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# USSR Report

AGRICULTURE

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13 February 1986

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SUCCESSSES, SHORTCOMINGS IN POTATO HARVEST

Moscow ZAKUPKI SELSKOKHOZYAYSTVENNYKH PRODUKTOV in Russian No 9, Sep 85  
pp 19-21

[Article by D. Yermak, state inspector of the USSR Ministry of Procurement:  
"More Assertive Work--Better Result"]

[Text] The Food Program adopted at the CPSU Central Committee May (1982) Plenum sets as its goal the steady supply to the population of all types of food, including fruit and vegetable products.

As is known, potatoes, fruit and vegetables are of great significance in man's daily diet; they are a principal source of vitamins and contain easily digestible carbohydrates, organic acids, mineral salts and other useful substances. For this reason the party and government are paying great attention to an increase in the production and procurement of potatoes, fruit and vegetables and an improvement in the provision of the country's population therewith.

The RSFSR is the main supplier of potatoes. The specialization and concentration of the production of this valuable crop are under way, the material facilities of production and procurement are being reinforced, the level of mechanization of laborious processes is rising and progressive cultivation techniques are being introduced consistently in all the oblasts of the RSFSR in which the "second bread" is cultivated. All these measures have made it possible in the 11th Five-Year Plan to considerably increase the production and procurement of potatoes compared with the 10th Five-Year Plan.

Average annual purchases of the "second bread" in the republic in the 4 years of the 11th Five-Year Plan compared with the 10th increased 67 percent. Yield in 1984 increased 4 percent compared with the 1983 indicators. The RSFSR fulfilled the plan for potato purchases in 1984 some 99 percent and supplies to all-union stocks 99 percent also.

Leningrad, Kemerovo, Tomsk and Tyumen oblasts, Stavropol Kray and the Dagestan, Kabardino-Balkar and North Osetian ASSR's fulfill and overfulfill the state plans for potato purchases from year to year. Big harvests are gathered in by the kolkhozes and sovkhozes of the North Osetian and Chuvash ASSR's and Leningrad, Vladimir, Kursk, Kaliningrad and other oblasts.

The "Volna revolyutsii" and "Krasnyy Oktyabr" sovkhoses of Novozybkovskiy Rayon and the "Stroitel kommunizma" Kolkhoz of Pogarskiy Rayon of Bryansk Oblast are striving for a record yield of 300 quintals per hectare. The "Zarya" Kolkhoz of Smolensk Oblast's Pochinkovskiy Rayon is lifting 250-260 quintals of tubers per hectare. At the same time, however, an extremely low potato yield was obtained in 1984 on the farms of Saratov, Rostov and Perm oblasts and the Bashkir ASSR.

The gross potato harvest declined somewhat compared with the preceding year in Bryansk (by 12 percent), Kaluga (11 percent), Tula (4 percent), Kirov (11 percent), Kemerovo (6 percent) and a number of other oblasts.

The biggest decline in potato production occurred in Ulyanovsk (25 percent) and Kuybyshev (22 percent) oblasts and the Bashkir (32 percent) and Udmurt (23 percent) autonomous republics.

The gross potato harvest constituted 104 percent on all categories of farm in the Non-Chernozem zone in 1984 compared with 1983. Yield was 5 quintals per hectare higher than in 1983.

On the kolkhoses and sovkhoses of the RSFSR the gross potato harvest constituted 88 percent of the plan and 115 percent of the average level of the 10th Five-Year Plan.

The nonfulfillment of the plans for potato production by the kolkhoses and sovkhoses of a number of oblasts, krays and ASSR's is the result of a reduction in the sown areas and low yield. Thus in 1984 the areas sown to potatoes declined by 21,000 hectares compared with 1983 and were 118,000 hectares less than the average level of the 10th Five-Year Plan. There was a considerable reduction in the sown areas on the farms of a number of the main potato-producing oblasts and autonomous republics. Thus on the farms of Kaluga Oblast the area sown to potatoes in 1984 had declined by 6,000 hectares compared with the preceding year and by 10,000 hectares compared with the average annual indicator of the 10th Five-Year Plan, by 5,000 and 18,000 respectively in Smolensk Oblast and by 900 and 10,800 hectares in Gorkiy Oblast.

A reason for the decline in the potato yield is the fact that annually the kolkhoses and sovkhoses of a number of oblasts, krays and ASSR's are failing to fulfill the plan for the laying in of seeds of this crop. Thus there was a shortfall of approximately 200,000 tons of seeds for planting potatoes for the 1984 harvest, which was made good by way of interfarm exchange and, mainly, by way of purchases thereof from the population, which led to the low proportion of high-grade sowings. In 1984 the relative significance of high-grade potato sowings on the farms constituted 67 percent of the total planting area. Among other reasons for the decline in yield were the distribution of potatoes in small plots where it is difficult to apply industrial techniques of their cultivation.

Organizations and enterprises of the RSFSR Ministry of Fruit and Vegetable Industry fulfilled the potato procurement plan 92 percent, of the RSFSR Ministry of Trade 92 percent, the RSFSR Ministry of Food Industry 81 percent and of

the Rospotrebsoyuz 114 percent. Of the 67 oblasts, krais and ASSR's with a potato-procurement plan, 47 fulfilled it.

What were the reasons for nonfulfillment of the plan for the sale of potatoes to the state?

One of them was local preference and checking sales of potatoes to the state given an opportunity. Thus the farms of Smolensk Oblast fulfilled the plan for the sale of potatoes only 61 percent given a marketability of 28 percent. In Kirov Oblast the farms sold potatoes to the extent of 67 percent of the plan given a marketability of 27 percent. There was a shortfall in the supply to the state of 54,000 tons, while 123,000 tons of potatoes for food were left for intrafarm needs. In the Tatar ASSR the farms sold the state 89 percent of the plan given a marketability of 33 percent.

In recent years the party and government have been paying great attention to the introduction of progressive methods of potato procurement by the procurement and trading organizations directly on the farms.

Some 2,123,000 tons of potatoes, including 1,456,000 tons in the USSR Ministry of Fruit and Vegetable Industry or 78 percent of the quota and 57 percent in the Tsentsosoyuz and 47 percent of the quota in the USSR Ministry of Food Industry, were accepted directly on the farms in 1984. Acceptance of the potatoes directly on the farms and their haulage by transport of the procurement officers is economically beneficial both to the farms and the procurement officers since it makes it possible to avoid undue losses and sell a high-quality product and affords an opportunity for removing many of the instances of lack of coordination which arise at the time of the surrender and acceptance of the potatoes. The concentration of motor transport enables the procurement organizations to increase its use and reduce transportation expenditure.

It should be noted that the pace of transition to acceptance of the product directly at the scene of production is still insufficiently high. The main reasons for this situation are the sluggishness of the procurement organizations, a reluctance to assume additional obligations pertaining to the construction of acceptance-procurement centers and a lack of specialized transport. This is connected in certain instances with the farms' lack of interest in selling the product at the purchase prices on the spot.

The organizations and enterprises of the RSFSR Ministry of Fruit and Vegetable Industry fulfilled the quota for the acceptance of potatoes on the spot 62 percent. There was a similar situation in the organizations and enterprises of the RSFSR Ministry of Trade, RSFSR Ministry of Food Industry and the Rospotrebsoyuz. The acceptance of products at the scene of production by the procurement organizations in Novgorod, Kalinin, Astrakhan and Irkutsk oblasts and the Dagestan and Udmurt autonomous republics is particularly unsatisfactory.

A number of farms is failing to build acceptance centers and to train personnel in the procurement organizations. Thus by the time of the mass procurement in 1984 not one surrender-acceptance center had been made ready for operation in Ulyanovsk Oblast. Of the 122 surrender-acceptance centers on the farms of Gorkiy Oblast, only 57 had been made ready.

Of the 16 acceptance-surrender centers in Penza Oblast, only 5 had been built and were operational. Fourteen acceptance-surrender centers were to have been operating in Chelyabinsk Oblast, but half of them did not.

Work is being performed unsatisfactorily on potato acceptance directly on the farms of Moscow Oblast by the organizations of the "Glavmosplodovoshchprom" Association. It is significant that good-quality acceptance-surrender centers had been built on the majority of sovkhozes of Moscow Oblast in 1984, but meanwhile arguments were going on between leaders of the "Glavmosplodovoshchprom" Association and the oblast's agriculture and mutual claims pertaining to acceptance of the product directly at the scene of production were being settled. As a result the quota for the acceptance of potatoes in the oblast was fulfilled only 29 percent.

Practice shows that where great attention is paid to acceptance on the spot good results are achieved. Thus Leningrad, Pskov, Vladimir, Kostroma, Kursk, Tomsk and Kamchatka oblasts and the Tatar and North Osetian autonomous republics coped successfully with the quota for acceptance of potatoes at the scene of production.

The specialization and concentration of production has been carried out, technological processes of the cultivation of this crop have been perfected, seed breeding has improved, the gross harvests have grown and state purchases of the "second bread" have increased in potato growing in the Ukrainian SSR in recent years.

The state inspectorates for the purchases and quality of agricultural products in the oblasts and rayons have performed a considerable amount of work on the timely conclusion of forward-contracting agreements, full provision for potato seeds and care of the sown areas and the timely harvesting. As a result of these measures the potato-procurement plan was overfulfilled in 1984.

In 20 oblasts the procurement plan was fulfilled thanks to the increased yield and an increase in the marketability of this product. Some 60,000 tons more potatoes were purchased in 1984 than in 1983. The increase in the production and procurement of potatoes in this period in terms of the kolkhozes and sovkhozes constituted 102 percent. However, the plan for the supply of potatoes to all-union stocks was fulfilled 98 percent, and the Ukoopsoyuz supplied 97 percent and the UkSSR Ministry of Fruit and Vegetable Industry 108 percent.

A set of measures has been implemented in the republic in recent years aimed at the development of direct relations and the acceptance of potatoes directly where they are produced. Of the total volume of potato purchases in the republic, only 15 percent of the total volume of purchases was accepted at the scene of production, and 1,524,000 tons of potatoes were sold to the state per direct relations in accordance with the "field--store" principle and to the processing enterprises. The sale of potatoes in accordance with the "field--store" method is well organized in Kiev, Dnepropetrovsk, Odessa, Zaporozhye and a number of other oblasts.

Acceptance-surrender centers with laboratories for determining the quality of the potatoes have been built and weighing facilities have been installed on many farms, and recommendations have been drawn up determining the mutual relations and obligations of the contractors and the farms with respect to acceptance of the potatoes directly on the farms. The quotas for acceptance of the potatoes where they were produced were overfulfilled considerably in Voroshilovgrad, Transcarpathian, Ivano-Frankovsk, Nikolayevsk and Kharkov oblasts.

At the same time acceptance of potatoes where they are produced has still not been organized on sovkhoses of the UkSSR Ministry of Fruit and Vegetable Industry and in Denpropietrovsk, Lvov and a number of other oblasts.

The areas sown to potatoes declined 1 percent in the public sector in the Belorussian SSR in 1984 compared with 1983. The gross harvest on all categories of farm constituted 102 percent of the plan and 107 percent of the 1983 level, including 106 percent of the plan and 114 percent of 1983 on the kolkhozes and state farms.

The potato yield on all categories of farm rose to 107 percent compared with 1983. Some 2,291 farms were engaged in potato cultivation in the republic. The potato growers were rendered great assistance by the republic's party and soviet authorities in the organization of tuber purchases by the procurement and trading organizations. Constant supervision was established of the progress of the fulfillment of the plans and forward-contracting agreements on the part of the BSSR Ministry of Procurement state procurement inspectorates, which made it possible to fulfill the state plans for potato purchases.

Tubers reached the procurement centers and trading organizations from all categories of farm of the republic in a volume of 106 percent of the plan and 301,000 tons more than the average annual indicators achieved in the 10th Five-Year Plan. Potatoes were purchased to the extent of 102 percent of the plan from the kolkhozes and sovkhoses and 289 percent of the plan from the population.

Organizations and enterprises of the republic Ministry of Fruit and Vegetable Industry purchased potatoes to the extent of 105 percent of the plan, procurement organizations of consumer cooperatives 100.7 percent, organizations and enterprises of the BSSR Ministry of Food Industry 101 percent and of the BSSR Ministry of Agriculture 137 percent and the Belsortsemovoshch 124 percent of the plan.

The plan for potato purchases in 1984 was fulfilled by all oblasts of the BSSR. Some 143,000 tons of potatoes were accepted on the farms directly where they were produced, and 196,000 tons were hauled by transport of the procurement organizations. Some 84,000 tons of potatoes were supplied directly to the trade network in accordance with the "field--store" method.

Some 600 hectares less were planted with potatoes on farms of the Latvian SSR in 1984 than in 1983. Their actual yield constituted 135 percent compared with

1983. The plan for purchases was fulfilled 119 percent. All rayons, with the exception of Liyepayskiy, where the potato plantings on many farms suffered in the spring and at the time of harvesting from excessive soil moisture, fulfilled the plan for the production and sale to the state of potatoes.

The plan for the sale of early potatoes was fulfilled 148 percent. The Latvian Potrebsoyuz fulfilled the plan for purchases of this crop 123 percent, the republic Ministry of Fruit and Vegetable Industry 101 percent and the Sortsemovoshch 142 percent. Potatoes were shipped to all-union stocks to the extent of 122 percent of the plan.

Under the leadership of the party and soviet authorities and proceeding toward the 27th CPSU Congress, the agrarian-industrial complex of the Lithuanian SSR completed the state plans for purchases of the 1984 harvest successfully. The quota for supplies of potatoes to all-union stocks was fulfilled also. The LiSSR Ministry of Procurement and the state inspectorates for the purchases and quality of agricultural products contributed to this success. The republic fulfilled the plan for potato production 104 percent and the purchases plan 116 percent.

Of the 599 farms which had plans for the sale of potatoes to the state, 204 failed to fulfill them. The number of such farms declined by 197 compared with 1983. The plan for potato purchases was fulfilled by all the LiSSR's procurement organizations.

Such is a brief description of potato production and procurement in the main areas of the European part of the country. As the facts testify, where enterprising work is performed and where the production and purchases of potatoes are undertaken actively, the set plans are fulfilled successfully, as a rule, and the state is supplied with a high-quality product.

An important place in the production and procurement of potatoes is assigned the state inspectorates for the purchases and quality of agricultural products. They are having an active impact on a strengthening of state procurement discipline, an improvement in purchasing methods and an expansion of direct relations and acceptance of the product on the spot. The state procurement inspectorates are constantly strengthening business relations with the procurement and trading organizations and with the kolkhozes and sovkhozes and are actively influencing a rise in the quality of the potatoes and their reduced losses during harvesting, shipment, processing and storage.

In conjunction with the farm leaders and specialists the workers of the state procurement inspectorates are thoroughly analyzing the state of potato production, drawing up measures with reference to local conditions for the fulfillment of the plans for purchases and supplies to all-union stocks and keeping a strict watch on the execution of forward-contracting agreements. The experience of the work has shown that the most important condition for the fulfillment of forward-contracting agreements is verification of the correspondence of the farms' production-financial plans to the commitments assumed in the forward-contracting agreements with respect to the volume, selection and specific times of the production and sale of the potatoes to the procurement officer.

The state procurement inspectorates exercise constant supervision of the state of the level of production and fulfillment of the forward-contracting agreements, not leaving a single instance of violation unexamined. Effective measures are adopted in respect to farm leaders who deviate from the timely fulfillment of the purchase plan.

The USSR Ministry of Procurement and its bodies--the state inspectorates for the purchases and quality of agricultural products in the oblasts, krais and autonomous republics--have been entrusted with the functions of interdepartmental coordinating body for the procurement and supply of agricultural products in order to promptly remove the difficulties which arise in the way of the kolkhozes' and sovkhoses' sale of their products. Now, joining the rayon agrarian-industrial association council, the workers of the state inspectorates of a number of rayons may contribute to an even greater extent to the removal of a departmental approach at the time of the planning of the production and procurement of agricultural products.

The mass potato procurement is now close to completion. It is the duty of the state inspectorates for the purchases and quality of agricultural products to ensure supervision of the fulfillment by each kolkhoz and sovkhos of the state plan for purchases of this important crop of the 1985 harvest.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BELORUSSIA BEHIND QUOTAS IN POTATO PROCUREMENT

Moscow SELSKAYA ZHIZN in Russian 2 Oct 85 p 2

[Correspondent V. Legankov report: "The Belorussian Potato"]

[Text] Belorussian SSR--The harvesting of the "second bread" in Belorussia is now at its height. The tubers have been dug up over more than half the area. Despite the difficult weather, many farms have achieved good results. The "Sovetskaya Belorussiya" Kolkhoz of Brest Oblast's Kamenetskiy Rayon is digging 380 quintals of tubers per hectare and overfulfilling the plan for the sale thereof to the state by a factor of 1.5.

The work of the farmers of the same rayon's "40 let Oktyabrya" Kolkhoz is heartening. In the spring the farm's contract links applied shallow nonmound planting. The tubers were set out in precut furrows and thereupon lightly covered with earth. And they were finally ridged 2-3 weeks later, following vernalization and germination. Combined with other agrarian methods this has doubled the yield. Three brigades are for the first time digging 300 quintals of tubers per hectare. The crews are working without regard for the time: no one leaves the field until the quota is met.

The entire rural population has gone to the potato harvest in Kamenetskiy Rayon. Some 1,500 city dwellers have come to help also, concrete and tangible assistance.

The summaries of operations invariably call attention to the big separation from others of Ivanovskiy Rayon. This is not fortuitous. In the past the local farms were the first in the republic to initiate the introduction in the potato plantations of the Ipatovo method. SELSKAYA ZHIZN described their experience in detail. It was taken up throughout the Non-Chernozem. The composite harvesting-transportation detachments in the potato plantations have now been operating thus for 9 years. And now they are providing the kolkhozes and sovkhoses with a daily increase in the cleared areas of 4-5 percent given an average harvest of over 200 quintals per hectare.

The Ipatovo method combined with the collective contract has enabled the rayon to increase the productivity of the potato-harvesting combines 30 percent compared with last year's level, and average daily output is amounting to 2.5-3 hectares. And it is even higher on the best farms. The productivity

of the sorting centers has been raised to 130-150 tons per shift. For example, the crew of USSR State Prize Winner N.I. Klyshko, which undertook in the present season to issue from the hopper of its combine no less than 2,500 tons of tubers, is clearing them from almost 5 hectares daily. The machine operators of the "40 let Oktyabrya" Kolkhoz are daily dispatching from four sorting centers to the railroad station 200-300 tons of select tubers each. And, furthermore, the "Kolkhidas" are not being held up more than 10 minutes during loading.

On the farms of Ivanovskiy Rayon, where the harvesting is already drawing to a close, good use is being made of the equipment. All the combines here have been fitted with additional illumination for work in the evenings and at night-time, and two-shift work has been introduced everywhere. Sorting centers and accumulator-bins with a total capacity of 1,000 tons have been established in the brigades. An acceptance-shipping center with an accumulator-bin operates at the railroad station. Six motor vehicles may be unloaded and two railcars loaded simultaneously here.

The big detachments constantly have one-two combines in reserve. Some 55 motor vehicles have been dispatched from rayon organizations to the farms to ship the potatoes from the fields. Some 30 large-capacity vehicles of the interrayon Selkhoztekhnika are operating at the central transportation station. The pit areas, in which the seed tubers are laid up for storage, have been fitted with forced-ventilation installations. Dispatchers are on duty round the clock. The harvesting has been organized well in Zhabinkovskiy, Lyakhovichskiy, Luninetskiy, Kletskiy, Nesvizhskiy, Vileyskiy, Shchuchinskiy, Mostovskiy and Voronovskiy rayons also.

However, not all are working thus as yet. Mogilev Oblast, where less than half of the areas had been picked by the end of September, less than in northern Vitebsk Oblast even, is lagging behind. References to the bad weather are no justification. The trouble is that the equipment was not prepared in good time here, the engineering service was inadequately organized and the brigade contract is underestimated.

Many fields were completely overgrown with weeds because the links were simply not given a chance to cultivate the sown areas and were diverted for a long time into other work. It even took the intervention of the rayon first secretary in Belynichskiy Rayon to ensure that link leader A. Astafyev be admitted to the inter-row cultivation of the field which had been assigned him. Shklovskiy Rayon's once foremost "Gorodishche" Sovkhoz had to invite sponsors in for manual weeding. In some places farms did not get around even to cutting the weeds prior to the harvesting. The combines, naturally, are breaking down.

A special word about combating weeds. To judge by the summary report, the republic is still far from fulfillment of the pledges. Harvesting 185 quintals per hectare--and such is the pledge--is possible if all channels of losses are closed off and the plantations are replowed properly over the entire area. But this is not being done on many farms of Vitebsk Oblast, where only 110-120 quintals per hectare are being harvested as yet, alas.

Yet the oblast is much in debt to the state. In 4 years of the 5-year plan the kolkhozes and sovkhozes have fallen short in supply by tens of thousands of tons of tubers. Is it not time to pay off the debt?

Nor was the plan for 4 years of the 5-year plan in respect of potatoes fulfilled in Belorussia as a whole. True, if, as planned, the state is now shipped 2.17 million tons of potatoes, the 5-year quota will be fulfilled. But hard work needs to be done for this.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### RAIN HAMPERS POTATO HARVESTING IN BELORUSSIA

Moscow SELSKAYA ZHIZN in Russian 9 Oct 85 p 1

[Text] Minsk, 8 October (TASS)--Belorussia's potato growers are undergoing a difficult test. The frequent rains have dragged out the tuber harvesting and taken away the opportunity of making full use of highly productive equipment. Under these conditions the farms are doing everything possible to gather in the harvest before the first frosts.

Rain had poured down the whole week. The ground, which had had its fill of moisture, could no longer take it. Along the edge of the field and in the depressions the potato furrows were in water. In the morning the rain stopped, and the machine operators of Shklovskiy Rayon's Kolkhoz imeni Frunze drove the combines to the plantations. Where the plots were somewhat higher up, the equipment worked, with difficulty, but it worked. But the potatoes did not "work". A clinging mud settled on the transport vehicles and jammed the passageways.

