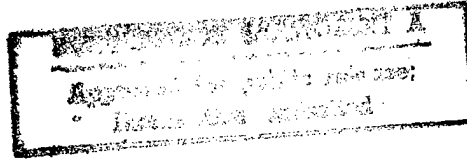


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CHINA REPORT

AGRICULTURE

No. 217

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I. GENERAL INFORMATION

ADVICE GIVEN ON IMPROVING FARM MACHINE ECONOMIC RESPONSIBILITY SYSTEM

Beijing NONGYE JIXIE [FARM MACHINERY] in Chinese No 3, 1982 pp 6-7

[Article by Zhang Caide [1728 2088 1795], Maintenance Department, Ministry of State Farms and Land Reclamation: "Steady Perfection of Farm Machine Economic Responsibility Systems. Ten 'How To's' Once Farms Have Promoted Systems of Responsibility Whereby Responsibility for Farm Machines Is Assigned and Rewards Fixed"]

[Text] Editors note: Today state farms everywhere have promoted a farm machine economic responsibility system founded on accountings for individual machines in which "contracting, fixed, and rewards" are the main ingredients for an initial surmounting of tendencies toward egalitarianism in distributions. This has aroused the initiative of farm machines staff and workers, has promoted increased agricultural output and earnings, and has produced rather good economic results. Some new problems have also appeared in the process of implementation while, at the same time, all jurisdictions have also accumulated some new experiences. Diligent study and solution of problems is required. The writer of the present article gathered together and collated "10 how to's," which are provided farms everywhere for reference in perfection of farm machine economic responsibility systems.

1. Once Farms Have Instituted Production Responsibility Systems, How Is The Situation of "Machines Replacing Workers" To Be Handled?

Once farms have instituted production responsibility systems, from cadres to workers efforts are put into saving on expenditures, cutting costs, and giving attention to economic accounting. This is good. But some places onesidedly pit responsibility systems against farm machines, emphasizing great use of labor and requiring "less use of machine cultivation for greater year end distributions." This hurts the bringing into play of the role of farm machines. In order to make fullest use of the role of farm machines, Jiangxinsha Farm in Jiangsu Province did the following: 1) depreciated the fixed assets of individual farm machine farming teams, deducted a percentage for machinery overhauls, and distributed these sums to company size farm teams on the basis of the area farmed; 2) correspondingly lowered machine farming fee rates from the former 1 yuan per mu to 0.65 yuan per mu; 3) linked some of the bonuses of

tractor personnel to farm teams, i.e. when farmland work quotas handed down by the farm headquarters have been fulfilled and quality of work meets requirements, 50 percent of the annual average per capita bonus at the local branch farm is withheld and is taken care of by the farm team. When year end amount of work completed and plan norms increase or decrease, bonuses proportionally increase or decrease with them. After deducting 20 percent for payment to higher authority as required when assuming sole responsibility, and after deducting 20 percent as a bonus for farm machine staff and workers, all the remaining farm cultivation team year end profits revert to farm teams on a pro-rated basis for the area they farmed by machine. Results have been quite good and the amount of machine farming has gone up by more than 20 percent.

2. What Is To Be Done When Small Team Management and Machine Farming Conflict?

In the process of instituting production responsibility system, inasmuch as farm teams use a production responsibility system of sub-group management linking remuneration to output whereby the same plot of land is managed by several small groups, the crops planted vary, planting methods and technical requirements differ, the times of field care are not identical, some use machines while others do not use machines, the machine farming efficiency rate and making the most of economic benefits are impaired. In order to solve such problems, Liangjiazi Farm in Liaoning Province used the "five uniforms" method: 1) Uniform crop varieties. They required all production teams to arrange crop structure on the basis of field plot soil quality and fertility, growing crops of the same variety within a single plot with no wasting of plots on the growing of flowers. 2) Uniform machine farming and technical measures. Machine farmed plots and projects were planned by production brigades. Within the same plot ridges ran in the same direction, rows and plants were the same distance apart; the same amount of sowing and fertilizing was done; and seeds were sown to the same depth. 3) Uniform field care. Thinning of seedlings, weeding, top dressings of fertilizer, plant protection, and such farm work requirements were all completed at the same time on any given plot by the work teams. 4) Uniform arrangements for tractors. Use and allocation of tractors was handled in a centralized manner by the production brigades, and work teams could not transfer tractors at will. 5) Uniform examination and acceptance. Once work had been completed, each small team conducted a uniform examination and acceptance, and at the end of the year uniform accounting of tractor cultivation expenses was done. Use of the "five uniforms" solved conflicts between those who machine farmed and group management, increasing machine efficiency rates and economic benefits.