It was decided to use the excavator. It took machine operator I. Prokhorov only minutes to replace a unit. Foul weather had taught him to adjust to the conditions. When they permit, all six combines will join in the work with full power on the kolkhoz.

All the rural inhabitants are adopting an understanding attitude toward the situation and going out together to the sectors which are inaccessible to the vehicles to lift the tubers by hand. The stockbreeders of the hog-raising complex have filled up the work schedule, and more than 40 persons are currently helping from 12 to 16 hours in the field. Patrons from Mogilev enterprises and local schoolchildren are toiling assiduously. Potatoes have already been harvested from more than 100 of the 150 hectares on the kolkhoz. Seed stocks have been laid in fully, and the sale of the "second bread" to the state is actively under way.

"The frequent rains have made the field work difficult on many of the republic's farms," A. Ilyasevich, specialist of the Belorussian SSR Ministry of Agriculture, said. A particularly difficult situation has come about in Vitebsk and the northwest parts of Mogilev oblasts. The rain fell almost the whole of September here, and many fields are awash.

The machine operators have switched the tractors to half-track operation, have coupled the wheels of the combines and are operating around the clock.

In spite of the caprices of the fall, potatoes in Belorussia have been harvested from 80 percent of the total area. The farmers intend to preserve the harvest to the last tuber, cope with the plans successfully and sell the state over 2 million tons of the "second bread".

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BENEFITS OF FURTHER ASSISTANCE TO PRIVATE PLOTS

Minsk SELSKAYA GAZETA in Russian 17 Oct 85 p 2

[Article by M. Parkhimovich, chairman of Starodorozhskiy Rayon's Polozhevitskiy Village Soviet, under the rubric "The Private Farm is the Public's Concern": "Mutual Benefit"]

[Text] The potato harvesting on the "Polozhevichi" Sovkhoz and "Krasnoye znamyia" Kolkhoz, which are located on the territory of our soviet, has come to an end. Each hectare provided here 180-185 quintals of potatoes. A pretty good harvest at first sight, but still somewhat lower than planned. The reduction in the gross harvest of tubers may in itself make appreciable adjustments to the fulfillment of the plans for the production of milk and meat in the winter stalling period. For this reason the leadership of the farms in conjunction with deputies of the village soviet is currently performing active work on buying up potato surpluses from the population. This is an appreciable reserve and should not be disregarded. After all, the attached land of the village soviet constitutes 358 hectares, and potatoes directly occupy approximately 290 hectares. Having estimated the approximate yield, we concluded that we would be able to purchase in the season 300 tons of tubers. We were, to be blunt, quite considerably wrong here and underestimated the potential of the village farmsteads. For example, even now the workers of the "Polozhevichi" Sovkhoz have sold more than 370 tons of potatoes, and the kolkhoz members from "Krasnoye znamyia" 300 tons. There are still many wishing to surrender their surpluses. I would stipulate right away that this is not harming the private subsidiary farms and that people are leaving sufficient potatoes both for livestock feed and for seed.

The activeness of the residents of the village soviet gratifies us, and it was just such a response to the concern for the development of the subsidiary farms that we expected from people. And we are doing a considerable amount in this field. For example, of the 1,024 attached plots, last year alone 421 were brought into the crop rotation fields with their replacement every 3 years. People support us in this connection inasmuch as they have been able to see for themselves that on the new land the harvest is bigger and the plants are virtually unaffected by disease. Second, an opportunity has arisen for the extensive use of equipment. Planters, for example, are now used on 35 percent of the plots in the common crop rotation fields. On these questions the leadership of the farms always accommodates people and allocates a planter, organic and mineral fertilizer and equipment and transport for the harvesting

upon first demand. The population has now been using tractors even for inter-row cultivation. None of this costs much--for example, for planting tubers over 30-35 hundredths the kolkhoz member pays only R6.

And what are the actual returns from such an approach? According to the estimates of the inhabitants themselves, the yield in some plots has almost doubled. This can with every justification be confirmed by animal specialist L. Drubova, mechanic M. Ilyushcheniya, machine operator V. Lasotskiy, apiarist I. Chechukho and pensioner M. Demus, who sold 3,800-7,700 kilos of potatoes. Inasmuch as the farms pay R125 per ton thereof it is not difficult to calculate that the addition to the family budget of these and other comrades is quite impressive. There is mutual benefit here.

The purchasing of potatoes from the population is continuing. A further 100 tons plus thereof will be received by the farms prior to November.

In place of an epilogue: It has not been one of the best years for the potato growers. The harvest on a number of farms is considerably below the planned level, and damage to the tubers by phytophthora infection and other diseases is being noticed everywhere. Nor are the village inhabitants pleased by the harvest. In a number of places the heads of the household have only just managed to recover the seeds. In short, the situation is clear: there will be less potatoes for feeding the livestock in winter than anticipated. Proceeding from this, it is important and necessary to organize extensively purchases thereof from the population of the rayons where the harvest has been comparatively good. Two points need to be taken into consideration here, we believe. First, organize matters such that the present assertiveness in the purchases be not subsequently reflected in a decline in the numbers of livestock on the peasant farmsteads. Second, create the maximum conveniences for the sellers--provide transport, settle with them in good time and so forth.

Naturally, all these questions must be under the constant supervision of the village and rayon soviets. It is gratifying that the work is being performed precisely thus in the Polozhevichskiy Village Soviet. The figures, incidentally, speak for themselves.

It is a pity that far from all local soviets are operating in the same key. For example, the Nesvizhskiy and Slutskiy rayispolkoms lacked reliable information on how the purchasing of potatoes was going altogether. There was just one explanation: the harvest was poor, not enough potatoes. Is this the case? We are sure that in these rayons also there will be many residents wishing to sell surpluses.

Nor, to judge by everything, has the oblast inspectorate for the purchases and quality of agricultural products been up to the mark. Our recent question as to how the purchases of potato surpluses had been organized in the oblast caught the leadership of the inspectorate clearly unawares. There were nebulous references in reply to the fact that this question had not been seriously raised as yet, that the corresponding oblispolkom decision had only recently been signed and so forth.

The impression is created that such a concept as initiative and enterprise and the ability to work without waiting for instructions and directives has been forgotten here. Although in the same Starodorozhskiy Rayon, where, given a quota of 1,600 tons, 1,000 tons of potatoes have already been purchased from the population, this is being remembered for some reason. An example for emulation is, as they say, next door. But, to judge by everything, inertia of thinking, fear of independence and anticipation of instructions and authorization from above are still reflected in many leaders and economic-planning and soviet workers, a position which has been criticized repeatedly and from which work is suffering once again.

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CSO: 1824/113

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BRIEFS

BELORUSSIAN POTATO HARVESTING--Minsk, 9 September (TASS)--Mass potato harvesting has begun in the fields of Belorussia--the country's largest supplier of the "second bread." "In accordance with the USSR Food Program, the republic is becoming a specialized zone for the production of potatoes on an industrial basis," A. Ilyasevich, head of a department of the Belorussian SSR Ministry of Agriculture, said. "On the entire area, and this is 350,000 hectares, they are being cultivated by contract mechanized brigades and links." The composite harvesting-transport detachments which perform the full production cycle have now gone out into the fields. [Text] [Moscow SELSKAYA ZHIZN in Russian 10 Sep 85 p 1] 8850

CSO: 1824/113

## REGIONAL DEVELOPMENT

### CONFERENCE ON IRRIGATION, RECLAMATION PROBLEMS

Omsk ZEMLYA SIBIRSKAYA, DALNEVOSTOCHNAYA in Russian No 7, Jul 85 pp 24-26

/Article: "On the Eve of Great Changes"/

/Text/ Over the past six months, sectional meetings of the All-Union Conference entitled "Development of the Productive Forces of Siberia and the Task of Accelerating Scientific-Technical Progress," of the Siberian Branch of the USSR Academy of Sciences, have been held in various Siberian cities. The country's leading scientists and specialists have discussed the methods for raising the efficiency of public production in Siberia and also for accelerating the realization of the results of scientific studies associated with the all-round regional program "Sibir." A section entitled "Problems of Land Reclamation, Utilization of Water Resources and Protection of the Environment" carried out work at Barnaul. It was headed by an organizational committee under the direction of Corresponding Member of the USSR Academy of Sciences and chairman of the Scientific Council on the Problems of Distribution of Water Resources of Siberia and Environmental Protection of the Siberian Branch of the USSR Academy of Sciences O.F. Vasilyeva.

The following participated in the work of the section: 1st secretary of the Altay Kray CPSU Committee F.V. Popov, 1st deputy chairman of the Presidium of the Siberian Branch of the USSR Academy of Sciences Academician A.A. Trofimuk, other competent scientists, leading workers of ministries, departments and production enterprises and representatives of party, soviet and social organizations. The principal problems of land reclamation in Siberia, examined by the section, are reflected in the article by the Deputy Minister of the RSFSR Minvudkhos /Ministry of Land Reclamation and Water Resources/ N.N. Mikheyeva, which opens up this issue of the journal. We also recommend the notes by our special correspondent V.R. Plyukhin.

Land reclamation is now being compared more frequently against the mastering of the virgin lands. This comparison is fully justified when one takes into account the fact that the virgin lands provided us with two types of experience.

First of all, there was the experience of mastering the virgin lands from a global national economic standpoint. And secondly, it was precisely here, on the virgin lands, and earlier if you please than in other production branches or regions of the country, that experience began to accumulate in the ecological utilization of nature and in the purposeful optimization of the natural environment. Life reveals that the trends selected for this ecological work are correct and now only require improvements. The soil-protective system of farming, the creation of valuable systems of field-protective forest strips and reservoirs of an economic and sanitary nature and already tested means for controlling natural processes in the steppe zone of western Siberia are making it possible, assuming skilful use both today and in the future, to increase the production of agricultural products.

If we compare the thought processes and actions of a modern farmer against those of his predecessor of 30 years ago, then it can be said that two virgin lands emerged, one of them being a virgin land in the usual sense and the other -- a virgin land of ecological ignorance. The mouldboard plow was replaced in the arsenal of a farmer by a soil-protecting sweep precisely as a result of the mastering of this second virgin land.

But between these two events -- that is the plowing up of the Siberian steppes and the ecological enlightenment of a plowman -- there were many years characterized by chernozem dust storms, negative results and an understanding of the mistakes committed. Since that time, the unwritten commandments of the virgin land have developed and remain in our consciousness, eternally permeated by the aftertaste of dust on our teeth. One of them, the very first, must read as follows: before encroaching upon nature, one must meticulously search for the means for entering into agreement with it. Then the first mistake will be science in the future and the second -- a violation of laws previously learned."

The theme of searching for the ecological consequences of future large-scale land reclamation operations in Siberia has directly or indirectly found its way into a majority of the reports, communications and discussions held during meetings of the section. The situation actually resembles that which prevailed on the eve of mastering the virgin lands, only now the chief instrument for improving it is water and not the mouldboard plow.

The water resources in the agricultural zone of Siberia are distributed in an extremely irregular manner: a deficit in the steppe region, its most productive area, and a surplus to the north. The representatives of planning organizations delivered reports on the diversion of a portion of the flow of the rivers of the Ob and Irtysh Basin into the Central Asian republics and a portion of the flow of the Ob River into Lake Chany, with secondary irrigation of the Kulunda Steppe, the construction of a hydraulic development of the Southern Omsk Irrigation System and others. The planners are of the opinion that from an engineering standpoint the redistribution of the water resources of Siberia in the interests of agriculture does not present excessive difficulties with regard to the modern level of development of the technical-power engineering potential. Similarly, at one time the mass plowing of the virgin lands became technically possible.

But today the situation differs substantially from the one which prevailed during that period. Yes, the principal question -- how to respond to this

redistribution of nature -- has not been adequately studied. However, the problems of land reclamation, the utilization of water resources and protection of the environment although occurring for the very first time, nevertheless must be examined as part of an overall complex and in close association with one another. This is already in conflict with the use of a unilateral approach for solving these problems. Here, for example, during meetings of the section, the soil scientists convincingly proved that not all of the Siberian chernozem soils were predistributed for the carrying out on them of existing types of irrigation land reclamation measures. Thorough scientific experiments are needed in order to avoid possible mistakes.

Moreover, the principal formula for success is pointed out by the considerable amount of practical experience already available. Let us compare the reasons for successful land reclamation, using as an example the contour-reclamative system of farming in Zmeinogorskiy Rayon in the Altay Kray (see "Contour-Reclamative Farming," No. 12, 1981) and unsuccessful land reclamation -- the experience accumulated in making water-logged agricultural lands available for economic use ("Problems of Drained Lands," No. 7, 1982 and "In the Interests of Agriculture," No. 4, 1983). And inevitably we draw the conclusion that success in land reclamation is the result of a study of the natural characteristics of a specific territory, to include the degree of their ecologically intelligent use.

But it is appropriate to ask: how can success be achieved with such a detailed study? For the vast, exotic and incomparable area of Siberia, there is only one land reclamation institute (SibNIIGiM /Siberian Scientific Research Institute of Hydraulic Engineering and Reclamation/ and it has a rather weak material base. But if there were not just one and if there were even an entire association for the carrying out of all-round studies, how much time would be required for waiting for results? And during this period, what would happen with regard to land reclamation? In other words, would it not have been better to allow everything to "take its own course?" Was not the past a poor example? Let the action unfold without a search, let the consequences unfold and in return there will be achievements during the course of eliminating them, what reorganization! A soil-protective complex, a higher level of reflection. Could it be that the results will transcend all of the losses?

It is possible. However, life is now advancing other standards as a result of the reorientation of thought that has taken place. In the reports and communications delivered during the section, for example, mention was made on more than one occasion of the experience of the Luzinskiy Sovkhoz in Omsk Oblast, where the waste runoff from one of the largest swine husbandry complexes in the world (9,000 cubic meters daily) is being employed successfully for the irrigation of agricultural crops. Thus the sovkhov has succeeded in solving all three problems -- utilization of industrial waste runoff, irrigation reclamation and environmental protection -- without experiencing adverse consequences. How was this accomplished?

Obviously the time had come to study very attentively the experience in paying for the work of scientific workers based upon the final production results. As revealed by the work of a support point of the All-Union Progress NPO /Scientific Production Association/ for the agricultural utilization of waste

runoff waters, created at a sovkhos on the basis of an economic agreement, the scientists, under conditions involving direct contacts with production, supply it with a method which is already available to science at this time. Further studies inevitably assume a complex character, since the contractual conditions and also the production situation itself requires an examination of and solutions for the various aspects of the problem, including social, medical and so forth.

Thus both sides gain. Science, based upon strong financial and material support for production, is able to handle thoroughly the new questions, attracting the specialists of any profile as required. Production initially is provided with scientific recommendations which guarantee its effective development in the absence of ecological risk. On the whole, scientific studies on the reclamative utilization of waste runoff waters at the Luzinskiy Sovkhos are economically justified.

The time has come to mention why the work of the land reclamation section of the All-Union Conference was carried out here at Barnaul. Actually, in addition to the greatest amount of aquicultural and land reclamation construction taking place in the Altay Kray, the process of ecological utilization of nature is increasing in strength with each passing year. Moreover, this work is directed by the academic science in the form of the Altay Ecological Laboratory of the Institute of Geography for Siberia and the Far East of the Siberian Branch of the USSR Academy of Sciences. In Issue No. 12 for 1983, we discussed the fact that this laboratory developed as a result of initiative displayed by local scientific enthusiasts, supported on the one hand by party and soviet organs in the Altay and on the other by the Presidium of the Siberian Branch of the USSR Academy of Sciences. In essence, this support signified that the Altay Kray entrusted to science the further fate of the relationships between production and the environment.

What have been the results? Professional ecologists exercise control over and coordinate the activities of the branch institutes within the kray. Ecological expertise is being employed more and more in the work concerned with the protection of plans. This year, under the scientific-methodological direction of the library and the Altay State University, work is being completed on the unified "Plans for the Efficient Utilization and Protection of the Natural Resources of the Aley River Basin." In addition, during this section the ecologists gave their preliminary forecasts concerning a change in the natural conditions coincidental with the redistribution of the water resources of the southeastern portion of western Siberia, prepared on the basis of studies conducted throughout the zone on the influence of the active portion of the Kulunda Canal.

Finally, the section recognized as a true event the report submitted by the representatives of this laboratory and the university entitled "Special Purpose All-Round Program for the Efficient Utilization of Nature and for Protecting the Environment of the Altay Kray, -- TsKP /tselevaya kompleksnaya programma; special purpose all-round program/ Ecology. Exactly what is this? Last year a staff and scientific council was created within the Altay Kray Executive Committee for the development and implementation of a program, the purpose of which is to form a system of measures for protecting nature and also an organizational structure with authority to administer the material and

financial resources required for solving specific ecological tasks. The development of this program involves participation by kray administrations and departments, planning organizations, rayon and municipal executive committees, VUZ's, subunits of the Siberian branches of the USSR Academy of Sciences, VASKhNIL /All-Union Academy of Agricultural Sciences imeni V.I. Lenin/ and the USSR AMN /Academy of Medical Sciences/. The development of the program must be completed this year and it must be implemented prior to the year 2000. The leading customer is the kray planning committee and the general contractor is the Altaygrazhdanproyekt Institute, with guidance being provided by the already familiar to us ecological laboratory and the Altay State University.

Does not this reorientation of the relationships between "science - production - nature" resemble the situation at the Luzinskiy Sovkhoz? Only now the ecological work encompasses not just a specific problem within the framework of one farm, but rather the development of the productive forces for the kray as a whole. But in both instances, science, if you please, for the first time in history, is searching for specific means for achieving harmony between production and the environment. And the experience of the Luzinskiy Sovkhoz workers reveals that success is being achieved in searching for these means and without adverse consequences.

Certainly, the larger the scale, the more complicated the task. However, the successful solving of this task requires that at least two conditions be met at all levels. The first is the capability of science to reorganize production on the basis of ecologically justified recommendations. And the second condition consists of the readiness and desire on the part of production to be reorganized. Thus the decisions handed down by the section are dedicated to mobilizing efforts in behalf of carrying out the first of these conditions.

In particular, these decisions call for the creation within the Siberian Branch of VASKhNIL of a hydrotechnical amelioration institute for the effective coordination of scientific-research, experimental and planning work in the area of land reclamation and a strengthening of the scientific-production base and personnel structure for existing scientific organizations of a land reclamation profile (SibNIIGiM, West Siberian Branch of VNIIGiM /All-Union Scientific Research Institute of Hydraulic Engineering and Reclamation/). In connection with the need for a rapid dissemination of studies concerned with the efficient utilization and protection of the water resources of the Ob-Irtysh and Angaro-Yenisey basins, the creation of a special scientific subunit within the Siberian Branch of the USSR Academy of Sciences is considered advisable. Such a subunit could promote the use of a systematic approach in studying the mentioned problems and it could also serve as the base for achieving all-round ecological expertise in the handling of new engineering plans.

As you can see, these decisions are extremely important. It is hoped that during their approval attention will be focused on one circumstance which, judging by the editorial board's mail, continues to disturb the rural residents. Oddly enough, it usually comes to light after the trailers of the builders have departed the land reclamation project, having privately left the farmers with a transformed reality.

Thus, for example, the residents of the ancient village of Melgunovka, as a result of radical rebuilding efforts associated with rice-growing land

reclamation in the Khankayskaya Valley, were left without yards, gardens or orchards for the simple reason that the territory surrounding the cottages made available to them had been covered with pebbles according to plan -- in all probability, for the sake of beauty. In addition, the streams which earlier had an abundance of fish were regulated for the purpose of flooding rice check-plots and no replacement was made available in the reinforced concrete "New Melgunovka" in the form of a reservoir. The village's children now bathe themselves under the ocean sun in a discharge canal of the land reclamation system. Just as in the past, the personnel problem of the rice growers continues to remain acute, despite costly attempts to solve it.

This problem was also mentioned during meetings of the section and just as frequently, if you please, as the water shortage problem in arid regions. And Melgunovka automatically springs to mind and with it other villages, the residents of which are disturbed by one question:

Why were the plans not coordinated with the village's population? Is it really difficult to provide a model of a future project for review, with a copybook for reactions? Indeed, how many mistakes could be corrected? Surely it would be easier to do so on paper rather than later on concrete.

And why not? It is well that today we discuss ecological expertise for plans. However, land reclamation changes not only the natural environment but also the living conditions of the rural population. And quite often it does so in a radical manner and arouses an entire series of reciprocal reactions. Nor are they always positive in nature. Is it normal for the opinion of a rural resident not to be taken into account during all stages of the land reclamation process -- from scientific works and planning studies to the receiving and delivery conveyor belt?

Here an objection can be raised: and who takes it into account -- is he a specialist? No, he is not a specialist. He is the master. For it is he who must live under the new conditions and work and feed his family and the state. For example, we are all non-specialists in the art of tailoring and yet at times we philosophize during a fitting in a studio! And here a pattern is cut out. Here they reverse the entire living environment that an individual has become accustomed to throughout a 400 year history of Siberian peasantry. And nobody now asks him: how is it with you? Are things going well? The official schedule for planning organizations makes no provision for a sociologist who could answer such questions.

In short, social expertise or public protection of plans is required from both an economic and ethical standpoint. And this should involve mandatory participation by the population in that area in which the land reclamation work is to be carried out. Only if this condition is met will it be possible to examine the land reclamation problems in a truly complete and comprehensive manner. It is still difficult even to conjecture as to what form this protection is likely to take. Unfortunately, our planners have no experience in this regard. But it is believed that the more democratic and more open to discussion it is, the better it will be.

Indeed, for their part what objection can be raised by the rural residents? What alternative is available and in what direction is it possible for them to

persist? There is only the national experience in the utilization of nature -- nothing more. But protection of a plan could prove to be of substantial value if it serves to reveal and to become acquainted with this experience in a timely manner. Moreover, initially it might seem to be very strange and even comical. For example, similar to the home-made sweeps of T.S. Maltsev during the initial stage in the mastering of the virgin lands. . .

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## REGIONAL DEVELOPMENT

### DETRIMENTAL EFFECTS OF OVERUSE OF NITROGEN FERTILIZERS

Omsk ZEMLYA SIBIRSKAYA, DALNEVOSTOCHNAYA in Russian No 11, Nov 85 pp 16-17

[Article by V.I. Kustov, head of Department of Oncology at Khabarovsk State Medical Institute, Doctor of Medical Sciences and professor; N.P. Starikova, head of Department for the Feeding and Maintenance of Agricultural Animals at the Far Eastern Scientific Research Institute of Agriculture and Doctor of Agricultural Sciences; O.N. Borisenko, junior scientific worker: "How a Live Organism Responds or Certain Sanitary Aspects of Using Nitrogen Fertilizers"]

[Text] During the All-Union Conference on the Medical and Biological Aspects in the Use of Nitrogen Fertilizers (1978), it was noted that the systematic use of high dosages of these substances is dangerous to both man and warm-blooded animals. Such fertilizers are being employed in all areas in the Far East and Siberia for applying top dressings to agricultural crops. Quite often they are applied in higher dosages than those recommended and locally rather than in a scattered manner. As a result, the content of nitrifying substances in the plants is increasing.

The yields increase when high dosages of nitrogen fertilizers (more than 120 kilograms of active agent per hectare) are used for applying top dressings to agricultural crops. However, the content of dry and organic substance, sugar, nitrogen-free extractive substances and carotene decreases in a grass stand. Another fact was also established: the use of nitrogen containing fertilizers during the cultivation of potatoes, cabbage and carrots brings about a reduction in the amount of ascorbic acid contained in these products. It has been noted that during the storage process ascorbic acid breaks down more rapidly in the case of those vegetables which received larger quantities of nitrogen fertilizers.

Our studies revealed that when nitrogen fertilizer was applied in a top dressing for the vegetation of cultivated pastures, in dosages of 180 and 270 kilograms per hectare (partial applications, early in the spring and following each grazing cycle), the concentration of nitrate nitrogen during the third cycle amounted to from 0.1 to 0.15 percent in one kilogram of dry grass substance. The highest nitrate nitrogen content (a dosage of 120 kilograms per hectare was employed for applying a top dressing to a cereal grass stand) occurred during the heading of panicles -- 1,581.07 milligrams per kilogram -- and the lowest -- during the shooting phase -- 881.75 and the nitrate nitrogen

content in corn fodder during the formational period for the 5th through the 8th leaf was 889 milligrams per kilogram, with natural moisture.

The consumption by animals of plants having a high concentration of nitrate nitrogen causes poisoning, often with lethal results. Up until recently, there still was no uniform opinion regarding permissible or toxic concentrations of nitrates in the rations of ruminant animals. The majority of researchers consider as harmless a concentration of nitrate nitrogen up to 0.07 percent, or in a conversion for potassium nitrate ( $\text{KNO}_3$ ) -- up to 0.5 percent dry substance. Higher dosages cause a breakdown in the propagation processes and lower the milk yields and live weights of the animals. A nitrate nitrogen content in excess of 0.23 percent (or 1.5 percent  $\text{KNO}_3$ ) in the dry substance of a ration brings about poisoning of the animals and cattle losses.

A portion of the nitrates is transformed into human food products (milk, meat, vegetables and others). Epidemiological and clinical studies have shown that the principal toxic effect of nitrates and nitrites is methemoglobinic. Raised concentrations of these substances pose danger to man, especially if they are added to an organism systematically. A dosage of nitrates on the order of from 0.4 to 0.8 milligrams per kilogram of body weight is considered to be conditionally permissible for man.

According to literary data, the most serious pathological changes occurring in human and animal organisms following nitrate dosages in excess of the permissible norms are observed in the heart, lungs and also in the parenchyma organs -- liver, kidneys and spleen.

We determined the content of nitrate and nitrite forms of nitrogen in the organs and tissues of chinchilla strain rabbits depending upon their content in the feed ration. The studies were carried out in a vivarium at DalNIISKh /Far Eastern Scientific Research Institute of Agriculture/. Two groups of rabbits were formed in accordance with the pair-analog principle (10 head in each group). Over a period of 60 days, one group received fodder of a grass mixture of cereal crops with a predominance of timothy (80-85 percent, grown against a mineral fertilizer background of  $\text{N}_{120}\text{P}_{60}\text{K}_{60}$  kilograms of active agent per hectare. The second group -- grass of natural pastures, on which neither mineral nor organic fertilizers were applied. The accumulation of nitrate nitrogen by the plants was determined using the selective method (1981, TsINAO /Central Institute for Agrochemical Services for Agriculture/) and the content of nitrates and nitrites in the organs and tissues of rabbits -- using the method of the Main Administration of Veterinary Science of the USSR Ministry of Agriculture dated 25 August 1977.

It is noted that when a top dressing was applied to grass stands in the dosage mentioned above (120 kilograms of active agent per hectare), 80-85 milligrams of nitrogen were contained in 1 kilogram of air-dried soil. Yet, according to data supplied by agricultural chemists, the plants in such stands did not experience a deficit even with a soil content of 30 milligrams per hectare. Nevertheless, DalNIISKh recommends (1981, 1985) that 2-3 quintals of superphosphate, 0.5-1 quintal of potassium salt and fractionally 180-200 kilograms of active nitrogen fertilizer agent per hectare be applied to the soil of cultivated pastures.

Each rabbit included in our tests, in consuming an average of 650-700 grams of grass from a cultivated pasture, obtained with it at the same time nitrate nitrogen in the amount of 274 milligrams per kilogram of live weight. On the third day, the overall status of the experimental rabbits deteriorated sharply and two (after receiving a maximum concentration of  $\text{NO}_3$ ) died, some more during the 20th through the 30th day and the remaining ones fell behind in their growth and development.

Post mortems carried out on those that died revealed that all of them had a bluish tinge to their mucous membranes and individual hemorrhage spots in the form of a rash or bruises. A sharp expansion was observed in the subcutaneous blood vessels. In the heart, kidneys and spleen there was venous-capillary hyperemia.

All of the rabbits had distension of the gastro-intestinal tract caused by gases. The dissection of various parts of the tract revealed an excess amount of feed with abnormal fermentation, catarrhal inflammation and blood effusion in the mucous membranes of the intestines, reactivity of the lymph nodes of a hyperplastic type throughout the entire mesentery and petechial hemorrhages. The pancreases in all of the rabbits were overflowing with blood and growth of the connective tissue was noted in them. The liver was enlarged and dark red in color with centers of degeneration. Pronounced degenerative-dystrophic changes were observed in the kidneys and spleen. In the hearts of all of the animals there was a noticeable weakening of the ventricles and numerous petechial hemorrhages in the interventricular septum and epicardium. There was growth in the connective tissue in the myocardium. In the lungs -- catarrhal bronchopneumonia.

The highest nitrate nitrogen content was detected in tissues of the stomach, kidneys and in a delicate section of the intestines and that for nitrite nitrogen -- in the same section and also in the kidneys, duodenum and lungs (see Table 1). The quantities of both forms of nitrogen in the organs and tissues of rabbits were directly dependent upon their levels in the feed ration.

During the tests, a change in the hematological indicators was analyzed. Nitrate nitrogen was introduced into the rabbit organisms with the drinking water. During the winter, each rabbit drank an average of 197 milliliters of water daily and received 304 milligrams of nitrate nitrogen per kilogram of live weight. The method of acidic erythrograms (speed of hemolysis of erythrocytes) served as a most sensitive test for the changes taking place in a rabbit organism. For a normal organism condition, the speed of complete hemolysis of erythrocytes is a strictly stable value and it reveals a normal balance in the blood system, which ensures conformity between the work of blood formation and blood breakdown and reflects the high quality structure of red blood structure. The normal time for the complete hemolysis of erythrocytes in the experimental rabbits was 420 seconds (see Table 2).

A day after the rabbits had ingested nitrate nitrogen with water, the time for the hemolysis of erythrocytes decreased by 106 seconds, on the third day by 112 and on the 12th day by 150 seconds. By the 10th day, 50 percent of the experimental rabbits had perished.

TABLE 1  
Content of Nitrates and Nitrites in Organs and Tissues of  
Experimental Rabbits (M  $\pm$  m)

| Organs and Tissue       | Nitrogen Content (mg/kg) |                  |
|-------------------------|--------------------------|------------------|
|                         | Nitrate                  | Nitrite          |
| Stomach                 | 152.31 $\pm$ 27.96       | 3.64 $\pm$ 0.32  |
| Kidneys                 | 112.32 $\pm$ 10.77       | 6.02 $\pm$ 0.35  |
| Thin wall of intestine  | 82.50 $\pm$ 47.95        | 9.34 $\pm$ 2.04  |
| Duodenum                | 69.69 $\pm$ 16.34        | 6.51 $\pm$ 0.50  |
| Thigh muscles           | 68.33 $\pm$ 9.28         | 3.03 $\pm$ 0.16  |
| Lungs                   | 66.89 $\pm$ 6.27         | 11.98 $\pm$ 6.27 |
| Liver                   | 26.41 $\pm$ 9            | 3.77 $\pm$ 0.18  |
| Thick wall of intestine | 20.74 $\pm$ 1.78         | 5.20 $\pm$ 0.15  |
| Long back muscle        | 18.88 $\pm$ 1.27         | 2.98 $\pm$ 0.36  |

TABLE 2  
Effect of Nitrate Nitrogen on Speed of Hemolysis of  
Erythrocytes in Rabbits (M  $\pm$  m)

| Time From Commencement of<br>Water Consumption | Hemolysis of<br>Erythrocytes, c | P<br>Reliability Criteria |
|------------------------------------------------|---------------------------------|---------------------------|
| Up to beginning of experiment<br>(norm)        | 420 0.05                        |                           |
| 1 day later                                    | 314 $\pm$ 15.38                 | < 0.001                   |
| 3 days later                                   | 308 $\pm$ 7.69                  | < 0.001                   |
| On 12th day                                    | 270 $\pm$ 11.54                 | < 0.001                   |

The study results revealed once again the harmful effects on a live organism of products grown with the use of excessive dosages of nitrogen fertilizers. Their adverse influence on an organism, in addition to toxic effects, also includes other factors.

In 1978, in Lyons, a conference was held for a special research group of the World Health Organization on the hygienic criteria for the status of the environment with regard to nitrates, nitrites and nitro compounds (NS). And it was by no means an accident that this conference was opened in behalf of the general director by Professor Higginson -- the director of the International Agency for the Study of Cancer. Whereas up until recently the attention of the researchers and oncologists was devoted mainly to polycyclic aromatic hydrocarbons and especially benzpyrene, which is considered to be a PAU [politsiklicheskiy aromatcheskiy uglevodorod; polycyclic aromatic hydrocarbon], at the present time oncology must deal with still another class of chemical carcinogens -- with nitro compounds.

As a rule, these compounds are found in very low concentrations in elements of the biosphere and in food products. At the present time, one can consider as

having been proven the possibility of carcinogenic NS forming in the gastric juice of laboratory animals when they are fed certain products which, although considered to be toxic substances for an organism, do not themselves possess carcinogenic properties. An important conclusion was drawn on the basis of the experiments -- of the secondary amines and nitrates (and they are a component part of the food products of man and are also contained in tobacco and in medicines), carcinogenic NS can be synthesized in the stomach of man.

Under realistic conditions, man is subjected to the effects of nitro compounds to a considerably less degree than shown in the experiments. And it is still unclear how much they affect the oncological disease rate, in the amounts in which they are found in food products. Nevertheless, if the use of nitrogen fertilizers is not properly controlled, they can serve as material for the formation and spread of carcinogenic NS in reservoirs, soil and in plants having value for food purposes. Academician L.M. Shabad stated "thus a chain series of events is started which leads through feed for animals and through food products to man."

The link between the NS content in food plant products and the incidence of stomach cancer in the populations of a number of countries is borne out by epidemiological studies.

Such studies are being carried out in the Soviet Union. In particular, workers attached to the Department of Chemical Carcinogens of the USSR AMN /Academy of Medical Sciences/ in the Chuvash ASSR attempted to compare data on the nitrate content in drinking water with the incidence of stomach cancer in the population.

However, the problem is very serious and requires further studies, including a simultaneous study of a whole series of peculiarities of specific territories: their climate, nutritional status of the population, drinking water regime and the quality of the water and other factors not associated with the NS levels in the environment.

The results obtained during the course of various scientific studies underscore the danger posed to the health of man by the action of nitrates and nitrites. The experimental studies made it possible to define an important means by which these substances are able to enter the human organism.

These alarming facts provide the basis for persistently raising the possibility of organizing a comparative study of the NS content in vegetables and root crops grown in Siberia, the Far East and in other regions of the country and for developing hygienic recommendations for the entire region. These recommendations must be directed towards limiting the entry into human organisms of nitrifying agents.

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## AGRO-ECONOMICS AND ORGANIZATION

### PROBLEMS, PROSPECTS OF PRIVATE PLOT DEVELOPMENT IN UZBEKISTAN

Tashkent SELSKOYE KHOZYAYSTVO UZBEKISTANA in Russian No 10, Oct 85 pp 43-45

[Article by A. Kadyrov, Doctor of Economic Sciences, Professor (Tashkent Planning Institute): "To Develop Private Plots"]

[Text] In the plans for economic and social development of the USSR national economy during 1981-1985 and the period until 1990, it has been noted that in the eighties, the Communist Party will consistently continue the implementation of its economic strategy, the highest aim of which is the steady rise of the material and cultural level of the life of the population.

In achieving this goal, the private plots must play a large role, inasmuch as the present level of collective agricultural production in the country is still unable fully to satisfy the requirements of the population.

The socio-economic significance of the private sector is well known, but the economics of the LPKh [private plot] has still been insufficiently studied and a method of production planning in it is lacking. The private sector is a variety of private property under socialism. It is an important source of output of agricultural products, which influences the more effective utilization of labor and land resources in rural areas and promotes the growth of the commodity base of the kolkhoz market and consumers' cooperative societies, and also brings additional income to villagers.

Under conditions of developed socialism, it is also possible to speak of the private sector as a form of subdivision of public production which the LPKh supplements by producing necessary agricultural consumer products.

If private property reflects the economic relations between society and the individual worker in the appropriation and distribution of articles of individual consumption, then the private sector reflects wider and deeper relations which are formed not only with regard to articles of consumption, but also in connection with land utilization, hence with public property. Here, the individual enters into economic relations with society in terms of land utilization and cultivation, the application of technology and mineral fertilizers, and the realization of surplus agricultural products.

Assertions are often encountered in the economic literature to the effect that the LPKh is basically connected with the kolkhoz farm. Thus, in "Kurs Politekonomii" [A Course in Political Economy] it is noted that "the private sector of the kolkhoz members is a specific characteristic of the kolkhoz system at a certain stage of its development." But it would be more correct to consider that, in fact, it is not only kolkhoz members who have private plots, but many other village residents as well - sovkhoz workers, inter-operational enterprise workers, the rural intelligentsia and, to some extent, urban residents.

The question arises: is the work expended in the private sector also public work? This is a complicated question which demands great clarity and precision. We consider that work in the private sector is part of socially necessary work, because it is directed and regulated by society in accordance with its aims and requirements. The basic part of production in the private sector serves as a supplementary source for satisfying the requirements of the population and is utilized for normal reproduction of the labor force. The conclusion follows that individual work in the private sector, which has optimum limits, is part of necessary work.

At the present time, the share of output produced in private plots comprises 26 percent of the gross output of the country, including 31 percent in animal husbandry output.

Under conditions of developed socialism, the role of the private sector may determine the following social and economic functions, which it fulfills:

1. It is a significant supplementary source of satisfying the requirements for necessary food products on the part, first of all, of those who are engaged in it. When there is a surplus, these products are sold through the market, i.e. they satisfy public demand.
2. It actively participates in the formation of marketable stocks of food commodities.
3. It is a supplementary sphere of labor application.
4. It promotes an increase in the work income of the rural population and equalizes its level with the level of urban residents.

In addition, it should be noted that work on private plots brings great moral satisfaction to their owners, as it combines mental and physical work, and exerts a beneficial influence on young people, since they are trained from an early age to work to the extent of their ability and treat the natural environment with care. Thus, one may boldly conclude that the LPKh is an expedient form of combining the public and private interests of workers and that it fulfills vitally important social and economic functions.

The party and the government devote great attention to satisfying the requirements of the population. With regard to the question under discussion, the following resolutions were passed by the CPSU Central Committee and the

USSR Council of Ministers: in 1977, "On the Private Plots of Kolkhoz Members, Blue and White Collar Workers and Other Citizens and on Collective Gardening and Vegetable Gardening" and in 1981, "On Additional Measures to Increase the Output of Agricultural Products on the Private Plots of Citizens". On the basis of these documents, a number of measures were put into operation to stimulate the development of this form of production.

At the April (1985) plenum of the CPSU Central Committee, M.S. Gorbachev, general secretary of the Central Committee of our party, spoke about the need to activate all reserves to accumulate food in the country, including those of the private plots of citizens.

It should be mentioned that in our republic, per capita production output is increasing from year to year. From 1975 to 1983 alone, per capita grain production increased from 77.2 to 194.4 kg, potatoes from 15.3 to 21.6 kg, vegetables from 101 to 152.3 kg, meat (in terms of weight intended for slaughter) from 19.2 to 22.5 kg, milk from 122.2 to 146.7 kg, and eggs from 89 to 101 units. A large percentage here falls to the share of the private sector (see table).

Growth Rates of Gross Agricultural Production in the Uzbek SSR According to Operation Category (in percent related to 1970)

| Indices                                     | 1970 | 1975 | 1980 | 1983 |
|---------------------------------------------|------|------|------|------|
| Gross agricultural production               | 100  | 117  | 154  | 159  |
| including plant-growing production          | 100  | 116  | 153  | 155  |
| animal husbandry production                 | 100  | 121  | 159  | 172  |
| Kolkhozes and inter-operational enterprises | 100  | 99.8 | 112  | 108  |
| including plant-growing production          | 100  | 99   | 112  | 107  |
| animal husbandry production                 | 100  | 109  | 134  | 134  |
| Sovkhozes                                   | 100  | 158  | 248  | 261  |
| including plant-growing production          | 100  | 156  | 250  | 265  |
| animal husbandry production                 | 100  | 166  | 234  | 240  |
| Private plots                               | 100  | 121  | 160  | 180  |
| including plant-growing production          | 100  | 143  | 212  | 231  |
| animal husbandry production                 | 100  | 111  | 139  | 160  |

As is evident from the data of the table, the growth rates of gross production on private plots are high and have a stable tendency to rise steadily in production

The growth in output of agricultural production is closely connected with the growth of land area held as private plots by kolkhoz members and blue and white collar workers. From 1981 to 1983 alone, it increased by 15,100 hectares and, in 1983, comprised 166,000 hectares. 127,000 hectares were sown, including 2,300 hectares of industrial crops, 70,200 hectares of grain, 61,100 hectares of potatoes, vegetables and melons, 33,400 hectares of fodder crops. Land areas devoted to fruit and berry cultivation are also growing at rapid rates. From 1965 to 1983, they increased by 41,100 hectares. In 1983, in the LPKh, 590,400 tons of fruits and berries were produced,

i.e. their harvest exceeded the 1965 level by 4.8 times, while the harvest of grapes exceeded it by 2.5 times. In 1983, the private sector produced more than 61 percent of the fruits and 26.7 percent of the grapes of the gross production in the republic.

In terms of the future, Uzbekistan has great possibilities available to expand cultivated fruit and grape plantations by placing them in mountainous and hilly zones, and the sector will evidently also make a significant step forward due, to a certain extent, to the private sector.

But regardless of the fact that the private sector has great social and economic importance, it develops spontaneously and is an operation not provided for by the plan. In this connection, a number of questions arise regarding its organizational and economic character. Among the most important of these are the following: until now there have been serious difficulties in realizing output produced in the LPKh and conditions necessary for the regular sale of its surplus have by no means been established everywhere.

The most rapid positive resolution of this question would promote the utilization of supplementary sources for realizing the tasks of the Foodstuffs Program of the country.

It cannot be said that we have clear arrangements for selling young livestock and poultry in the necessary quantity to owners of private plots or that they are fully provided with fodder, fertilizers, means of small mechanization, etc.

The most important unresolved organizational question is that the private sector must develop on the basis of clear plans, i.e. systematically, and produce those products which are necessary and which society needs most. On the other hand, excessive development of the LPKh and the spread of their land areas must not be permitted, since this hampers the combination of socially useful activity in the kolkhozes and sovkhoses with work on private plots. For that reason, the increase of output of gross production on private plots must proceed primarily in accordance with an increase in the rural population, an increase in crop capacity and a provision to the LPKh of all necessary means of production which promote a high yield from the land allotted to it.

The role and significance of the private sector in satisfying the growing requirements of the population for products and those of industry for agricultural raw materials were noted at the 26th CPSU congress. It was emphasized in the summary report that "Kolkhozes and sovkhoses have been and remain the basis of socialist agriculture. But this does not at all mean that the possibilities of the private plots should be disregarded. Such operations may be of great help in the production of meat, milk and certain other products. The gardens, vegetable gardens, poultry and livestock belonging to the workers constitute part of our common wealth." This status must be a basic principle for the resolution of all questions concerning the development of the private plots of citizens.

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INTENSIVE INDUSTRIALIZATION OF AGRICULTURE ADVANCED

Moscow EKONOMIKA SELSKOGO KHOZYAYSTVA in Russian No 11, Nov 85 pp 6-16

[Unattributed article: "The Industrial Basis of Agricultural Production"; words and passages within slantlines published in italics]

[Text] V.I. Lenin viewed the task of developing agricultural production as one of the most important aspects of the communist party's economic policy touching upon the Soviet State's base--the indissoluble union of workers and peasants. Still at the dawn of Soviet rule, a year after the Great October Socialist Revolution, V.I. Lenin was saying that "...the miracles of machinery should go, first of all, into transforming the production that is the most common, employs the most people, and is the most backward--the agricultural" (Complete Collection of Works, Vol 37, p 358).