3. What Is To Be Done About Conflicts Between the Two Minds and the Two Sets of Account Books of Farm Teams and Farm Machine Teams That Arise Out of Use of Farm Machines For "Cultivating Land for Others" in Agriculture?

In addition to their practice of giving maintenance personnel bonuses for increasing income and economizing on expenses, the Xijiang Farm in Guangxi also practices the giving of bonuses on the basis of output. The proportion of these two kinds of bonuses is as follows: The bonus for increasing income and

economizing on expenses is 30 percent, and the bonus linked to output is 70 percent. At year's end, those getting a bonus for increasing income and economizing on expenses withdraw 18 percent as a tractor operator's bonus from expense economizing bonus funds, the remaining 82 percent being proportionately parceled out to each work team on the basis of the amount of work done by tractors in each specialized team for an increase in their incomes. Withdrawal of bonuses linked to output is also done on the basis of the proportional amount of work done by tractors in each specialized unit. For example, if the annual per capita quota for each person in a maintenance squad is set at 2,000 standard mu, and 4,000 mu is done at team A during the year, at the end of the year specialized team A will have overfulfilled production and should be responsible for paying the bonus linked to output of two tractor operators. Since farm machine and agricultural economy benefits are mutually linked, both parties cooperate rather well and are mutually concerned about costs and output, so there is also mutual supervision and mutual assistance in the course of work.

4. What is to be done when identical quota criteria are used for tractors, and fixed rewards are instituted for fixed output quotas, but because of differing tractor service lives and technical conditions, inequities result? An example is the inequity resulting when the drain on a caterpillar tractor operator's strength is greater and his work environment more arduous than that of a wheeled tractor driver, yet his bonus is frequently lower.

The 102 Regiment in Xinjiang Province considered tractor service life as most important and set up several categories in light of their technical condition, setting different standards for standard costs per mu. Caterpillar tractors, for instance, were put into three categories in terms of their service life of 1-5 years, 6-12 years, and more than 12 years for which standard costs per mu were set at 0.90 yuan, 1.00 yuan, and 1.05 yuan. For wheeled tractors of from 1 to 8 years of service life, standard profits per tractor per year were set at 1,800 yuan. For wheeled tractors with 9 years or more of service life, annual profits per tractor were set at 1,500 yuan. In addition, the proportional bonus to be given was set at 60 percent of the portion saved in the case of caterpillar tractors and 30 percent in the case of wheeled tractors, with the result that in 1980 average per capita bonus for caterpillar tractor drivers. This made caterpillar tractor personnel content to do strenuous field work, and this year quality of field work and rate of hours work have increased very greatly over last year.

5. Should Bonuses Be Given Individual Tractor Units That Have Overfulfilled Quotas When Tractor Brigades as a Whole Have Not Fulfilled Planned Quotas?

Should individual tractor teams be issued stipulated bonuses for overfulfillment of quotas and tractor teams that have not completed plan be penalized as stipulated when tractor plowing brigades as a whole have not completed plan quotas or have incurred losses, and where will the bonus funds come from? The method used by some farms in Jiangsu Province, including the Huaihai Farm, is as follows: 1) Payment out of previous year surpluses; 2) payment from wages that have been deducted for taking leave for illness or for staying away from work unauthorizedly; 3) payments from penalty payments for failure to fulfill quotas and fines for accidents; 4) payments from juggling of accounts, making withholdings from the following year's funds to be circulated.

6. What Is To Be Done About Blacksmiths, Fitters, Carpenters, Welders and Such Logistics Personnel Once Tractor Team Personnel Institute Fixed Rewards for Fixed Output?