Having scientifically established the necessity and methods for shifting the millions-strong masses of small producers onto the socialist track on the basis of collective forms of socialist production, V.I. Lenin emphasized that socialism can be constructed and consolidated only by means of industrialization and an increase in national production, on the most modern technical basis, which will ensure substantial increase in national labor productivity and a change in labor's character.

Lenin's teachings on collectivizing farming were an integral part of his ingenious plan for constructing the socialist society, the central idea of which consisted of putting a material foundation under socialism--a large machine industry capable of reorganizing even farming, arranging the economic cooperation of workers and peasants, uniting industry and agriculture on a common socialist basis, newly organizing the production and distribution of material benefits, carrying out a cultural revolution, developing the working masses' labor activity in every possible way and having them participate in managing the economy and the entire State.

In establishing the plan for constructing socialism in the USSR, V.I. Lenin saw its main element in development of heavy industry as socialism's material base, and as the chief condition for the Soviet State's economic independence and the technical equipping of all sectors of the country's national economy. The 14th Party Congress, convened in December 1925, having scientifically synthesized accumulated experience in constructing the new society, taking Lenin's

ideas as foundation, and proceeding from the internal and international situation that had taken shape, proclaimed a policy for the USSR's socialist industrialization, and issued a directive for the prioritized "...development of production of means of production and formation of reserves for economic manipulation...to conduct the economic construction in such a way as to convert the USSR from a country importing machines and equipment into a country producing machines and equipment...."

The policy of Lenin's communist party for socialist industrialization received broad support, and was adopted by the workers for implementation. The whole country, having completed the restoration of an economy ruined by the world and civil wars, was turned into a gigantic construction site, on which, in an extraordinarily short time period, there took material form a defiantly bold plan, the like of which, in its scales and tempos, the history of mankind had not known. Dneproges [Dnieper Hydroelectric Plant imeni V.I. Lenin], Uralmash [Ural Heavy Machine-Building Plant imeni Sergo Ordzhonikidze in Sverdlovsk], Novo-Kramatorskiy Plant [not further identified], Zaporozhye, Kuznetsk and Magnitogorsk Metallurgical Combines, the Moscow and Gorkiy motor vehicle giants, the tractor plants on the Volga in Kharkov and Chelyabinsk, Rostselmash [Rostov Agricultural Machine-Building Plant], and others have been recorded in the Soviet People's glorious labor history forever.

In evaluating past progress, comrade M.S. Gorbachev stresses that our country long ago became a great scientific and technical power, having won its technological independence after the revolution. This has permitted the Soviet People to prevail in the Second World War, to be the first to leap out into space and launch space research on a broad scale, to provide for secure defense, and, on the whole, to develop the country's productive forces successfully. And an appreciative folk memory retains its admiration and gratitude for those who were among the pioneers and who, under incredibly difficult conditions, laid the foundations for our homeland's economic might and its prosperity.

As early as during the years of the First 5-Year Plan, many branches of a large industry were created: the machine tool, tractor, aluminum, and others. In 1932, production of the means of production was increased 2.7-fold and industry's entire gross production increased 2-fold, as compared with 1928. The 5-year plan was concluded after 4 years and 3 months.

The First 5-Year Plan's successes afforded the opportunity to define the Second 5-Year Plan's basic task--completing the national economy's technical reconstruction. In 1937, the Second 5-Year Plan's final year, industry's gross production had increased 2.2-fold by comparison with its level in 1932.

The Second and Third 5-Year Plans radically changed the USSR's national economic structure. While the share of means of production (group "A") accounted for only 35.1 percent of all industrial production in 1913, it accounted for 61.2 percent as early as 1940. All of this means that, under the communist party's proven leadership, the Soviet People had radically reorganized their productive forces and production ratios in the shortest of time periods, created a powerful and effective industry, and ensured the country's technical and economic independence from imperialistic States.

The industrial foundations of agricultural production also were laid during the years of the first 5-year plans. The tractor and agricultural machine-building industries, and an industry to produce mineral fertilizers, arose precisely during that period, and rural production and social infrastructures received a certain development. In result of this, deliveries of material resources to agriculture were significantly increased, and the technical base of the kolkhozes [collective farms] and sovkhozes [State farms] was strengthened. An appreciable share of crop and livestock farm products began to undergo industrial processing.

By the end of the 1930's, fundamental advances had taken place in agriculture's socio-economic structure. The change-over of rural areas from small, private to large, national production largely had been concluded.

Socialism's victory in the rural areas strengthened the Soviet State and the union of workers and peasants still more, created realistic conditions for rural workers' active participation in the country's socio-economic life, put a large agricultural production at socialism's service, and established a new system of social relations in the rural areas. The established kolkhozes and sovkhozes were turned into large producers of farm products. Their production ties with industry and other sectors of the national economy were expanded. Thus was begun the formation and development of a unified national economic agro-industrial complex charged with dependably meeting the country's requirements for food and agricultural raw materials.

The rural areas' technical potential was substantially changed. Mechanized plowing, sowing and harvesting of grains became predominant, stocks of horses gradually were replaced with machinery, and the production of tractor-drawn plows, seed drills, mowers, potato planters, flax pullers, and other farm labor implements was increased rapidly. In 1940, all of agriculture's power capacities (expressed per single worker) had increased 3.8-fold as compared with 1928.

However, there was no possibility of providing for the complete technical re-equipping of agriculture during that period. The main task was to create heavy industry, eliminate the USSR's technical and economic lag behind developed capitalist countries, and securely strengthen the country's defense in abbreviated time periods. Agriculture's material and technical base still was relatively weak and did not meet the requirements of large national production. Manual labor predominated on the kolkhozes and sovkhozes, especially in livestock farming, truck farming and potato growing.

In the postwar period, especially in the course of implementing the CPSU Central Committee Plenum's September 1953 decision, development of the country's agrarian economic sector was accelerated considerably. During three 5-year plans (1951-1965), a large step was taken in increasing productive forces and improving production ratios in all branches of the agro-industrial complex. Along with an increase in the production of farm products, capacities of the industries supplying the rural areas with various means of production and

processing agricultural raw materials were augmented rapidly. Primary production funds for agricultural purposes were increased from 14 billion rubles in 1950 to 56.1 billion rubles in 1965, or 4-fold; and agriculture's power capacities were increased correspondingly during these years from 62.3 million to 236.6 million horsepower, or 3.8-fold. The power-worker ratio was increased from 1.7 horsepower in 1950 to 8.5 horsepower in 1965, or 5-fold. Deliveries of mineral fertilizers to agriculture grew more than 5-fold during the same years: expressed in standard units, from 5.3 million to 27 million metric tons. The industry's marketable production increased 2.3-fold during the same time. The volumes of agricultural products entering industrial processing increased. All of this meant further increase in the level of collectivizing production, expansion and strengthening of agriculture's integrated relations with other industries, and formation of a unified agro-industrial complex.

A new stage in agricultural production's technical reconstruction began after the March 1965 CPSU Central Committee Plenum. In accordance with the plenum's decisions, there was implemented in the country a policy of further intensifying agriculture and strengthening its material and technical base, increasing the specialization and concentration of production, and extensively developing interfarm cooperation and agro-industrial integration. Simultaneously with this, the development of resource-producing and processing sectors of the industry was accelerated, and proportions were somewhat improved in the agro-industrial complex's development as a whole.

Qualitative advances in forming and improving the material and technical base of agriculture and the entire agro-industrial complex also are occurring at their present stage of development. This may be judged by the following data. In the country as a whole, primary production funds for agricultural purposes increased from 94.7 billion rubles in 1970 to 294 billion rubles in 1984, or more than 3-fold. While each 100 hectares of farm lands accounted for 17,600 rubles of these funds in 1970, the figure was 53,900 rubles in 1984, or 3 times as much. Agriculture's power capacities grew correspondingly from 322.1 million to 710 million horsepower, or 2.2-fold, for the same years.

The funds and power per worker ratios are the material basis of changes in the nature and wages of labor, and its productivity. The dynamics of their growth are extremely revealing. While each agricultural worker accounted for 3,600 rubles of primary production funds in 1970, the figure was 11,900 rubles in 1984, 3.3 times as much; and the power capacities of each were 12.7 and 30.7 horsepower respectively, or 2.4 times as much.

In recent years, agriculture's industrialization process has been acquiring an ever more complex and intensive character, although there remain quite a few unresolved problems. In agriculture, even today, a good many production operations are performed without the use of machines and mechanisms. This retards labor productivity's growth, acceleration of production rates, and ensuring the stable profitability of production.

The social aspects of this process, also, have no less important a meaning. Heavy manual labor is underproductive. It retards the growth of wages and the process of evening the income levels of the different categories of rural workers. Consequently, there remains among them, as well, an uneven degree of economic realization from national ownership of the means of production. And there is yet another aspect of this problem. Manual labor, by its nature and wages, is intended for use of the simplest implements and application of the traditional technologies. This creates definite obstacles to all-around development of the individual and labor's transformation into the foremost requirement of a person's life, which constitute, as is well known, a principal demand of socialism's basic economic law. That is why the party devotes particular attention to solving the problem of reducing the use of manual labor, improving its conditions and wages, and increasing workers' qualifications and vocational skills.

Intensification of production and scientific and technical progress--these are inseparably linked and mutually dependent aspects of progressive development of productive forces and increase in their effectiveness. V.I. Lenin, in the work "The Agrarian Question and 'Marx's Criticisms'," wrote that additional labor and capital investments, in comparatively small amounts, may occur, and are occurring, on the basis of already familiar and traditional kinds of equipment. He stressed, however, "...the unchanging state of equipment imposes comparatively very tight limits on additional investments of labor and capital" (Complete Collection of Works, Vol 5, p 101). Consequently, the intensification of agricultural production, as V.I. Lenin pointed out, ".../presupposes/ change in production methods and equipment transformation. ...It is necessary to /invent/ new machines, new systems of crop farming, new methods of maintaining livestock...etc." (ibid.).

In the party's current agrarian policy, these Leninist propositions are taken into account fully. Efforts are being directed--and in this lies the main feature of the modern technical reconstruction of agricultural production--at development and mass introduction into production of a new generation of machines capable of providing for rapid growth in labor productivity, economy in material resources, and reduction of product losses all the way from the field (farm) to the consumer. "...Life and its dynamism," it was stressed at the April 1985 CPSU Central Committee Plenum, "dictate the need for further changes and transformations, and the achievement, in the broadest sense of the word, of a new qualitative condition of society. This means, first of all, scientific and technical renovation of production and achievement of the highest world level of labor productivity."

A large-scale task has been set before agriculture and the industries building machines for rural areas: Implement the systematic change-over to production and delivery of systems of both a series of machines and production lines providing for the comprehensive mechanization and ever more noticeable automation of basic and auxiliary work, the introduction of industrial technologies, and the substantial increase of national labor productivity. For these purposes, a system of machines containing 3,950 machine and technical equipment titles,

including 1,751 for crop farming, 1,176 for livestock farming, and 673 for carrying out land-reclamation work, has been developed for agriculture for the years 1981-1990. Out of this system, at present, series output has been mastered for 1,891 titles of technical equipment, 484 titles have been recommended for production, 353 are undergoing State testing, and 1,222 require development.

Calculations show that introducing the technical equipment and technological series called for by this system of machines will permit reducing the labor costs in crop farming by 30 percent on the average. Based upon the labor productivity level achieved in 1980, this is equivalent to a symbolic average annual release of nearly 3 million workers. Direct labor costs in livestock farming will be decreased by half, operating costs by 25-30 percent, and the number of tending personnel will be decreased by 1-1.2 million persons.

In the program for the technical re-equipping of agricultural production with highly effective machinery, particular attention is being devoted to increasing the output of machines attachable to and towed by the powerful, power-replete [energonasyshchennyye] K-700, K-701, T-150, and DT-75T tractors. The point is that many agricultural machine-building enterprises and associations presently are not providing for large series output of the complete variety of machinery necessary for the highly productive use of power-replete tractors. For example, it is proposed to have 92 titles of machines and implements for tractor K-701, but industry is putting out only 19. In consequence of this, powerful and expensive machinery often operates at less than full capacity and for a short time, the labor-intensiveness of field and farm production is reduced slowly, and the acquired potential does not give a proper return.

The output of new and modernized tractors is planned, including a 150-horsepower universal between-rows plowing tractor. The output of highly productive grain-harvesting combines of the "Don" family will begin, as well as that of combines with a discharge capacity of 12 kilograms of grain weight per second. The latest achievements in domestic and foreign combine construction are embodied in these machines.

The production of combination units, which permit performing several technological operations in a single pass, and self-propelled beet-harvesting combines will increase substantially; and the output of motor vehicles and large-capacity trailers, as well as equipment for introducing mineral fertilizers into the soil, will grow. Agriculture will receive new, self-propelled corn-harvesting and potato-picking combines, as well as highly productive beet loaders, in large numbers.

As comrade M.S. Gorbachev stresses, it is now necessary to shift from improving existing technology and modernizing machines and equipment to fundamentally new technological systems and highly productive, latest-generation machines which provide the greatest efficiency.

The consistent intensifying of agricultural production and its systematic shifting onto the large-machine-industry track are impossible without stepping up the tempos of electrification and growth of the electric power-worker ratio in farm labor. V.I. Lenin attached exceptional importance to the country's electrification. In the widely known saying "/Communism--that is Soviet rule plus electrification of the whole country/", he pointed out the general way of transforming Russia and creating communism's material and technical base. Lenin wrote: "...There is one way--to convert the country's economy, farming included as well, to a new technical base, to the technical base of modern, large production. Only electricity is such a base." (Complete Collection of Works, Vol 42, p 159).

At present, the country's agriculture is over 90 percent supported by central-electric power supply. From year to year, the number of electric motors in use on kolkhozes and sovkhozes increases. While the number of them there in 1965 was 2 million units with a total capacity of 11.5 million kilowatts, the figures in 1984 were 15.1 million units and 81 million kilowatts. However, the industry's electric-power-repletion [elektronasyshchennost] level still is insufficient. Therefore, measures have been worked out to increase the use of electric power for production purposes in crop and livestock farming, and to ensure a stable, centralized power supply for kolkhozes and sovkhozes. Comprehensively mechanized and electrified farms, and electrically mechanized and automated grain-cleaning stations and shops to prepare feeds and carry out other technological processes are being built on the kolkhozes and sovkhozes. Electric power consumption for rural residents' household needs also is growing.

The concluding stage of production's comprehensive mechanization is automation, which will permit substantially increasing labor productivity. Versatile, automated forms of production, rotary and rotary-conveyer lines, microprocessor technology, and automated designing systems are receiving ever wider distribution in industry. Automatic plants [zavody-avtomaty], operating by so-called peopleless technology, will be constructed. This is the main direction in the national economy's technical reconstruction, the basis for substantial acceleration of socio-economic development.

In agriculture, by virtue of a number of its specific characteristics, automation of production so far has not received noticeable expansion. However, the acceleration of scientific and technical progress and complete electrification of agriculture will create the necessary preconditions for rather extensive automation of both crop and livestock farming. In crop farming, for example, processes for regulating the loading of combines, controlling grain-cleaning systems, maintaining the necessary environment in storage spaces, etc., are automated. Notable for great efficiency is the operation of automated irrigation systems and automatic sprinkler systems, served by a single operator, and performing the watering of crops and the regulation of water delivery by a set program in accordance with established norms.

Conditions for automating production in livestock farming are the most favorable where stationary processes and production-line technology predominate. The prospect is very real, not only of automating individual operations, but even of creating automatic farms [fermy-avtomaty], especially for poultry farming and livestock fattening.

The solution of a broad range of scientific and technical progress problems in all sectors of the national economic system is inseparably connected with immediate development of industry's base sectors, and machine building first of all. As was pointed out at a conference in the CPSU Central Committee, in June 1985, on questions of accelerating scientific and technical progress, a powerful upsurge of Soviet machine building--that "...is the main direction of our development, and it must be supported firmly now and in the future." To these ends, it is intended, as early as in the 12th 5-Year Plan, to increase the rates of machine-building production 1.5-2-fold. There is the task of maximum use of available capacities and immediate reconstruction of enterprises. It is planned to increase capital investment in machine building 1.8-2-fold, and sharply increase the delivery volumes of modern kinds of equipment.

The necessity for agricultural production's technical re-equipping demands the raising of tractor and agricultural machine building and all of the national economy's resource-producing sectors to a qualitatively new level. With this in mind, the party attaches particular significance to their accelerated development and radical modernization. It is expected practically to double tractor and agricultural machine building's production potential in the 1980's, which will permit accelerating agricultural production's re-equipment rates on the latest scientific and technical basis. The industry, as a matter of fact, is undergoing its second birth. In it, new enterprises are being built and previously built ones reconstructed. These are being fitted out with the latest equipment and changed over to progressive technologies. Major steps are being taken to increase productivity substantially and improve the quality of machines and equipment being produced. Agricultural machine building's design and engineering forces have been focused on producing a new generation of machines and technological systems capable of comprehensively mechanizing production, sharply reducing product losses, and providing for a significant increase in national labor productivity. In machine building for livestock farming and feed production, the output of equipment based upon the system of machines for agriculture's comprehensive mechanization is being increased.

However, the kolkhozes' and sovkhoses' repletion with productive equipment is one aspect of the matter. Another, and no less important one, is the equipment's efficient use, and a careful, proprietary attitude toward production funds. And, precisely here, there are quite a few shortcomings. On a number of kolkhozes and sovkhoses, the rules for storing and operating machines are not being observed, a substantial fraction of them stands idle because of poor quality repair and technical servicing, the shift and daily outputs of machine units are low, and there are not enough machine servicers. All of this inflicts appreciable loss upon the economy of the farms and the country as a

whole. That is why skillful and efficient use of equipment, and a careful attitude toward it, are tasks of paramount importance to APK [agro-industrial complex] workers. The main thing, today, is to use the acquired potential efficiently, increase the return for every ruble of production funds, and bring about all possible savings of material resources. The key to reality in implementing development plans, accelerating production's growth rates, and increasing its efficiency lies precisely in this.

Modern technical progress in agriculture is unthinkable without comprehensive adoption of chemical use in all its branches. Extensive use of mineral fertilizers, herbicides, pesticides, vitamins, antibiotics, plant and animal growth stimulants, and other chemical preparations--all of this has enduringly entered the arsenal of means for the intensive conduct of agricultural production.

As is well known, mineral fertilizers were not produced in prerevolutionary Russia. They were imported in small quantity from the developed capitalistic countries. After the Great October Socialist Revolution, a chemical industry for the rural areas was created as a special branch during the years of industrialization. The production of mineral fertilizers began to grow steadily. And yet, for a number of reasons, production of fertilizers developed slowly, and was manifestly insufficient right up to 1960. Extensive work was necessary to create a firm material foundation for agriculture's adopting the use of chemicals. In result, the chemical industry's deliveries of mineral fertilizers (expressed as 100 percent nutritive substances) increased from 0.7 million metric tons in 1940 to 23.1 million metric tons in 1984, or 33-fold. The Soviet Union presently holds first place in the world in production of mineral fertilizers. The quality of the mineral fertilizers has been increased substantially. While the share of complex and concentrated fertilizers in the overall volume of fertilizers amounted to 67 percent in 1970, it was 85 percent in 1984, and the average content of nutritive substances in the fertilizers grew correspondingly from 29.4 to 41.5 percent. This has permitted fully supplying technical-crop fields with fertilizers and putting an ever larger number of them under grain and feed crops.

Nevertheless, even the present delivery volume of mineral fertilizers does not permit kolkhozes and sovkhoses to put them onto the fields in the quantity necessary, especially for grain and fodder crop fields. During 1984, 103 kilograms of fertilizers (expressed as 100 percent nutritive substances) was put on every hectare of land under cultivation in the country, or significantly less than was required by agrotechnical norms. Not enough phosphorous and complex liquid fertilizers are being produced. A shortage of highly effective herbicides, defoliants and dessicants, feed supplements for livestock, and feed preservatives is being felt keenly.

In the USSR's Food Program, it is planned to increase the deliveries to agriculture of fertilizers, including liquid ammonia, and chemical feed supplements, and to develop at more rapid rates the production of highly effective plant protection means. Satisfaction of agriculture's needs for the herbicides necessary in introducing intensive farm crop cultivation technologies is envisaged.

In stepping up the production of chemical products, it is important to increase substantially the return from their use. It is necessary to ensure that kolkhozes and sovkhozes receiving a greater quantity of chemical preparations correspondingly increase production and improve the quality of farm products.

On the basis of the growth in production's technical equipment availability and its adoption of chemical use, intensive technologies are receiving ever wider distribution. These embody a qualitatively new stage in organizing and carrying out the whole cycle of work on fields and farms. Their application permits speedily stepping up the production of produce, improving its quality and lowering its production cost, increasing labor productivity, and ensuring the profitability of all sectors of agriculture. The overall area on which farm crops are being cultivated by intensive technologies is increasing annually. Thus, in 1985, wheat was being cultivated by intensive technologies on almost 17 million hectares, and corn, as a grain, on almost the entire area of its fields; whereas, for the 1986 harvest, it is planned to bring the area of grain crops, to which such technology will be applied, to more than 31 million hectares. As was noted at a conference of the party's farming aktiv [active membership] in Tselinograd, it will be possible in the next few years to apply intensive technologies on an area of no less than 60 million hectares, which will be a real contribution to carrying out the assigned task of getting these technologies into production in every way, relying on science and advanced experience.

In ensuring agricultural production's stability and augmenting the country's food resources, an exceptional role is allotted to further development of land reclamation. The significance of the October 1984 CPSU Central Committee Plenum lies, first of all, in land reclamation's being viewed as a composite, intersectoral problem, the solution of which depends to a determining extent on development of the economy's base sectors, machine building above all. Precisely upon machine building and electrical engineering depend the technical re-equipping of enterprises in water-management construction and operation of land-reclamation systems, and the ensuring, at lowest costs and least number of servicing personnel, of more substantial end results--increases in farm products. Carrying out the Long-Term Land-Reclamation Program and increasing the effectiveness of using reclaimed lands for purposes of steady augmentation of the country's food resources will play a tremendous part in agriculture's development, including its grain production as well, and will permit obtaining almost half of all farm products without regard to weather fluctuations.

The machine-building industry is obliged to master, as early as in the next few years, the production of many new kinds of land-reclamation machinery and equipment requisite to water-management construction needs, the operation of irrigation and drainage systems, and the conduct of crop-technical work. It will have to improve the technical and economic indices of the sprinkler systems being produced, fundamentally revamp the assortment of products and increase its reliability and maintainability, and create machines and equipment providing for widespread introduction of energy- and resource-saving technologies.

It is envisaged by the Long-Term Land-Reclamation Program to organize the production, and increase the output, of production lines for manufacturing polymer pipes, horizontal and vertical centrifugal pumps of abrasion-resistant design, frontal-action sprinkler machines, and automated, hose-type irrigation devices. Instrument-making enterprises will have to increase the output of water-level gauges operating on the hydrostatic pressure principle, unified laser control systems for excavating machines, as well as automation and remote control means. The new material and technical base for land reclamation will provide for further increase in agriculture's stability, and a steady stepping up of the production of grain, feeds, and other products of crop and livestock farming.

At present, a disparity is apparent between the volumes of farm products being produced and the capacities for their processing. This is leading to excessive increase in the processing periods for agricultural raw materials, their substantial losses, and worsening in product quality. National economic labor efficiency is lowered thereby in all previous production stages. Therefore, substantial modifications have been introduced into investment policy. As early as in the 11th 5-Year Plan, the share of capital investments being directed into technical re-equipment of the food industry's branches, creation of a storage base, and improvement in the whole production infrastructure was increased noticeably. This also is a fundamental party line in the 12th 5-Year Plan. At the party's farming aktiv [active membership meeting] in Tselinograd, the importance of outstripping development of industries in the agro-industrial complex's sphere III and food-industry machine building was stressed.

The processing industry needs production lines complete with the latest equipment, facilities for bulk transport and hopper reception of raw materials, quick freezing devices, vacuum and monovacuum filters, centrifuges with programmed control, and instruments for automated production monitoring. The meat and dairy industry has not yet been provided in sufficient quantity with systems for fine meat-mincing, sausage-making lines, semiautomatic machines for producing frankfurters and sausages, mechanized production lines for making and packing portions and small pieces of partially prepared foods, and composite mechanized lines for putting out quick-frozen meat dishes.

The CPSU Central Committee Politburo, in April 1985, examined the problem of accelerating development of the material and technical base of the agro-industrial complex's processing industries. It was noted that the tasks established by the Food Program to create additional capacities for storing and processing agricultural products are being carried out slowly, and that the machine-building industries not infrequently provide a significant amount less than the required quantity of machines and equipment for the light and food industries. Therefore, measures are planned for expanding the construction, technical re-equipment, and reconstruction of the processing industry's enterprises and associations, more fully using the existing production base, comprehensive processing and reducing the losses of raw materials, increasing output, and expanding the variety and improving the quality of food commodities.

A future direction in scientific and technical progress is the development of biotechnology. Biological science's successes now permit investigating and, to an ever greater extent, regulating the processes occurring in living organisms at the molecular level. The structural principles of heredity's basic stuff--the double helix of DNK [DNA (deoxyribonucleic acid)] and its chief elements, the genes--have been decoded. Scientists have learned to manipulate genes according to an assigned program, and to obtain artificial or, as it is customary to call them, recombinant genetic molecules. Thus, prospects are unfolding for ever broader application of gene engineering methods, by which individual genes may be transferred purposefully to create differing combinations of natural and synthetic genes, and to construct new plant varieties and animal strains possessing high productivity and increased resistance to diseases and unfavorable natural conditions. A new industry--biotechnology--has arisen precisely on the basis of genetic engineering methods. The main subjects of genetic engineering, for the time being, are microorganisms, but the practical prerequisites for analogous application of its methods in the plant world already have been noted, and the first attempts at intervention in animals' heredity apparatus are being made.

The largest industry in the world for microbiological synthesis of protein for agriculture has been created in the USSR, and the obtaining of biomass from ginseng and other medicinal plants has been arranged. The application of biotechnology's methods will permit creating nitrogen-filtering systems for fields of wheat, sugar beets, corn, and vegetable crops. These systems will acquire nitrogen directly from the air, and supply it to the plants. Thus will arise an artificial analogue to the symbiosis existing in nature of peas, soybeans and alfalfa with the nodular bacteria. The importance of this problem is enormous. Using biological nitrogen fixation instead of stepping up the production of fertilizers will mean the transition to an economically and ecologically more advantageous industrial technology in agricultural production.

The process of technically equipping all USSR national economic sectors on the basis of industrialization is inseparably linked to the cultural revolution being carried out in the country. V.I. Lenin stressed the importance of the task of increasing the educational and cultural level of workers, their working ability and achievement of higher labor productivity, and pointed out that "...in order to be cultured, a certain development of the material means of production is necessary, and a certain material base is needed" (Complete Collection of Works, Vol 45, p 377). And now the material production requirements and ever more complex machinery entering the economy's agrarian sector demand systematic increase in the cultural and technical level of personnel. This is being provided by higher rates of growth in the population's educational level in rural areas. Thus, in 1979, according to population census data, the number of persons with higher and secondary education (complete and incomplete), calculated per 1,000 employed, had increased by 45 percent among workers in rural areas, as compared with their number in 1970; while, in the city, the increase was 23 percent, and for white-collar workers it was 4 percent and 2 percent, respectively. Among kolkhoz farmers, the number of persons with higher and secondary education (complete and incomplete) amounted to 59 percent in 1979 (in 1970 it was 39 percent).

Growth in the educational level of rural youth was especially accelerated by the introduction of universal mandatory secondary education. Just for the years 1970-1978, the number of workers in rural areas with higher, uncompleted higher, and secondary special education (calculated per 1,000 employed) increased 2.6-fold, while the number with secondary general education increased 2.7-fold; and the number of such kolkhoz farmers increased 2.1-fold and 3-fold, respectively.

Now, 104 agricultural vuzes [higher educational institutions] and 17 of their branches, in which over half a million persons are studying, conduct the training of highly qualified personnel for the rural areas, and about 800,000 young men and women annually enroll in SPTU's [agricultural vocational and technical institutions]. In addition, mass personnel training is conducted in the farms' course network, and in interfarm training and course combines. General education schools also devote great attention to vocational training. Over 30,000 production training rooms and school workshops have been equipped in rural schools; there are classes on tractors and motor-vehicle matters, fundamentals of crop-cultivation practices and livestock farming; and over 700,000 student working positions have been created.

However, life is presenting new and increased demands. As M.S. Gorbachev notes, scientific and technical progress demands intensification of the attention to cultural and technical level of the working class and peasantry, and radical improvement in the training and refining of society's chief productive forces. Precisely this end is served by the reform being carried out in general education and vocational schools, which is intended to raise education to a qualitatively new level, radically improve the work education and vocational orientation of students on the basis of combining training with productive work, train qualified personnel in vocational and technical institutions, and supplement the universal secondary education with a universal vocational one.

For accelerating the rates and expanding the scales of scientific and technical progress in the agrarian sector, the decree of the CPSU Central Committee and USSR Council of Ministers "On Extensive Spreading of the New Management Methods and Intensifying Their Effect upon the Acceleration of Scientific and Technical Progress" has fundamental significance. The decree defines measures for the transition from a large-scale economic experiment to creation of an integrated national economic management system, providing for improvement in planning, increase in the effectiveness of economic levers and incentives, and refinement in the organizational structure of management. The independence of enterprises and associations is expanded, and their responsibility increased, for accelerating scientific and technical progress, putting out highly productive equipment, increasing product quality, and effectively using production development and material incentive funds.

Improving the material and technical base and increasing production's intensification serve as the material basis for further upgrading farming and the other sectors of the agro-industrial complex. The Food Program is being put into practice systematically, and in stages. In the years 1981-1984, despite

unfavorable weather conditions, the average annual volume of agriculture's gross production constituted 129.6 billion rubles, or was 5.7 billion rubles greater than in the 10th 5-Year Plan; and, calculated per 100 hectares of farm lands, it had increased almost 1.7-fold by comparison with its average level for 1961-1965, which attests to the increase in agricultural production's degree of intensification and the growth in productivity for each hectare of farm lands.

Agricultural production's tendency toward outstripping production growth is distinctly shown in a comparison with population growth. Thus, agriculture's average annual gross production volume, calculated per capita of population, had increased almost by 30 percent in 1981-1984, as compared to its level in 1961-1965. This has permitted increasing the degree of supplying the country's population with food commodities and improving its nutrition. During 4 years of the current 5-year plan, the consumption of meat per capita of population has increased by 2.8 kilograms, that of milk by 3 kilograms, that of eggs by 17 units, that of vegetables and melons [including pumpkins] by 6 kilograms, and that of fruits and berries by 7 kilograms.

Especially noticeable changes have taken place in livestock farming. In 1981-1984, the average annual production of meat (in slaughtered weight) increased by 1.2 million metric tons, that of milk by 0.9 million metric tons, and that of eggs by 10.6 billion units, as compared with its level in the 10th 5-Year Plan. In recent years, the plans for purchasing livestock-farming products have been fulfilled successfully.

The qualitative indices of agriculture's development also have improved. On an annual average, labor productivity in national production increased by 21 percent in 1981-1984 by comparison with 1971-1975. The number of unprofitable and underprofitable kolkhozes and sovkhozes has decreased substantially. The strengthening of the financial and economic situation of agricultural enterprises makes it possible for them to put into practice, ever more fully and consistently, the cost-accounting principles of economic management, and gradually make the transition to bringing about expanded, revitalized production and solving social problems primarily by using their own monetary resources. This, along with the expansion of economic independence and development of labor collectives' initiative, is the most important direction in further improving the socialist management mechanism, and one of the main conditions for carrying out the Food Program.

Thus, agriculture and the industries connected with it are changing over to the intensification track. Production is being stepped up and production quality improved. At the same time, the country's requirements for agricultural products are not fully being satisfied as yet. The party has set the task--reach new limits in the production of farm products, and create a dependable food resource for the country, which will ensure the uninterrupted supplying of workers with food commodities. The matter now depends upon the shock work of the agro-industrial complex's labor collectives. To establish order in production, strengthen discipline, increase responsibility and initi-

ative, struggle decisively for acceleration of scientific and technical progress and extensive introduction of its latest achievements, and rationally and effectively use the created potential--these are today's main tasks. Ever more extensively developing socialist competition for the worthy reception of the 27th CPSU Congress, the agro-industrial complex's workers are concentrating their strength upon accelerating production's development rates, increasing its efficiency, and successfully fulfilling the 5-year plan's quotas.

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## AGRO-ECONOMICS AND ORGANIZATION

### PROCUREMENT SYSTEM ROLE IN MEETING FOOD PROGRAM GOALS

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[Article by A. Platonov, chief of the Main Economic Planning Administration of the USSR Ministry of Procurement, doctor of economic sciences and professor: "Procurement--the Most Important Link of the APK in Realization of the USSR Food Program"]

[Text] 1. Satisfying the constantly growing needs of the Soviet people is the most important requirement of the party.

2. Steady development of agriculture is the basis for solving the food problem.

3. What brought about the Food Program and its historic significance.

4. APK of the country and its component links.

5. Stimulation of production and purchases of agricultural products.

Procurement (purchases) of agricultural products in the USSR is an economically sound commodity production realization system, which is characteristic of socialist production. They are one of the basic forms of organized goods turnover and the most important component part of economic links between industry and agriculture and the working class and kolkhoz peasantry. Procurements are one of the important links in the process of expanded socialist reproduction and conditions of successful development of the country's national economy and a rise in the material living standard of the Soviet people.

With the aid of procurement the state creates centralized stocks of grain and other agricultural products. It ensures systematic supply of the population with food and of industry with raw materials, and also forms the necessary reserves and guarantees to kolkhozes and sovkhoses an organized sale of their commodity production. With the aid of procurement kolkhozes sell more than 90 percent and sovkhoses nearly all commodity production.

The state procurement system--its forms and methods exert an active influence on the development of agriculture. Under its influence the structure, variety and volumes of production output on farms are formed. Its purchases are conducted in accordance with contracting agreements by enterprises, which carry

out processing. Livestock, poultry and milk are purchased by enterprises of the Minmyasomolprom [Ministry of the Meat and Dairy Industry] of the USSR; sugar beets, grapes, tobacco, low-grade tobacco, tea leaves and essential oil-producing crops by enterprises of the Minpishcheprom [Ministry of the Food Industry] of the USSR; cotton, fiber flax and hemp by enterprises of the Minlegprom [Ministry of Light Industry] of the USSR; potatoes, fruits and vegetables by enterprises of the Minplodoovoshchkhov [Ministry of the Fruit and Vegetable Industry] of the USSR; eggs, wool, hides and potatoes by enterprises of the Tsentrosoyuz; and grain and oil-bearing seeds by enterprises of the Minzag [Ministry of Procurement] of the USSR. The functions of supervision and control of purchases of all agricultural products were assigned to the USSR Ministry of Procurement.

Concern for complete satisfaction of needs of the Soviet people in foodstuffs is the most important program demand of the Communist Party. This is due to the fact that they are the first condition of man's life.

With regard to the overall level of caloric content, the nutrition ration of Soviet man has reached the physiological norm as far back as the sixties. However, the nutrition structure, as was pointed out at the 26th CPSU Congress, is in need of improvement. The demand for meat and dairy products is not being fully satisfied, and there are not enough vegetables and fruits.

Let us examine what the essence of the food problem consists of. The concept of the problem according to the methodology of systems analysis means an existence of a substantial difference between a desirable and actual condition of the system. In the present case a reliable food supply of the population of all regions of the country at a level which corresponds to the recommended rational norms of consumption with effective demand being taken into account is desirable and necessary.

The aggravation of the food problem was a result of a number of reasons. To a great extent it is explained by the emergence of discrepancy between the growth of the population's monetary income and the increase in the output of agricultural products. Thus, the real income of the population in 1980 increased by 95 percent compared with 1965, but the gross output of agricultural products increased by 50 percent in the same period. Under these conditions with stable state retail prices for basic agricultural products, the demand has naturally increased for the most valuable food products and they became scarce. Under unstable supply conditions an urge arises to purchase products for future use in volumes that exceed current need.

It is also explained by a sharp increase in the number of customers. During three five-year plans, the overall number of the population has increased and there are considerably more regular buyers of food products. During the sixties, the rural population purchased R13 billion worth of products, but now it purchases R29 billion worth.

To a certain extent the reduction in the share of subsidiary farms in the overall volume of output of foodstuffs has also exerted an influence. During the past 15 years, milk output in subsidiary farms declined by 6.6 percent, and in 1980 the output of meat stabilized at the level of 4.5 million tons and of eggs at 21 billion eggs.

The food problem is aggravated by insufficient utilization of existing reserves. The technology being used at the present time in harvesting, safekeeping and processing agricultural production does not ensure a sufficiently high level in utilization of food resources already produced in kolkhozes and sovkhozes. Development and introduction of new equipment and technology will make it possible to additionally obtain a considerable quantity of production from the same quantity of agricultural raw materials and also to reduce its losses at all stages. In food industry alone the use of new equipment and progressive technology will increase the resources of meat and meat products, milk, vegetable oil and sugar and the output of high quality flour.

Reduction in the losses of potatoes, vegetables, fruits and other production, which still reach considerable proportions, will make it possible to saturate the domestic market more fully by using the harvest which has already been raised and to more fully satisfy the population's requirements in foodstuffs.

The goal of the Food Program, as pointed out at the 26th party congress, consists in solving the task of uninterrupted supply of products to the population within the shortest possible periods. The solution of the food problem is regarded in the unity of two sides--as a most important social task and as a factor of economic development of the Soviet state.

The Food Program provides for increasing by the end of the eighties the per capita consumption of meat by more than 20 percent, of vegetables and melon crops by 30-39 percent and of fruits and berries by 74-84 percent. Increased consumption of animal proteins, fats, vegetables and fruits will make it possible to qualitatively improve the nutrition structure, and by 1990 to reach the recommended nutrition norms. A considerable increase in the production of agricultural products is planned in order to fulfill the Food Program.

The key problem, as before, which was noted at the October (1984) plenum of the CPSU Central Committee, is steady increase of grain production. The long-term land improvement program, which was developed at the October (1984) plenum of the CPSU Central Committee, opens tremendous possibilities in solving this task. By 1990 it is envisaged to increase gross harvesting of grain on improved land to 32.3 million tons and by the year 2000 to 55-60 million tons, including corn to 18-20 million tons. Production and procurement of other agricultural products will also increase on this basis.

In the 12th Five-Year Plan, it is planned to obtain more on the average a year than in the 10th Five-Year Plan of grain 45-50 million tons, milk 11.3-13.3 million tons, meat 5.2-5.7 million tons, vegetables and melon crops 7.9 million tons and berries 4.6-5.6 million tons. The following facts describe the scale of the tasks: for all listed products the increase during the eighties must exceed the actual one in the last two five-year plans. It is possible to achieve such rates only on the basis of balanced and dynamic development of all sectors of the agro-industrial complex and a slackening of one of them can unavoidably lead to the weakening of the entire system. In so doing a particular attention must be devoted to raising the quality of agricultural production being purchased.

Quality is inseparably linked with quantity. The higher the sugar content of the beets raised by kolkhozes and sovkhozes, the more sugar is produced by industry and received by the national economy, and in the final analysis by the Soviet people. The higher the oil content of sunflowers, the more oil is supplied by industry. Mixed feed balanced with regard to nourishment ensures reduction of its expenditure per unit of gain in weight of animal husbandry products and increase in the fatness of livestock. The higher the fatness of livestock and poultry, the greater is the output of meat of higher quality.

An increased content and improved quality of protein in durum and strong wheat makes it possible to produce high quality macaroni flour from such wheat and to improve the baking properties of the flour produced from weak varieties of wheat, and this helps in providing the population with macaroni and bread and flour products with high consumer values.

In the course of processing raw materials of high quality their expenditure per unit of manufactured production is being reduced. Thus, the output of various products from the same volume of raw materials is being greatly increased.

The existing system of economic stimulus and improvement of the quality of commodity production being procured by means of corresponding surcharges to purchasing prices makes it possible to exert a sufficiently effective influence on the process of its production in kolkhozes and sovkhozes. The prices and conditions of calculations being used place the income of farms in direct dependence not only on the volume but also on the quality of the output being produced and sold.

Before turning to examining the aforementioned system of stimulating the rise in the quality of agricultural production, we should examine the concept of "quality" of production itself.

The content of the concept of "quality" includes an aggregate of properties of production, which define the degree of its usefulness and fitness for utilization and the ability to satisfy one or another social requirement. The quality of agricultural production in the economic sense means an aggregate of its properties, which determine the possibility under certain conditions of consumption to satisfy one or another requirement of society in accordance with its purpose and economically justified from the standpoint of interests of a collective as well as of the society as a whole. The raising of consumer properties of any production promotes fuller satisfaction of society's requirements.

Purchase prices for plant growing and animal husbandry production are based on consumer values of these products. Wheat of strong varieties with gluten content in the amount of 28-31 percent of first quality group is paid with a surcharge to the price for soft wheat in the amount of 30 percent and with gluten content of 32 and more percent with a surcharge of 50 percent. Beginning with the 1985 harvest, a unified purchase price has been set for durum wheat grain in the amount of R150 per ton of base conditions. In this case, durum wheat which is placed in the first class with regard to quality and quantity of gluten is paid with a surcharge of 100 percent, in the second class

with a surcharge of 70 percent and in the third class with a surcharge of 20 percent to the price of durum wheat. The most valuable varieties of grain crops, strong wheat varieties with a gluten amount of at least 23 percent and not lower than the second quality group, are paid with a surcharge to the basic price in the amount of 10 percent.

Per Capita Production Consumption Amounts  
(per year--in kg)

| (1) Вид продукции             | 1980 г. | 1990 г. |
|-------------------------------|---------|---------|
| (2) Мясо и мясопродукты       | 58      | 70      |
| (3) Рыба и рыбопродукты       | 17,6    | 19      |
| (4) Молоко и молокопродукты   | 314     | 330-340 |
| (5) Яйца (штук)               | 239     | 260-266 |
| (6) Сахар                     | 44,4    | 45,5    |
| (7) Растительное масло        | 8,8     | 13,5    |
| (8) Овощи и бахчевые культуры | 97      | 126-135 |
| (9) Фрукты и ягоды            | 38      | 66-70   |

Key:

- |                            |                               |
|----------------------------|-------------------------------|
| 1. Type of production      | 6. Sugar                      |
| 2. Meat and meat products  | 7. Vegetable oil              |
| 3. Fish and fish products  | 8. Vegetables and melon crops |
| 4. Milk and dairy products | 9. Fruits and berries         |
| 5. Eggs (units)            |                               |

As of 1985, an order was established for payment to kolkhozes, sovkhoses, and other agricultural enterprises of surcharges in the amount of 50 percent of the purchase price for the sale of durum wheat to the state above the average level achieved in the 10th Five-Year Plan, regardless of exceeding this level for grain as a whole.

Discounts to the basic price are used during the sale of lower quality grain. Thus, rice containing grain impurities of more than 15 percent and up to 35 percent inclusive is paid with a discount from the price in the amount of 1 percent for every percent of grain impurity above base conditions and with grain impurities content of more than 35 percent it is paid according to the price of feed barley. During reduced weight per unit of volume, wheat and rye are paid with a discount of 15-30 percent from the basic price.

Purchase prices for raw cotton are differentiated according to variety with a deviation of up to 20 percent in the direction of their increase or reduction. Payment for fiber flax is made depending on its consumer value. A similar system of quality stimulation is established for all field crop farming and animal husbandry products which are purchased by the state. The task of procurement organizations is to strive through the APK system for organization of high quality production output in kolkhozes and sovkhoses.