The 29 Regiment in Xinjiang Province changed the former bad practice for logistics personnel whereby there were no fixed worked quotas, no checks on quality, not accounting for costs, difficulty in judging achievements, and no basis for distribution. They instituted "three fixed and one reward" (fixed personnel, fixed work time, and fixed costs), i.e. considering as gross costs employees' wages, fuel expended, electricity expenses, and depreciation of tools and equipment, planning unit man hour expenses on the basis of stipulated number of days at work and man hours, using this as a standard for per man hour charges. When tractor units requested logistics personnel to do maintenance or repairs, they turned in a "maintenance and repair coupon" in lieu of payment of cash to be carried as income for the maintenance and repair units and as an expenditure for the tractor unit. Both parties verified the number of hours and quality of work, and when quality was below standard, the maintenance and repair team bore responsibility for man hour expenses. When maintenance and repair teams rendered assistance in the fields or in other positions, its earnings were figured on the man hour price rate for rendering assistance. For exceeding man hours or income quotas, or for any portion lacking, proportional points were recorded as a basis for distribution of overfulfillment bonuses and other bonuses. Four changes took place after this had been done: Where formerly leaders had to urge workers to do their work, now workers sought out leaders to ask for work. Where formerly workers sat around talking when there was no work to do, now whenever they had free time they went everywhere trying to scare up work. Where formerly there had been little concern about labor efficiency or quality, now every second counted and quality was first. Where formerly leaders had been very busy, now everyone was busy.

7. What Is To Be Done About Management Personnel Following Institution of Responsibility Systems of Fixed Reward for Fixed Output Quotas?

Zhongjie Farm in Hebei Province used a system whereby management personnel practiced a responsibility system linked to various economic criteria and work completion for calculation of bonuses and penalties. In this way all tasks were completed and units incurring losses for maintenance were fewer than the previous year, receiving bonuses at the average level of management personnel at the main farm. After fulfilling all production tasks, all maintenance units without losses received from 10 to 20 percent more bonus. When all tasks were not fulfilled, units with losses and units with units where losses were greater than in the previous year got 5 to 10 percent less bonus.

8. What Is To Be Done About Excess Workforces Following Institution of Farm Machine Economic Responsibility Systems?

Once responsibility systems have been instituted, farm machine staff and employee enthusiasm for care and use of farm machines greatly increases; not only is there a surplus of maintenance personnel following the fixing of the number of personnel and a table of organization, but there is also a great surplus of farm workers as a result of improvement in mechanization levels. At Liangjiazi Farm in Liaoning Province, there was a surplus workforce of more than 1,000 farm

machinery related workers and farm workers. They did the following: 1) much agricultural capital construction, investing 270,000 man days, moving 340,000 cubic meters of earth and stone to stop waterlogging on a 22,000 mu area and to sink 35 pump wells; 2) planted trees to afforest 6,600 mu; 3) went in heavily for the livestock industry, expanding teams specializing in the raising of hogs, and building poultry and deer farms; 4) much operation of farm-run industries with an expansion and new construction of repair shops, brick and tile plants, paper plants, and two small collective industries. 5) development of households specializing in the raising of livestock, the number of households specializing in the raising of hogs, chickens, rabbits, sheep and goats now numbering 128. Chabei Livestock Farm in Hebei Province organized its surplus machine maintenance personnel for development of economic diversification, and a maintenance brigade from the first branch farm assumed responsibility for the repair of highways. The second branch farm's maintenance brigade undertook responsibility for readying and installing machinery in a powdered milk plant. The third branch farm's maintenance brigade contracted hauling of earth for use in daubing walls. Earnings for the first and second branch teams alone for the first half of the year came to 13,800 yuan, and machine maintenance expenses for the farm as a whole were more than 40,000 less than during the same period last year.

9. How Can Bonuses for Maintenance Personnel Be Equitably Withheld Once Systems of Responsibility Linking Output to Calculation of Bonuses Have Been Instituted?

When some farms institute systems of responsibility in which output is linked to calculation of bonuses, they promote agricultural production increases through maintenance personnel fulfilling all work requirements in terms of quantity and quality, and they decide first, second, and third class bonuses for them after excess financial profits have been earned in the same way as for farm workers. But inasmuch as tractor units' work is scattered and the work they do not readily amenable to recognition, the work enthusiasm of tractor personnel is damaged. The 29th Regiment in Xinjiang Province based calculations on the number of days of work attendance, i.e. they used the total number of days of work attendance by maintenance personnel divided by the average number of days of work attendance of the unit to derive the average number of maintenance personnel attending work. Then they multiplied the average number of personnel attending work times the average amount of bonus each person in the unit should receive, i.e. the total amount of bonus each maintenance platoon should receive, after which they distributed bonuses to individuals on the basis of number of days they showed up for work and fulfillment of their tractor quotas. This method of figuring was able to embody in an equitable way both the amount of labor expended by maintenance personnel and the results of their labor.

10. How Can Farm Machine Economic Responsibility Systems Promote Transition Toward Specialization in the Farming Industry?