Kolkhozes and sovkhoses are the main link in APK. They have been and remain the basic source of establishing food resources. A great role is allotted to

subsidiary farms of plants, factories, construction projects, and organizations, which are called upon to supply a considerable quantity of production for public catering. They must be transformed into highly efficient farms which use manpower and material reserves of basic production. An important place in the Food Program must be occupied by subsidiary farms of kolkhoz members, workers and employees. Not only economic but a sociopolitical role is played by these farms. While substantially supplementing food resources, they also cultivate labor skills in youths and make it possible to use manpower reserves which do not participate in social production. The growth on these farms of agricultural production output and improvement of its quality is one of the conditions for the successful realization of the country's Food Program.

Large capital investments and physical resources are being directed toward the development of agricultural production in the eighties. Measures are being implemented with regard to further strengthening the economy of kolkhozes and sovkhozes, raising the economic incentive of rural workers in achieving final production results with minimum expenditures, improving production organization and management of APK, deepening specialization and concentration of production on the basis of interfarm cooperation and agro-industrial integration and social transformation of the countryside. In the process, fund generating sectors in the composition of APK will develop at a much higher rate.

Raising of efficiency dictates the need to bring processing and procurement enterprises as near as possible to places where output is produced. During the eighties, it will be necessary to complete the transition to receiving livestock and poultry, milk, potatoes, and fruit and vegetable products in kolkhozes and sovkhozes and hauling them by specialized transport of procurement organizations. Construction of elevators in remote rayons as well as of processing enterprises directly on farms will increase.

It is planned to bring about an increase in production output in field crop farming by improving the structure of areas under crops and crop rotation, increasing improved land and raising its utilization efficiency, extensively using organic and mineral fertilizers, introducing industrial processing methods, protecting soil from erosion, introducing more productive varieties of plants, and raising the economic incentive of rural workers in the growth of productivity of all crops and in animal husbandry by raising productivity and strengthening the fodder base and shifting the sector to an intensive path of development.

Along with development of production in kolkhozes and sovkhozes it will be necessary to further strengthen the production and technical base of the processing industry. Provisions have been made for the construction in remote regions of Siberia, Volga, Kazakhstan, and other regions of the country of small grain receiving enterprises and mixed feed shops. Production and technical bases of procurement enterprises are called upon to ensure an uninterrupted acceptance of agricultural production being delivered in connection with procurement. Delays in accepting grain immediately have an effect upon the reduction in the pace of its harvesting. According to the data by Bobylev and Khadzhayev ("Problemy sokhrannosti sel'skokhozyaystvennoy produktsii" [Problems of Preservation of Agricultural Production], Ekonomika, Moscow, 1981, pp 67, 70) grain resources can be increased 20-25 percent by improving its

post harvest processing, preservation and utilization. In addition, by 35-40 million tons by eliminating losses owing to violation of harvesting periods. According to their data, the losses from shattering on the fifth day after the onset of complete ripeness amounts to 4 percent, on the eighth day to 8 percent, on the 10th day to 12 percent and on the 12th day to 28 percent of the biological yield.

During the eighties, grain receiving enterprises must increase capacities in order to ensure the acceptance of grain in 10-15 days and drying of the basic mass in the flow of its arrival. Introduction of grain deliveries according to hourly schedules will facilitate the solution of this task and reduce by 20 percent the need in motor transport for hauling it.

Within the aforementioned period, it is planned to considerably increase the capacities of cold storage and vegetable and fruit storage facilities.

The growth of production and procurement of agricultural products and increase of production capacities of enterprises with regard to their processing will ensure a further increase in the consumption of basic foodstuffs, which has been set by the Food Program (see Table).

For the purpose of establishing conditions for successful solution of large-scale and complex tasks, which were envisaged by the Food Program, the May (1982) plenum of the CPSU Central Committee has outlined measures with regard to further perfecting economic relations of kolkhozes and sovkhoses with their partners and improving management of agriculture and other sectors of the agro-industrial complex.

For the purpose of raising economic incentive of kolkhozes and sovkhoses in increasing production and sale to the state of high quality wheat grain of strong and durum varieties, beginning with the 1985 harvest, a new order has been established for payment for wheat of durum and strong varieties with increased moisture content, which meet established requirements for other indicators. During drying of such grain, its weight per unit of volume and gluten content change. In the process, a part of the grain shifts to a much higher group and its value increases. The new order provides for a corresponding rise in the current weight per unit of volume of such wheat when it is accepted with increased moisture content.

The new system of economic stimulation of growth in the sale of grain to the state has begun to manifest itself more effectively. Under the payment for above-plan grain sold to the state which was increased by 50 percent, the average supplementary payments per 1 ton of such grain in the 10th Five-Year Plan amounted to R46 and 43 kopecks, but during 3 years of the current one, when the increased (by 50 percent) price began to be paid for grain sold above the average level, they increased to R66 and 90 kopecks on the average per 1 ton sold above the level of the 10th Five-Year Plan.

The measures for improving the management of APK provide for coordinating the activities of ministries and departments, their local organs, and subordinate enterprises and organizations and mobilizing the efforts aimed at much fuller

utilization of resources, steady growth of volumes of production, purchases of production, raising its quality, and ensuring high efficiency of all sectors of the complex. Forming a part of it are kolkhozes and sovkhozes of all departments, the USSR Ministry of Agriculture, the USSR Ministry of the Fruit and Vegetable Industry, and enterprises and organizations which serve kolkhozes and sovkhozes and carry out procurement and processing of production. Included among them are the system of Goskomsel'khoztekhnika [State Committee for Supply of Production Equipment for Agriculture], the USSR Minvodkhoz [Ministry of Land Reclamation and Water Resources], the Soyuzsel'khozkhimiya [All-Union Agrochemical Services to Agriculture Scientific Production Association], the USSR Minsel'stroy [Ministry of Rural Construction], the Glavmikrobioprom [Main Administration of the Microbiological Industry], the USSR State Committee for Forestry, enterprises engaged in procurement and processing of production of the USSR Ministry of Procurement system, the USSR Ministry of the Fruit and Vegetable Industry, the USSR Ministry of the Meat and Dairy Industry, the USSR Ministry of the Food Industry, and the USSR Tsentrosoyuz as well as the system of the USSR Minrybkhhoz [Ministry of the Fish Industry].

The agro-industrial complex occupies a leading place in economics of the national economy. Agricultural production and commodities, which are produced from agricultural raw materials, amount to approximately 70 percent in the personal consumption fund, and foodstuffs to more than 95 percent. The relative share of agriculture in the national income of the country amounts to approximately 30 percent.

To improve the economic mechanism and strengthen the economy of kolkhozes and sovkhozes, purchase prices were raised as of 1 January 1983 for cattle, hogs, sheep, milk, grain, sugar beets, potatoes, vegetables, and other agricultural production and surcharges to purchase prices were introduced for production sold to the state by low profit kolkhozes and sovkhozes. Considerable funds were directed for these purposes--R16 billion a year.

This was caused by the fact that individual sectors in agriculture were low profit ones and many farms for a number of reasons operated unprofitably, which restrained the rate of growth of agricultural production. The increase of purchase prices and payment of surcharges to purchase prices to low profit and unprofitable farms create the necessary conditions for increasing output of all kinds of production. Additional payment of bonuses to supervisors and specialists of sovkhozes and kolkhozes, who have ensured a rise in production profitability in economically weak farms, was established for the same purpose.

At the same time, measures are being implemented with regard to raising the economic incentive of enterprises and organizations, which serve kolkhozes and sovkhozes, in achieving high final results in the output of production and products of its processing, in getting it promptly to consumers, and in increasing economic efficiency of production in kolkhozes and sovkhozes. For the purpose of raising the responsibility of procurement organizations--contractors and enterprises for fulfillment of purchase plans, economic incentive and bonus payment funds for supervisory workers and specialists have been formed. In appraising their activity the procurement plan fulfillment indicator is regarded as one of the basic ones.

A complex of measures has also been developed with regard to strengthening the economic incentive of agricultural workers in increasing the output of production and raising its quality. Included among them are extensive introduction of the collective contract, which has demonstrated high effectiveness on many leading farms; payment to workers of surcharges to wages of up to 70 percent of the rate for holding two jobs and fulfilling an established volume of work with the least number of workers; to engineering and technical personnel and employees up to 50 percent of salary for high skill, holding two jobs and fulfilling an established volume of work with the least number of workers; and raising salaries for supervisory workers and specialists of sovkhozes. The practice is being expanded of payments in kind with grain, potatoes, vegetables, fruits, berries, grapes, and melon and fodder crops to farm workers as well as to citizens who are enlisted in raising and collecting the harvest.

For the purpose of stimulating the purchases of food wheat the councils of rayon, oblast, kray, and republic (ASSR) agro-industrial associations were advised to pay bonuses at the expense of the centralized economic incentive fund of these associations to workers and specialists of kolkhozes, sovkhozes, and other agricultural enterprises and organizations as well as procurement enterprises and organizations. Bonuses are credited in the amount of 2 months wages for ensuring the sale to the state of grain of durum, strong and most valuable varieties compared to the average annual level, which was achieved in the preceding 5 years under the condition of fulfillment of established plans for the sale (purchase) of wheat as a whole by a corresponding enterprise, organization.

Important measures are being implemented with regard to further improving housing, municipal and everyday, and sociocultural living conditions of the rural population. Transformation of the countryside is being regarded as a component part of the Food Program, as the most important task of the whole country and of all the people. Further transformation is planned of rural populated places into well-planned settlements and of a considerable increase in the volume of housing, municipal, and cultural and domestic construction in order to create the necessary conditions for retaining personnel in the countryside and to improve services and supply for them.

The Food Program is of great international significance. It has aroused a tremendous response in the whole world. Under the conditions, when the aggressive imperialist circles are directing enormous resources toward the arms race, the Soviet state is concentrating its efforts on further raising the well-being of the people.

#### BIBLIOGRAPHY

1. Lenin, V. I., Complete Works, Vol 32, p 201, Vol 36, p 157, Vol 44, p 9.
2. Materials of the 26th CPSU Congress.
3. Materials of the May (1982) Plenum of the CPSU Central Committee.

4. Materials of the April (1985) Plenum of the CPSU Central Committee.
5. Gorbachev, M. S., "The Food Program and the Tasks of Its Realization," KOMMUNIST, 1982.
6. Gorbachev, M. S., "The Fundamental Question of the Economic Policy of the Party," Moscow, 1985.
7. Gorbachev, M. S., "Intensive Development for Agro-industrial Production," (report at the party and economic aktiv conference in the city of Tselinograd).

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## TILLING AND CROPPING TECHNOLOGY

### REMOVAL, DESTRUCTION OF POTATO PLANTS ON FIELDS IN BSSR

Minsk SELSKOYE KHOZYAYSTVO BELORUSSII in Russian No 9, Sep 85 p 23

/Article by N.P. Sachko, graduate student at Belorussian Scientific-Research Institute for Potato, Fruit and Vegetable Production: "Negative Selection in Seed Production for Potatoes"/

/Text/ The negative selection, detection and removal of diseased plants and strain impurities from fields is an important measure for protecting meristematic potatoes from repeated contamination and for sanitizing seed production plantings against virus and bacterial diseases.

In 1983-1984, we carried out studies aimed at determining the effectiveness of negative selection, depending upon the method employed for carrying it out. The studies were conducted on meristematic potato plantings at the Rusinovichi Experimental Base in Minskiy Rayon. The size of the record plots was 50 square meters and the replication was fourfold. Super-superelite potatoes of the regionalized Belorussian Ranniy and Temp varieties, sanitized at BelNIKPO /Belorussian Scientific-Research Institute for Potato, Fruit and Vegetable Production/ using the methods of thermotherapy and a culture of meristematic tissue, served as the initial material for the studies. This agricultural technique is generally accepted for use on seed production plantings for elite potatoes.

The usual negative selection (1st variant) was carried out manually, with digging up of the discarded plants and removal of the tubers and bushes from the field. With this method, the labor expenditures amount to 60-80 man-hours per hectare and the output norm for one worker is 0.3-0.6 hectares daily.

In the second variant for destroying discarded plants, use was made of chemical preparations (carbatione pesticide being the most promising). Using a syringe, carbatione diluted with water in a ratio of 1:1 was applied to the placement depth of the maternal tuber in a dosage of 5-10 cubic centimeters per bush. Complete destruction of the potato plants was observed within 12 days, depending upon the phase of their development. The labor expenditures amounted to 17-20 man-hours per hectare. The output norm for one worker was 1.2-1.4 hectares daily.

In the third and fifth variants, the negative selection was carried out using the method which called for the haulm to be left between the rows. For three days prior to carrying out the selection, insecticides were employed against aphids -- carriers for virus diseases. Here the labor expenditures amounted

to 30-40 man-hours per hectare. The output norm in these instances amounted to 0.8-1.0 hectares per day.

The negative selection was carried out in three periods. The first period -- the appearance of complete seedlings, at which time the plants had achieved 15-25 cm, the second period -- during blossoming and the third -- at the commencement of dying away of the haulm. Visual estimates of the diseases were carried out during the growing season on the eve of the negative selection.

Substantial differences between the mentioned methods for the negative selection were not noted during the studies. The carrying out of the negative selection with the haulm remaining between the rows and in the absence of chemical protection lowered the cropping power by an average of up to 2.2 percent over a period of 2 years and infection by diseases increased by 22.2-42.8 percent.

A negative selection with the haulm being left between the rows is justified only on plantings of meristematic potatoes, with chemical selection and distance isolation against aphids -- carriers of viruses. A selection carried out with the haulm being left between the rows, as part of a complete system of chemical and agrotechnical measures, lowers the speed of repeated infection by diseases and raises the productivity of meristematic potatoes. Thus, in the third and fifth variants the increase in cropping power for the Belorusskiy Ranniy variety over a 2 year period amounted to 25.2 and 31.0 quintals per hectare and for the Temp variety -- 17.7 and 29.1 quintals per hectare.

Use of the chemical method represents considerable progress in carrying out a negative selection. Labor productivity is raised by a factor of 3.5-4.0 compared to the manual removal of diseased plants and labor expenditures are lowered by 60-90 percent. The principal condition for carrying out a negative selection with the haulm left between the rows is that of waging a campaign against aphids -- carriers of viruses. In addition to facilitating physical labor, the labor expenditures are lowered by 50 percent and labor productivity is raised by twofold. The carrying out of a negative selection with the haulm being left between the rows makes it possible, during the most tense period of agricultural operations, to enlist the aid of seasonal workers, pupils and students on an extensive scale.

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## TILLING AND CROPPING TECHNOLOGY

### OPTIMUM STORAGE CONDITIONS FOR POTATO CROP DISCUSSED

Minsk SELSKAYA GAZETA in Russian 14 Nov 85 p 1

[Article: "Proper Care of Potato Seed" under the rubric "Operational Survey of the BSSR Ministry of Agriculture"]

[Text] As a result of this year's weather conditions, favorable conditions have been created for the development of fungus, bacterial and virus diseases on potato tubers. If the technology for placing seed stock in storage is not observed, losses in excess of the permissible norms may occur.

Taking into account the complications involved in providing proper care for seed tubers, the leaders and specialists of a majority of the kolkhozes and sovkhoses and the agricultural administrations of rayon executive committees in Brest, Gomel, Grodno and Minsk oblasts, commencing with the very first days of the harvest operations, have displayed proper concern and attention for creating optimum conditions for the storage of seed potatoes and for ensuring that they are cared for in a reliable manner. The principal quantity of the seed funds was placed in storage only following preliminary drying, ventilating and the strict culling out of diseased tubers. All of the potatoes have now been turned over, on the basis of storage documents, to materially responsible persons who will ensure that they are held under constant observation. Measures have been outlined for ensuring material and moral interest in providing complete protection for the entire crop cultivated.

At the same time, route inspections concerned with the degree of protection being provided for the seed potatoes have shown that in a number of areas, especially in Vitebsk and Mogilev oblasts, almost no attention is being given to this work. For example, on the day that an inspection was carried out at the Pochayevichi Sovkhoz in Chashnikskiy Rayon, potatoes had not yet been transferred over for storage to materially responsible persons and no log of observations had yet been established. The tubers were being stored in a poor manner. Centers of rot, which must be eliminated immediately, were observed in five clamps (approximately 100 tons).

Large centers of rot were noted in six clamps at the Dnepr Sovkhoz in Orshanskiy Rayon, in three clamps at the Sovkhoz imeni Yu. Smirnov in Dubrovskiy Rayon and in 10 clamps at the Sovkhoz imeni Gorovets in Sennenskiy Rayon. At the Zabolotye Sovkhoz in Mstislavskiy Rayon, 550 tons of potatoes are being maintained in a condition such that if extreme measures are

not undertaken, all of the seed stock may eventually become unsuitable for use. The farm does not have any persons who are responsible for ensuring proper care of the tubers and no log is being maintained on storage operations. At the Kolkhoz imeni Frunze in Belynichskiy Rayon, 55 tons of seed potatoes are also being stored under extremely unsatisfactory conditions. On the day that an inspection was carried out at kolkhozes and sovkhozes in this rayon, there were no individuals who bore responsibility for safeguarding the potatoes.

Such a situation can only be explained by the fact that the potatoes were harvested and placed in storage during damp weather. Nevertheless, in both Vitebsk and Mogilev oblasts there are many farms on which the status of the seed potatoes is not arousing alarm. For example, the Kolkhoz imeni Kuybyshev in Chashnikskiy Rayon operates under the same conditions as the farms mentioned above. But here every attempt was made to observe the recommendations of science and practical experience. And now all of the potatoes are being maintained under constant observation. Thus, where the desire exists, it is possible to find a solution for a difficult situation.

What must be done in order to ensure that all of the seed stock is properly maintained until spring? First of all, it will be necessary, where this has not already been carried out, to thoroughly inspect each clamp. If centers of infected tubers are uncovered, it will be necessary to remove not only the rotten potatoes but also those which are in contact with them. Dry straw must be placed in the empty spaces thus formed and thereafter the straw should be covered with peat meal. Where damp rot is found in potatoes on a non-centralized basis, the tubers should also be sorted through on an urgent basis and the temperature in the clamps brought to 2-4 degrees.

The clamps can be opened up when the air temperature is not lower than 5 degrees and the weather is calm and wind-free. In carrying out this work and for the purpose of protecting the personnel involved, use should be made of portable plastic coverings.

In connection with the tending of clamps, an important element is that of maintaining constant observation of the surface of the clamps -- cracks form in them. Such phenomena occur around the ventilation pipes installed in clamps. Additional warmth must be provided for these areas using straw and peat meal.

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## TILLING AND CROPPING TECHNOLOGY

### PROPER SAFEGUARDING OF SEED POTATOES REQUIRED

Minsk SELSKAYA GAZETA in Russian 30 Oct 85 p 3

Article by O. Puzankov, head of Department of Seed Production for Potatoes of BelNIIKPO and A. Budkevich, senior scientific worker at BelNIIKPO: "Proper Safeguarding of Seed Potatoes"/

Text The conditions this year have not promoted the development of high quality seed potatoes. In many rayons they are badly contaminated by potato blight and scab. In addition, in all rayons in Vitebsk, a portion of Mogilev and the northern Minsk and Grodno oblasts, excessive moisture during September brought about partial destruction of the tubers in the soil. Thus the farmers are confronted with the task of doing everything possible to ensure that the seed stock is properly cared for.

First of all, the potatoes on the farms must be turned over, on the basis of storage documents, to materially responsible persons and thereafter constant observation of them must be organized in the interest of ensuring that they are properly protected. The temperature and humidity readings in a storehouse must be recorded daily in a log. Mention should be made here regarding the duration of ventilation (if the ventilation is controlled manually) and the temperature of the outside air during ventilation. Control over the temperature in the clamps is exercised twice weekly.

Regular observations over the status of the storage work make it possible to record in a timely manner any deviations from the assigned temperature regimes and to undertake timely measures. Thus, an increase of 1 degree or more in the temperature in a storehouse or clamps, over a 24-hour period, indicates the formation of centers of rot in a particular area. Such potatoes must be immediately cooled, sorted through, checked, dried and, if possible, covered with dry straw.

For the purpose of lowering the temperature in the clamps, openings measuring 30X40 centimeters are made in staggered rows in the dirt covering at the rate of one air vent every 1.5-2 meters. After the temperature has dropped to 2-4 degrees, the openings should be covered with peat meal or sawdust. The clamps can be sorted out only during a thaw period when the temperature of the outside air is not lower than 1 degree.

In storehouses where condensation often forms, the upper layer of a mound of potatoes should be inspected weekly. During such inspections, all rotting and

moldy potatoes should be removed. A mass sorting out of tubers is permitted if their contamination by diseases exceeds 8-10 percent.

The storage period usually lasts until the middle of March or the beginning of April. Throughout all of this time, an optimum temperature must be maintained in the mass of potatoes. The optimum temperature for seed potatoes of the Belorusskiy Ranniy, Prigozhiy-2 and Ogonek varieties is +1.5-2.0 degrees, the Loshitskiy, Komsomolets-20 and Verba varieties -- +2-3 and for the Temp variety -- +3-4 degrees.

The agronomic service for kolkhozes, sovkhoses, rayons and oblasts is responsible for creating optimum conditions for the storage of potatoes during the spring and winter period and for ensuring that they are safeguarded completely.

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## TILLING AND CROPPING TECHNOLOGY

### SEED PRODUCTION FOR STRONG, DURUM WHEAT

Alma-Ata SELSKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 2, Feb 85

/Article by A. Khafizov, head of Department of Seed Production and Seed Management of the Kazakh Scientific Research Institute of Farming, Candidate of Agricultural Sciences: "Seed Production for Strong and Durum Wheat"/

/Text/ It is a known fact that strong wheat is distinguished by high baking qualities and durum wheat is irreplaceable in the production of macaroni and groats. When cultivated on good soil, strong and durum wheat varieties are in no way inferior to other varieties in terms of all of their indicators. For example, Bezostaya 1 and Bogarnaya 56 furnish 70-80 quintals of grain per hectare, with the protein and gluten content meeting the requirements for strong wheats.

Twelve varieties of strong wheat have been regionalized in our southern and western oblasts, of which number four are winter varieties and eight -- spring varieties. Despite the fact that five of the durum varieties have been regionalized, they still occupy only negligible areas and sowings of strong varieties do not always produce grain that meets the requirements of the GOST /state standard/

The high technological, baking and macaroni properties of strong and durum wheat grain are inherited. They can be transmitted from one generation to another only on the basis of correctly organized seed production operations and observance of the agrotechnical methods of cultivation, in keeping with their biological characteristics.

Primary seed production for strong wheat is being carried out using the method of individual-family selection with a two-year evaluation of offspring. First of all, parental plants (ears) should be selected. Here, in addition to other morphological and biological signs, special attention must be given to preserving those technological qualities of the grain which meet the GOST requirements for strong wheat.

Our studies have shown that a special nursery should be created for selecting the initial ears, nurseries where the sowing is carried out using a lowered norm and the wide-row sowing method, so as to provide an optimum nutritional area for each grain. Following selection of the plants in the field, a need will exist for a stern laboratory culling out of the selected grain lines, with

consideration being given to the color of the grain, the damage caused by pests and diseases, smoothness and plumpness, size and glassiness. Moreover, as recommended by science, those possessing a closed type of blossoming should be singled out. The lines obtained are sown in nurseries where the offspring of the first and second years are tested and where the lines are studied for the principal economically useful biological characteristics.

All elements of primary seed production for durum wheat are based upon the use of fallow predecessor crop arrangements and a bed of perennial grasses. Thus, under irrigation conditions on light chestnut soils, a selection nursery for the winter wheat varieties Bezostaya 1, Bogarnaya 56 and Mironovskaya 808 can be established following a bed or furrow slice inversion of perennial grasses or bare fallow, with an application of nitrogen, phosphorus or potassium during pre-sowing cultivation. In addition to those already pointed out, the best predecessor crops are: pulse crops, corn, vegetables and potatoes. Durum wheat should never be grown two years in a row on the same field following soft or durum wheat.

Corresponding work must be carried out in propagation nurseries and in elite seed production. Here, in addition to rich soil, the norm for sowing the seed must be lowered to from one to one and a half million grains compared to conventional sowings.

In particular, the experience of oblast stations and experimental-production farms of the Kapalskiy imeni 50-Letiya SSSR Specialized Seed Farm in Taldy-Kurgan Oblast, which operates under non-irrigation farming conditions, reveals that special importance is attached to the predecessor crop arrangement when organizing seed production work for strong spring wheat. The seed sowings are carried out only following clean fallow and two-field specialized seed production crop rotation plans: fallow - grain crops -- are introduced and mastered for the purpose of carrying out primary seed production. In such a case, mechanical and biological contamination is eliminated.

Under conditions involving irrigation and guaranteed non-irrigated land, 6-8 field crop rotation plans with a 2-3 year sowing of perennial grasses and row crops are introduced into operations. It was established that when cultivating spring strong wheat and in addition to other leading agrotechnical measures, the sowing periods should be clearly defined. Varieties sown during the best period produce high quality grain, the ears form uniformly and ripen and favorable heading promotes the accumulation of the substances required for the formation of strong wheat. A mandatory measure for seed production sowings is that of carrying out varietal and high quality weed control operations with subsequent approval.

The timely carrying out of strain renovation work is an indispensable condition for maintaining varietal purity and the baking qualities of strong wheat. It must be carried out based upon materials concerned with the certification and quality of the grain. In the event of low varietal purity and a loss in quality, the strain renovation work is carried out on an accelerated basis and seed not lower than the fifth reproduction is sown on the commodity tracts. Each year, farms which grow seed on an industrial basis obtain high reproductions from scientific-research institutes and thereafter

they plant propagation areas. In addition, a seed plot is created for the sowing of a 1st-3rd reproduction; the remainder is sold to non-seed production farms for marketable purposes.

On large farms, the production of seed for strong wheats is concentrated in special brigades and sections, where the seed for high reproductions is obtained from scientific-research institutes and from training-experimental farms of VUZ's.

In addition to high indicators for varietal purity and sowing qualities, all of the seed must be distinguished by a gluten content of not lower than 28 percent, which conforms to a 30 percent varietal bonus. A bonus of 50 percent is established for a gluten content in excess of 32 percent.

More stern requirements with regard to varietal purity are imposed in the case of seed production for durum wheat. For example, based upon the requirements for gluten quality, the varietal purity in 1st class grain must not be less than 28 percent, 2d class -- 25 and 3d class -- 22 percent. The grain of all three classes must have a specific color (dark amber or light amber), typical only of strong wheats. Higher procurement prices have been established by the state for high quality durum wheat: the bonus for 1st class grain is 100 percent and for 2d and 3d class grain -- 70 and 20 percent respectively.

In order to obtain durum wheat seed grain that conforms to the specific requirements, the seed production work must be carried out on a high agro-technical level.

These biological peculiarities of durum wheat must be taken into account commencing with the selection of the parental plants (ears) and the carrying out of the initial elements of seed production.

In order to avoid biological and mechanical contamination, the sowings of winter durum wheat must be located at a distance of not less than 200 meters from soft wheat sowings.

Special attention must be given to the sowing schedules and to the sowing and fertilization norms. The sowing norms for durum wheat must be 10-15 percent higher than those for soft wheat and the sowing should be carried out with a local application of phosphorus fertilizer.

Rogueing and varietal weed control work is carried out on a mandatory basis following heading and prior to harvesting. In the process, the impurities are removed from the soft wheat.

The seed production crops of strong and durum wheat are harvested mainly as rapidly as possible, with the mowing of high reproductions being carried out first. If shortcomings exist in the organization of the harvest work, the durum wheat grain may be damaged and this can bring about a sharp reduction in laboratory and field germinative capacity. Thus it is recommended that the seed plots be harvested separately, with twofold threshing of the mown windrows: the first -- with a reduced number of rotations of the threshing unit and the second -- using the conventional regime for obtaining commodity grain.

All grain being received must be subjected to immediate initial cleaning, with use being made of an OVP-20 heap-cleaner or such all-round machines as ZAV-20, ZAV-40 or Petkus.

The seed batches are formed taking into account the reproductions, the categories of varietal purity and the moisture content. In the case of durum wheat, a delay in primary cleaning or a raised moisture content in grain held on threshing floors are considered to be especially dangerous. A delay in initial cleaning of a day or two can lead to self-heating of the grain and to a loss in the required color or glassiness. The quality-standardized moisture content of strong durum wheat placed in storage must not exceed 14 percent. If the moisture content is raised, drying work must be organized.

During the storage of seed grain, especially durum wheat, control work must be carried out no less often than twice a month and an optimum temperature regime and air-exchange must be ensured. Properly organized seed production operations will promote an increase in the sowings of strong and durum wheats.

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## TILLING AND CROPPING TECHNOLOGY

### DEVELOPMENT OF SEED CROP BASE FOR FUTURE GRAIN HARVESTS

Alma-Ata SELSKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 9, Sep 85 pp 12-13

/Article by N. Krivosheyenko, chief of the Department for Administration of Seed Production of the Ministry of Agriculture for the Kazakh SSR: "Seed -- The Foundation for the Harvest"/

/Text The Food Program calls for high rates of development for agricultural production based upon consistent intensification in the use of land, maximum strengthening of the logistical base for agriculture and the accelerated introduction of scientific achievements and leading experience.

Our most immediate goal is to raise the average yield throughout the entire republic to not less than 15 quintals. This is a realistic goal. Almost 300 farms in various climatic zones throughout the republic are already obtaining stable yields in excess of 20 quintals of grain per hectare. If the yields are raised to this level, a goal will be achieved which will serve to guarantee the successful carrying out of the Food Program.

The republic's grain fields stretch out over a vast territory. The area exceeds 24 million hectares. Even just minor growth in productivity over such an area will produce a noticeable increase.

One important factor for raising the grain crop yields is that of improving the organization of seed production operations and raising the quality of the seed. The importance of properly organized seed production work, with regard to obtaining higher yields under various soil-climatic conditions in any zone, is beyond question.

The first reserve -- introducing regionalized and highly productive varieties into production operations. More than 99 percent of the republic's overall area of grain crop sowings consists of high quality sowings, of which amount more than 97 percent are regionalized. High quality sowings of the principal food crop -- wheat -- amounted to practically 100 percent, including regionalized varieties -- 99. The same proportions apply for the strong and durum wheat sowings.

In recent years, more than 30 new highly productive grain and pulse crop varieties and hybrids have been regionalized throughout the republic. The use out on the republic's kolkhoz and sovkhos fields of the spring wheat varieties

Omskaya 9 and Tselinnaya 21, Donetskiiy 8 barley, Neosypayushchiysya 1 peas, Saratovskoye 3 millet and other crops and varieties has earned the recognition of specialists. This year the sowing areas for so-called new varieties of grain crops have reached more than 6 million hectares, or one fourth of all grain crop sowings.

Actually, large areas have been occupied in recent years by the spring wheat variety Omskaya 9, which during years of testing at strain testing stations in North Kazakhstan and Kokchetav oblasts surpassed Saratovskaya 29 in terms of productivity by 4.0-5.9 quintals per hectare. Roughly the same increase was obtained on farms in Semipalatinsk, Kokchetav, Tselinograd and other oblasts, where the Tselinnaya 21 spring wheat variety was regionalized.

At the present time, six new durum wheat varieties have been regionalized in place of Kharkovskaya 46: for Aktyubinsk Oblast -- Nakat, Kokchetav and Kustanay oblasts -- Almaz, North Kazakhstan Oblast -- Altayka, Kustanay, Pavlodar, Taldy-Kurgan, Turgay and Tselinograd oblast -- Bezenchukskaya 139, Vostochno-Kazakhstan, Karaganda and Semipalatinsk oblasts -- Orenburgskaya 2 and for Uralsk Oblast -- Saratovskaya 40. These highly productive varieties of the intensive and semi-intensive type were used in production for more than 70 percent of the overall sowings of durum wheat. Their more rapid introduction into operations will promote improved productivity and an increase in the gross grain yields for this valuable crop.

However, even the best variety can manifest its potential only when the seed sown possesses high sowing qualities that are conditioned by the inherited characteristics of the varieties and also by the environmental conditions in which they are grown. An analysis of studies has shown that the difference in productivity when sowing seed of the same variety but of different origin can reach more than 80 percent and surpass the varietal differences. Academician N.I. Vavilov pointed out that the variability among plants caused by environmental conditions, although not inherited, nevertheless can exert a decisive influence on productivity.

Hence it follows that an important task is that of improving the yield properties and sowing qualities of seed during the course of cultivating them. The creation of rich soil constitutes the basis for the agrotechnical measures employed on the seed plots. Thus all of the agrotechnical elements here must ensure the best conditions for plant development.

A great amount of work is being carried out throughout the republic in connection with ensuring that the farms are supplied with high quality seed. For the most part, this task is being solved successfully even during extremely dry years. This year the required seed plot areas were set aside on the farms and they were sown using the best high quality seed of regionalized varieties. The best predecessor crop arrangements and adequate amounts of fertilizer were employed in behalf of these sowings.

However, the work being carried out on the seed plots was not end here. In order to prevent mechanical and biological contamination during all stages in the propagation of seed, prophylactic measures should be carried out: thorough cleaning of the packaging materials, the sowing, harvesting and seed cleaning

machines and loading and transport equipment; rogueing and varietal weed control work; the preparation of storehouse facilities intended for the storage of seed; the observance of distance isolation and others.

The farm agronomists must carry out in a timely manner a complex of agro-technical measures associated with tending the crops, measures which will promote the development of high quality seed. All plots intended to be used for the harvesting of seed must be inspected and all areas in which weeds may spring up, which often occurs in low areas, must be singled out. There may also be incidents involving varietal contamination of plantings as a result of units arriving from neighboring fields during the sowing period and also seed losses occurring during transport operations. The plant bulk from centers of contamination must be removed thoroughly from a field prior to cutting down the grain crop. Correct action is being carried out in those areas where mowing is being carried out around seed plots on the sides adjoining forest tracts, forest strips and other tracts in which there are likely to be accumulations of stink bugs. Moreover, it should be borne in mind that seed damage caused by stink bugs adversely affects the germinative capacity and germinative energy of seed.

Special importance is attached to carrying out the field certification of high quality sowings in a timely and high quality manner and to formulating the varietal documentation correctly. A thoughtful agronomist will necessarily display concern, if deemed necessary, for ensuring the additional withdrawal of seed plants from the better commodity sowings and for organizing such tending for these crops so as to ensure the development of high quality seed.

A mandatory condition is that of a detailed plan for the disposition of the grain being delivered to a threshing floor during the harvest period. Provision must be made for the separate storage of grain by crops, varieties and individual batches, so as to avoid any mixing of them during the operation of transport equipment or grain cleaning or loading machines and also in the event of an increase in wind velocity. In the process, special attention should be given to the placement of the seed batches.

A factor of considerable importance and one which affects the sowing qualities of the seed is the timeliness and the regime employed for harvesting the seed plots. Studies have established the fact that during the growing season, right up until waxy ripeness, the plants and seed are better able to endure unfavorable factors. Following the period of waxy ripeness, the physiological activity of the seed abates and their resistance weakens. The formation of seed having good sowing qualities, particularly germinative energy and laboratory germinative capacity, is promoted by precipitation up to 50 mm and an air temperature up to 18-23 degrees. For a greater amount of precipitation (50-140 mm) and a lower air temperature (13-18 degrees) during this period, the sowing qualities of the seed decrease sharply.

Following ripening of the seed (especially over-ripening while standing), more damage occurs as a result of pests and diseases. Thus, whereas during the period of milky ripeness there was no spread of the "black embryo," caused by the alternaria fungus, during the period under study, amounting to less than 0.5 percent during the milky-waxy stage, during the middle of the waxy ripeness stage it increased to 3 percent and during complete ripeness the damage reached

4 percent. It was established that when grain bulk becomes overripe while standing, caused by soaking and drying out, longitudinal cracks form on the grain.

It is thus apparent that the sowing qualities of the seed decline as a result of unfavorable factors (weather conditions, diseases, pests) during the period from the beginning of waxy ripeness to threshing. Hence it follows that the grain from seed sowings, during the period from the beginning of waxy ripeness, must be allowed to stand or be held in windrows for a minimum amount of time.

The threshing of the windrows and also direct combining are best carried out when the grain has been dried to 16-18 percent, at which time mechanical damage is held to a minimum. Attention should be focused on the need for eliminating all factors associated with damage to the seed during all work stages. This includes correct operation of the threshing units of combines and the flow line technology for processing the seed as it arrives from the field and reducing loading operations to a minimum. Ideally, use should be made of belt conveyers, with a preference being shown for them over scraper and screw-conveyer loaders. Grain-throwing loaders are completely unacceptable for seed operations. In addition to causing great damage to the seed by throwing it severely against walls, supports, crossbeams and other structures of the storage facilities, these loaders also pack the seed too tightly, thus creating less favorable storage conditions.

The post-harvest processing of seed is one of the more labor-intensive processes involved in seed production. At the present time, the republic's farms have an adequate number of mechanized units of the ZAV-20, ZAV-40 and other types and also mobile seed-cleaning machines of the SM-4, OS-4.5A and other types at their disposal for carrying out this work. When used correctly, they are capable of removing impurities which are difficult to separate out.

The number one task is that of ensuring that all of the farms are fully supplied with the seed needed for next year's harvest. This will require first of all that all measures be adopted aimed at ensuring that each sovkhos and kolkhoz places its own seed in storage, makes maximum use of the potential of specialized seed farms and, when necessary, makes extensive use of inter-farm exchange opportunities.

It is deemed proper for the agronomic services of the rayon agricultural administrations, prior to the commencement of the grain harvesting work, to examine the possibilities available at each farm, including the subsidiary farms of enterprises, organizations and institutes, for creating their own seed, insurance and carry-over seed funds and also for carrying out the plans for procuring high quality and hybrid seed for grain and oil-bearing crops for the state resources. The foresight and competence of the farm leaders and agronomists must be evaluated on the basis of how well they succeed in ensuring proper protection for all of the seed production sowings and their correct utilization as intended.

At those kolkhozes, sovkhoses and other agricultural enterprises and organizations which lack the opportunities (owing to unfavorable weather conditions) for satisfying their own requirements for high quality seed, work

should be carried out aimed at laying away the required amount of grain for subsequent exchange for seed from the state resources.

A considerable volume of work must be carried out in this regard by the state seed inspectorates, which are obligated to carry out timely checks on the quality of the seed, both that laid away directly on the farms and also that procured from state resources.

The timely and high quality preparation of seed requires the organization of around-the-clock highly productive operation of all available grain cleaning units and machines on the threshing floors of kolkhozes, sovkhoses and other agricultural enterprises and organizations, the creation of normal cultural-domestic conditions and the use of a complex of measures for the moral and material stimulation of workers engaged in the harvesting, procurement and processing of seed for grain and oil-bearing crops and grasses.

Fine indicators are being obtained in those areas where proper attention is being given to those problems concerned with improving the status of seed production. A positive evaluation has been earned in this regard by many farms in Eastern Kazakhstan and in Kustanay, Kokchetav and Taldy-Kurgan oblasts, where work involving the preparation of high quality seed is being carried out immediately following the arrival of the seed on the threshing floor from the fields.

A priority task of each kolkhoz and sovkhos is that of satisfying its own requirements for high quality seed of regionalized and promising varieties. The solution for this task requires the creation of a strong foundation for obtaining high yields next year and for the successful implementation of the USSR Food Program.

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## TILLING AND CROPPING TECHNOLOGY

### ROLE OF AGROCHEMICAL SERVICE IN INTENSIFIED AGROTECHNOLOGY

Moscow KHIMIYA V SELSKOM KHOZYAYSTVE in Russian No 10, Oct 85 pp 2-4

/Lead article by A. I. Loman: "Grain Using Intensive Technologies"]

/Text/ The grain fields of our country must furnish not less than 200 million tons during any year and under favorable weather conditions -- 250 million tons or more. Such was the task formulated during a conference conducted by the CPSU Central Committee in September 1985 in Tselinograd for the purpose of discussing those questions concerned with implementing the USSR Food Program and accelerating scientific-technical progress in agriculture and other branches of the agroindustrial complex.

We have at our disposal all of the conditions required for solving this task. The powerful production-economic potential that has been created in the agrarian sector is making it possible to convert over to the introduction on an extensive scale of intensive methods for cultivating grain crops, in the interest of achieving the planned goals. This potential will continue to increase in the future. During the 12th Five-Year Plan, agriculture in the nonchernozem zone of the RSFSR alone will be supplied with 300,000 tractors, 104,000 grain harvesting combines, 263,000 trucks and other items of equipment. In 1990 alone, this region will be supplied with mineral fertilizers in the amount of 6,790,000 tons of nutrients. The deliveries of other resources required for the complex use of chemical processes in agriculture will be increased throughout the country as a whole.

In the system of measures for strengthening the grain economy, great importance is being attached to the purposeful work being carried out at TsINAO /Central Institute of Agrochemical Services for Agriculture/ in connection with raising the quality of grain. Here we have in mind complex technologies for intensifying the use of chemical means in the cultivation of winter and spring wheat, technologies which are based upon regulating the nutrition of plants during the growing season, while taking into account their nutrient requirements during the phases of growth and development, exercising control over the phytosanitary condition of the crops and carrying out a pre-harvest evaluation of the grain quality in the interest of forming homogeneous batches at the time it is turned over to the state. Work carried out on the basis of these technologies produces a threefold effect. First of all, the yields increase. Secondly, an increase in the biochemical indicators results in a savings in grain resources in the sphere of consumption. Thirdly, payments for

valuable and strong wheat at raised rates improves the economic position of a farm. In accordance with a decree adopted by the Council of the Soyuzselkhozkhimiya Association, the plans call for the technology of the TsINAO scientists to be introduced extensively on fields throughout the country.

Let us examine the essence of the complex technologies developed at TsINAO, using winter wheat as an example.

First of all and beyond any doubt, all elements of the zonal systems for cultivating a crop must be observed if strong and valuable grain is to be obtained. An inseparable part of the technology is the system for protecting the plants against pests and diseases.

The plants are prepared for winter in October. Mistakes committed are not corrected, but for the sake of future conclusions it is a time for analyzing the concern to be evidenced for the first year of the forthcoming five-year plan. Were the decisions correct with regard to evaluating the predecessor crop arrangement, selecting the fields and varieties and determining the sowing schedules and norms and was quality-standardized seed made available in a timely manner? The use of chemical means will produce the proper results only if the master of a field, the agronomist, is able to answer these questions affirmatively.

Subsequent operations are carried out with close contact being maintained between a farm and the rayon Selkhozkhimiya association. Teams from the oblast association also participate in the work: planning-research stations for the use of chemical processes in agriculture or zonal agrochemical laboratories and their branches, plant protection stations, diagnostic and forecasting laboratories and also rayon (inter-rayon) and farm (inter-farm) complex agrochemical laboratories which operate under the methodological direction of the oblast association.

Correct action was taken in those areas where the planning-technological and estimate documentation was developed during the pre-sowing period, a contract was concluded for the complete servicing of the crops, an agrochemical evaluation of the fields was carried out, a passport for the fields was prepared and a forecast provided on weediness and on the spread of pests and diseases; in those areas where, taking the above into account, the soil was prepared, the principal fertilization was carried out, agents for combating weeds and pests were applied, properly prepared seed was sown in a timely manner and later the crops were tended and kept under observation, with use being made of herbicides and other plant protective means on an as needed basis.

On farms and at Selkhozkhimiya associations, the time is at hand for devoting thought to the preparations to be made for the coming spring and summer periods.

When the plants resume vegetation, a determination will have to be made on the mineral nitrogen content in the soil and, if necessary, a top dressing should be applied to the plants.

Prior to the end of tillering, a diagnosis of the nutrition in the soil should be repeated and, if possible, a nitrogen top dressing applied. If so indicated

by the results of a study of the number of pests and the spread of diseases, use should be made of plant protective agents. During this same phase, the plantings should be treated with retardants.

During the shooting stage, we again supply the plants with nitrogen and protect them.

During the heading and blossoming stages, we ascertain those plantings in need of late nitrogen top dressings using the foliar method and again we determine the degree of spread of pests and diseases, while paying special attention to the stink-bug.

During the phase of milky ripeness, the plants often require foliar top dressings and protection against stink-bugs and other pests and diseases.

In 1986, during the period of waxy grain ripeness in the RSFSR, the Ukraine and Kazakhstan -- in Krasnodar Kray, Orenburg, Novosibirsk, Lipetsk, Nikolayev, Odessa, Kherson, Kirovograd, Kharkov and Shortandy oblasts -- the country's agrochemical service will carry out a pre-harvest evaluation of the quality of the crops based upon grain analyses. Furnished to the farms, these analyses will serve as the basis for setting aside pretender-tracts for strong and valuable wheats. The documents for the availability of such tracts will be sent to the RAPO /rayon agroindustrial association/ for approval.

During the period of complete ripeness and harvesting and processing the grain, the laboratories of Selkhozkhimiya will determine the biochemical indicators for the grain, for the purpose of forming homogeneous batches of the product during the processing work and they will exercise control over its indicators. In accordance with the results of the analyses of the commodity batches, the farms will be provided with documents attesting to their quality. The grain receiving enterprises will begin receiving batches of grain that will be homogeneous in terms of indicators.

The conditions for obtaining high quality grain are rather difficult in Vyselkovskiy Rayon in Krasnodar Kray. Strong wheat is not grown there and grain considered to be valuable in terms of its condition is obtained in only small amounts. Three years of close collaboration between the farms and TsINAO have produced fine results. In 1982, 54,500 tons of valuable grain were obtained in the rayon and the farms received bonuses for grain quality amounting to 413,000 rubles. And in 1984 the state was supplied with 28,600 tons of strong wheat grain and 99,700 tons of valuable wheat grain; a large sum was turned over to the farms in the form of bonuses -- 1,464,000 rubles.

The use of chemical processes plays a decisive role in the cultivation of strong and valuable varieties of wheat and Selkhozkhimiya must undertake to provide complex services for such crops by agreements with the farms. Intensive technologies can be introduced in full volume in those areas where the associations have equipment at their disposal for exercising analytical control over the soil, plants and grain and where the productivity is such that the results of the analyses are made available in a timely manner for the handing down of administrative decisions. However, this is not meant to imply that one should wait with arms folded until the arrival of Infrapid-61

analyzers, the equipment used in these technologies. Much work can be accomplished at the present time in connection with raising the yields and improving the quality of the crops.

In 1986, grain crops will be grown on 31 million hectares using intensive technologies developed by the scientific institutes of our country. During the coming winter, training in these technologies should be organized for personnel in associations and on farms in all areas. Workers in the various areas must master thoroughly the agricultural practices and acquire the skills needed for the cultivation of grain crops, especially on reclaimed lands. In this manner our country will be reliably supplied with grain, as called for in the Food Program.

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## TILLING AND CROPPING TECHNOLOGY

### BOOK ON FARMING WITHOUT PLOW, SOIL CONSERVATION TILLAGE REVIEWED

Moscow SELSKAYA ZHIZN in Russian 5 Sep 85 p 2

[Review by V. Shaykin, candidate of agricultural sciences, of book "Pole bez pluga" [Field Without a Plow] by Fedor Trofimovich Morgun, first secretary of the Poltava Oblast committee of the Ukrainian CP, Izdatelstvo Izvestiya: "Arable Land Without a Plow: Research in Farming"]

[Text] Any experience in farming is of special importance to us since it deals with the most important job in the world, a very labor-intensive one--that of producing food products. It acquires a priceless significance if it is of a mass nature and if it yields more and more perceptible results from year to year. It then serves as a good example to others, is disseminated everywhere and is capable of bringing noticeable changes in the harvest on fields, in meadows and in orchards.

It is about this type of truly unique experience that Fedor Trofimovich Morgun, first secretary of the Poltava Oblast Ukrainian CP, tells us in his publicistic tale, "Pole bez pluga" [Field Without a Plow]. We recognize him not only as a party worker but also as an enthusiastic agronomist-researcher and a propagandist with a conviction about soil conservation farming methods. In his new book, published by Izdatelstvo Izvestiya, he comprehensively shows that the oblast's enterprises did not find it easy and could not quickly make the transition from the accustomed, time-tested cultivation of soil to the new "non-moldboard plowing" system [bezotvalka], as he calls it, which enables farmers to avoid the grave consequences of drought and to produce higher and more stable harvests.

This experiment, which was conducted on the scale of the entire oblast and which became daily practice after several years, undoubtedly deserves the most careful and interested attention of agronomists and kolkhoz and sovkhoz directors and the party workers of other oblasts and republics in the country. It is particularly instructive in the section that deals with the cultivation of winter crops and above all--of wheat. The author selects several very important features, emphasizing that we are speaking not simply of transferring that system of counter-erosion soil cultivation that has developed in Northern Kazakhstan or Western Siberia to the forest-steppe conditions of the Ukraine but of utilizing its principles, methods and technical methods under totally different circumstances and to a large degree

in a different way than on former virgin lands. Having worked there for many years and having become convinced of the advantages of the new technology, F. T. Morgun now examines the system in detail relative to winter crops, sugar beets and other crops raised in the Ukraine.

Fields which have not known plows with moldboards have increased in the Poltava region to 1.15 million hectares during the last 9 years. The author writes that during this time the enterprises here produced an additional 1.26 million tons of grain and 152 million rubles net income, according to calculations of specialists if a comparison is made with the soil cultivation method used previously. "Non-moldboard plowing" has enabled farmers to rapidly determine and improve the general quality level of farming and of the agronomic service in every enterprise.

The plowless preparation of the soil involves an entire cultivation complex to different depths using different types of equipment, but without the turning of the plowing layer. This type of cultivation is based on the assumption that the natural structure of soil and capillaries should not be violated if possible, that the upper layer should not be dispersed, that a crust should not be created between the upper layer and the subsoil, and that the artificial breakdown of the primary substance involving fertility--humus--into mineral salts should not be accelerated but rather its buildup should be promoted. In other words, this type of cultivation to a large extent determines the character of the entire farming system.

The author points out that the transition to soil-conservation farming in the oblast was begun not totally from scratch--in a number of the republic's rayons scientists and researchers N. K. Shikula, V. K. Chuyko, I. P. Brazhenko, N. A. Dobrovolskiy, I. Ye. Shcherbak, D. P. Ryzhikov, A. N. Zayats and others discovered, in the mid-1970's, the high level of effectiveness of sweep cultivation on Ukrainian fields in accumulating moisture, in protecting these fields from erosion and in increasing yields. With the existing scientific base it was already possible to take practical steps and to expand research itself.

First of all it was necessary to eliminate the reseeding of wheat--by occupying over 600,000 hectares (out of 1 million earmarked for grains) with wheat the oblast's enterprises annually reseeded over 20 percent of this area. The reason for this was the poor-quality preparation of the soil, especially after the harvesting of grains, corn and peas. This is done in late July-August. The weather is hot and during this period the upper layer is usually dried out. The plow turns up large clods, "suitcases." Then it becomes necessary to crush them and to chop them up into smaller pieces using various types of heavy equipment, to carry out pulverizing operations using surface plows, and, if everything is successful, to bring the field up to sowing condition. By this time there is practically no moisture left for the swelling of seed and for its development in the upper layer of soil. Frequently it is necessary to sow seed in "powder" with the hope of the acquisition of moisture in the future. If there is rainfall soon, that is fine, but often seed has to wait for weeks for moisture or it is completely consumed by mold fungi. Thus wheat sprouts too late, is very sparse, develops weakly and is damaged not only by January but by December frosts as well. An

analysis showed that in two decades (1952-1972) winter crops perished 16 times in the oblast, and by no means as a result of severe winters, but for the reasons mentioned above.

With the transition to the new cultivation system the situation changes. The new system enables us to break up the upper soil layer better for sowing and to preserve moisture underneath in the amount required for the swelling of seed and for the appearance of even shoots. Moreover, the stubble that remains encourages the accumulation of snow in the winter and wheat does not have to fear even the relatively severe cold.

Sweep cultivation provides the opportunity to sharply accelerate the preparation of fields and to carry out these preparations more rapidly immediately after harvesting the precursor crop, which is also important--the break-up of the soil is accelerated and improved and sowing is carried out within an optimal period of time. But this is not all. For each hectare of wheat that is sown the enterprise saves 3.8 rubles, and with the use of stubble sowers the savings is exactly half of the cost of plowing, presowing cultivation and sowing according to the old technology.

The author also emphasizes that in crop rotations alone plowless cultivation has contributed to increasing labor productivity by 37-40 percent, to decreasing fuel expenditures by 38-46 percent and to decreasing production expenditures by 24-31 percent. With a consideration of increased yield as well, additional net income of enterprises in the oblast, according to data from Professor N. K. Shchikul, equalled 70 million rubles already during the first 6 years that the new technology was in use. Moreover, the average increase of 2.4 quintals of grain per hectare was achieved solely as a result of the transition to soil-conservation field cultivation. In general the return on grain fields in the oblast has increased by 7.6 quintals per hectare during this time.

Many people expressed reservations during the first stage of the transition to "non-moldboard plowing" as concerns the possibilities of combatting weeds. Here a curious and very significant law was discovered--cultivators, sweeps, deep cultivators and needle harrows enable us to clear the soil of weeds better than traditional equipment. They pull sowthistle, quack grass and other shoots to the surface, where they soon dry out; the seed of annual weeds thus have better conditions to germinate and they are destroyed during the next cultivation. Weed seed is not removed from the plowing layer.

Some people felt that with "non-moldboard plowing" it is difficult to apply organic fertilizers--compost, manure and humus--to the soil. This is not the case! The following figures speak best about this--the oblast's enterprises now apply 6 million tons more of local fertilizers than during the late 1960's. Not only have application doses increased, but the fields being fertilized have also expanded--basic cultivation with the application of organic fertilizers is now performed per rotation on two fields in the crop rotation instead of on one, as was previously the case. They are applied by cultivators-sweeps and harrows to a depth of 12-14 centimeters, which is necessary for the effective action of fertilizers on plant development.

All of these agrotechnical measures taken together have enabled oblast kolkhozes and sovkhozes to noticeably increase their yields. In the best enterprises, which acted as initiators in the use of new farming methods, the changes have been particularly perceptible. The author gives many examples. Bilzhchovytska Pratsya and Progress kolkhozes of Karlovskiy Rayon were characterized by the same yield of grain crops during the Eighth Five-Year Plan--27.2 quintals per hectare; in the ninth the first gathered 37.2 quintals and the second--33.5 quintals per hectare, and in 1976-1978 the yields comprised 42.3 and 46 quintals per hectare respectively. During some years yields even exceeded 50 quintals per hectare. The chairmen of these kolkhozes, N. K. Moroz and A. L. Fusin, the agronomic services of the enterprises and all machine operators became convinced supporters of soil conservation technology. Incidentally, so did the specialists and directors of other enterprises and rayons in the oblast--it was this technology that enabled them to significantly improve the yield of winter wheat and other crops.

One involuntarily notices the smile of the author when he talks about how some agronomists and directors of enterprises waited for a long time, doubted and examined every new method for cultivating the soil and every new piece of equipment, fearful of making fools of themselves. They bore with failures primarily because often they used only individual elements of soil conservation technology on farms. Meanwhile, it has been clear from the very beginning that on the whole this technology requires the highest level of artistry from the farmer and that oversimplification here was intolerable.

Among the opponents of "non-moldboard plowing" was, for example, the senior agronomist of Sovkhoz imeni Kuybyshev of Orzhitskiy Rayon, V. K. Levchenko--he looked and waited until 1975. But finally 753 hectares in the enterprise were prepared according to the new method. When the following summer 53 quintals of wheat seed were harvested per hectare it was no longer necessary to agitate the agronomist--he became one of the most active supporters of the new technology, and in the sovkhoz all 5,000 hectares are now cultivated according to the soil conservation method.

"The scientist or specialist who has been to Poltava Oblast and has become acquainted with the new farming methods cannot remain indifferent to them," wrote academician V. N. Remeslo. "The achievements of Poltava Oblast and all life experiences show me that in the republic farming is at a critical stage, that the non-moldboard system will win the minds and hearts of grain farmers as well as kolkhoz and sovkhoz fields in coming years. Whoever does not understand this will stay behind. The future is behind the sweep."

It is difficult not to agree with this. We must also note that the soil conservation system is also very effective during fall preparations of chernozem soils, i.e., late fall plowing, especially as concerns the fields earmarked for sugar beets, corn, spring grains and feed crops. Undoubtedly, the author of the book is right in that non-moldboard plowing will continue to be spread and developed--it is acquiring more and more supporters and fans and fewer and fewer opponents. In addition, it contributes directly to the extensive use of the most intensive technologies. But to ensure that fields without plows become more extensive, enterprises need counter-erosion machines and equipment. At present it is their shortage and incompleteness that hinder matters.

## FORESTRY AND TIMBER

### ZVERYEV ON STATE FORESTRY INTEGRATION WITH USSR AGROPROM

Moscow LESNAYA PROMYSHLENNOST in Russian 17 Dec 85 p 2

[Article by A. Zveryev, chairman of USSR Gosleskhoz [State Timber Industry Association]: "We Have One Common Task: Forestry in the Agroprom [Agricultural Industrial Association]"]

[Excerpts] The party's course to improve the well-being of the people also manifests itself in the systematic development of the agroindustrial complex and in improving this important part of the economy. Recently a new big step was taken--the CPSU Central Committee and USSR Council of Ministers passed a resolution on further improving the administration of the agroprom. A union-republic USSR State Agroindustrial Committee has been created; the timber industry has become part of a single agroindustrial system in the country together with enterprises and organizations of USSR Gosagroprom [State Agricultural Industrial Association]. The main goal of the reorganization consists of maximally utilizing the economic potential developed in branches to increase food production. Our branch tasks were clearly established in the draft, "Basic Directions of Economic and Social Development in the USSR."

Land is the main treasure of the agricultural sector of the economy and we must do everything we can to make sure that casualties are not inflicted upon it. In cooperation with kolkhozes and sovkhozes, reclamation organizations and scientific institutions, our forestry enterprises can do a great deal. Methods for the radical reclamation of slopes eroded by gullies have been developed, enabling us to include slope areas in intensive agricultural rotations. According to calculations of VNIALMI [All-Union Scientific Research Institute of Conservational Afforestation], in Volgograd Oblast alone there are over 700,000 such hectares, and in the European part of the country--from 12 to 15 million hectares. The experience of Kletskiy Research Point of VNIALMI confirms that the correct implementation of the agroindustrial complex as concerns counter-erosion measures can impede the path of erosion and restore the soil's exhausted fertility.

A considerable amount has been done in the struggle against gully-formation in the enterprises of Moldavia, the Ukraine, the Central Chernozem zone, the foothill regions of the Northern Caucasus and Belgorod Oblast. Forest reclamation work in the Kanevskiy Ravine-Girder System of Cherkassy Oblast, where over 2,700 gullies have been reinforced and about 11,000 hectares of eroded arable lands have been improved, is widely known.

The importance of shelter belts for fields is considerable. In overcoming the objections and sometimes direct countermeasures of sceptics, the workers of many timber enterprises have been able to develop excellent forest belts within a period of a few decades in the dry steppes. Completed shelter belts are being used in over 7,000 enterprises and have become an integral part of modern agrotechnology. At present forest belts protect 40 million hectares of arable land, and the forest works for the harvest.

We must emphasize that the development of forest shelter belts requires fraternal cooperative efforts between foresters and farmers. The fact that we now belong to a single organization--the agroprom--allows us to hope that ties between those who create the belts and those on whose land this work is being carried out are growing stronger. It should be remembered that a belt that is not cared for or looked after can be rendered useless, which dictates the very idea of protecting fields with timber. It is essential to act jointly--over 1 million hectares of plantings, including 570,000 hectares of belts, require maintenance felling or renovation. But this is only part of the work to improve shelter belts.

A broad area of operations is opening up for foresters in the Kalmyk ASSR, Dagestan, Astrakhan Oblast, Central Asia and Kazakhstan. Extensive work must be performed to protect agricultural lands, irrigation structures, settlements and roads from the onslaught of sand.

With each passing year the role of the timber industry grows as regards supplying the agroindustrial complex with forestry materials and articles and goods having an industrial purpose. The delivery of frameworks of houses and garden buildings, roofing and packaging materials, building parts, hothouse frames, carpentry and transportation parts, crates and hives is carried out according to village orders, with expansion planned for the future.

In order to accelerate technical progress in the branch during the coming five-year plan it is planned to carry out the reequipping of several Leskhovmash [Timber industry machinery association] plants and on this basis to sharply increase machine output. This will have a positive effect on the economic interrelations with agriculture because our plants supply kolkhozes and sovkhozes with harrows, cultivators, sprayers, molasses mixing tanks, feed distributors, feed-preparation units and other equipment. While general production growth in machine building will equal 40 percent during the next 5 years, the production of agricultural products will increase by 34 percent. By increasing the output of wooden goods and articles and of machine-building and other products, the volume of deliveries to agriculture will increase by almost 20 percent.

At a meeting of the CPSU Central Committee in early December it was emphasized that every rayon, kray and republic is called upon to utilize all possibilities for increasing production of the most important products still in short supply. These requirements also apply in full measure to our branch, especially since timber enterprises work on the land, just as kolkhozes and sovkhozes do.

We have many examples of creative initiative and genuine enterprise. Thus, OPOCHETSKIY Timber Enterprise of Pskov Oblast produces 100 kilograms of meat per worker per year.

The foresters of the Bashkir ASSR, Volgograd, Kursk, Rostov and Ulyanovsk oblasts in the RSFSR and of Volyn and other oblasts in the Ukraine are persistently seeking reserves for the production of agricultural products. Nevertheless, there are administrations of the timber industry such as the one in Kirov, where out of 36 enterprises only 15 are involved in the production of agricultural products, and the one in the Komi ASSR, where of 28 timber enterprises only seven have farms.

Whereas previously we somehow acquiesced to the high cost of agricultural production, now we will strive to make farms profitable.

The April 1985 Plenum of the CPSU Central Committee requires from all of us a great demandingness toward ourselves and more exactingness in evaluating our work. There should be no flattering of ourselves with "average" indicators! The figures will show, for example, that in 1984 throughout RSFSR Minleskhoz [Ministry of the Timber Industry] 17 kilograms of meat were sold per worker and employee. But behind these figures we see that in OPOCHKA 100 kilograms were produced per person whereas in the timber industry associations of Karelia and the Yakut ASSR--2-5 kilograms.

At the December meeting of the CPSU Central Committee the necessity to improve the use of wild fruits, berries, mushrooms, nuts and other products was noted.

The 12th Five-Year Plan opens up the best possibilities for coordinated work to procure and process the gifts of the forest among enterprises of the timber industry, the food industry, consumers' cooperatives and other departments. It is planned to expand the assortment and to increase the production of fruit and berry juices and medicinal beverages. The material base of the sub-branch will be strengthened. Enterprises of the timber industry will increase the procurement of sea buckthorn, dog rose and other medicinal plants by 45 percent, and of berries, mushrooms and nuts--by 25 percent. The volume of processing these items and of producing canned goods is to grow by 28 percent. New shops will be built; old shops will be expanded and renovated. The return on the timber hectare will grow and the intensiveness of managing the enterprise will increase. There are excellent examples of this.

Significant successes have been achieved by enterprises of the Ukraine's timber industry. The Committee on Environmental Conservation and on the Efficient Use of Natural Resources of the Presidium of the USSR Council of Ministers has recommended the extensive introduction of the experience of Rovno, Volyn and other oblasts as regards the maximal use of all timber

products. In Volyn and Rovno oblasts production per hectare of forest land was valued at 96 and 88 rubles respectively, including 25 and 19 rubles obtained as a result of the gifts of the forest and of agricultural products. In USSR Gosleskhoz as a whole food production per hectare is five times less, so that work potential in this direction is significant. The experience of foresters in Volyn, Rovno and Lvov oblasts of the Ukraine and Gorkiy Oblast and the Tatar ASSR in the RSFSR and other leaders should be introduced systematically and persistently. This will serve to improve the entire branch. In speaking about enterprise, I would like to mention that timber-industry procurers of the Ukraine have strengthened attention to horse breeding. The herd of horses has recently grown by a factor of 1.6, reaching 12,000 by the end of the five-year plan. The horse is a dependable help on the farm, in the garden, in the field and in the forest. This should also not be forgotten.

The agricultural sector must become a competent subdivision of the timber industry. This has to do with farms, field brigades and fruit-processing shops. The accelerated development of "food" sections is often hindered by a lack of initiative among economic directors and by the insufficiency of scientific elaborations. Frequently side-by-side with modern mechanized production in sovkhoses or in enterprises of the food industry we have technology that has not been thought out and that is outdated in even the simplest components, as well as heavy manual labor. This gives rise to the unattractive nature of this work, seasonality in work and the turnover of cadres. As a result, this often leads to the cutting back of production and to losses of resources.

Under the new conditions traditionally-established ties between the timber industry and agricultural and other branches of the single agroindustrial complex must grow into a planned, prolonged and stable economic system of interrelations facilitating the accelerated implementation of the Food Program. Planning in the agroindustrial complex as a single whole signifies, above all, increased balance of plan tasks among all departments.

Now, when the multifaceted elaboration of a new five-year plan is in progress, it is the task of branch scientific-research organizations and all agroprom partners to maximally seek out reserves for developing all existing industries and pay services to the population and to achieve the proportional functioning of a single system of the agroindustrial complex. The economic stimulation of workers must be directed at the maximal return on forest lands for the purpose of solving the food problem.

New organizational forms of management of the agroindustrial complex are based on modern requirements for the intensive and efficient use of land, forests, meadows, pastures and nature as a whole in the interest of the national economy and of the country's population. For this we need creative, innovative and coordinated work on the part of all agroprom subdivisions and local party and soviet organs. Let's work together.

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