The 129 Regiment in Xinjiang Province tried out farm machine economic responsibility systems linking bonuses to output that featured machines and specialized contracting. By this is meant farm machine personnel were responsible for the growing of grain crops, accepted output and profit norms handed down by the regimental farm, and were proportionally rewarded or penalized in accordance with regimental regulations. In 1980, the 15 companies of the regiment had 32 farm machine personnel who, in addition to being responsible for the farming of 2,200 mu of cotton, were also directly responsible for 4,152 mu of grain crops

from which yields averaged 412.6 jin per mu, 9.2 percent higher than plan norms. Output totaled 1,733,000 jin, an average grain output of 54,156 jin per capita. From a 1,130 yuan loss on grain crops in 1979, the situation changed to a profit of 34,508 yuan, an average per capita profit of 1,078 yuan. In 1981, contracting for 5,195 mu of grain crops was continued, as was the contracting for 220 mu of cotton. Grain output is forecast at 21.8 million jin and ginned cotton at 30,800 jin for a 43,636 yuan profit. When 60,000 yuan in earnings for the use of tractors in helping with work and hauling elsewhere is added to this, total profits come to more than 100,000 yuan, double the 1980 figure. Grain output averaged 62,200 jin per capita and profits set a record 2,565 yuan per capita. Such a responsibility system can foster farm machine personnel able to both operate tractors and to farm the fields, thereby further increasing the potential of existing equipment, increasing the labor productivity rate, and helping the transition to specialization of farming.

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NEW TASKS FOR FARM MECHANIZATION OUTLINED

Beijing NONGYE JIXIE [FARM MACHINERY] in Chinese No 3, 1982 pp 5, 12

[Article by Maintenance Department, Ministry of State Farms and Land Reclamation: "New Tasks for the Agricultural Mechanization of State Farms"]

[Text] National state farm management work forums were held during September and December 1981 at Dongxin Farm in Jiangsu Province (the southern section) and in Beijing (the northern section). Delegates to the forums reported on the new situation of steady development of agricultural mechanization work through reorganization and major equipping while carrying out the program of readjustment. They also reported on new achievements and new experiences gained during the last several years in the strengthening of farm machine management and promotion of farm machine economic responsibility systems. They studied new problems and new tasks under new conditions involving farm machine work. They also conducted discussions of individual topics relating to issues such as systems, regulations and technical policies pertaining to "Regulations on State Farm Maintenance Work," "Agricultural Mechanization Technical and Economic Criteria and Accounting Methods," "Provisional Regulations on Scrapping of Agricultural Machines, Agricultural Machines and Equipment Principles," as well as to depreciation of farm machines and equipment, withholdings of funds for major overhaul and replacement and farm machine economic responsibility systems. The conferees exchanged experiences and studied methods, which strengthened their confidence about further strengthening of leadership and management of farm machine work, about making the most of advantages in mechanized farm production, and about improving economic benefits from farm machine operations. Deputy ministers Zhao Fan [6392 0416] and Meng Xiande [1322 2009 1795] also made reports to the forums on the strengthening of farm mechanization leadership work, which greatly encouraged everybody.

The forum acknowledged that since the Third Plenary Session of the 11th Party Central Committee, as a result of reliance on policies and reliance on science for development of productivity, beginning in 1979 state farms throughout the country began to bring to an end the loss situation that had endured for more than 10 years, agricultural mechanization playing a major role in this. A comparison of 1980 with 1978 in the Heilongjiang Provincial Farm Administration show a more than 5 million mu increase in area sown, and a more than 40 million yuan reduction in total expenditures for machine operations. In 1981 the leading leadership comrades in the Xinjiang State Farm and Land Reclamation Admin-

istration placed great stress on carrying out regulations on maintenance work, increasing earnings, and conserving expenses to the tune of more than 17 million yuan in a period of less than 10 months, making a major contribution in turning losses into profits.

Accompanying implementation of the party's various economic policies has been the adaptation of general methods to specific situations by state farms everywhere to build and perfect various forms of farm machine economic responsibility systems, linking the workers' rights and responsibilities closely to economic benefits, thereby arousing the enthusiasm for production of the broad masses of staff and employees for a new situation of increased output, increased earnings, and increased contributions. After 29 regimental farms in Xinjiang Province instituted farm machine economic responsibility systems, four great changes occurred. One was that where formerly leaders urged workers to work, now the workers came looking for leaders to ask for work. Second, formerly when there was no work to do, everybody sat around talking, but now whenever there is a moment's free time, they go all over trying to scare up some work. Third, where formerly people did not take seriously work efficiency or quality, now they make every second count and quality is first. Fourth, where leaders were up to their ears in work while workers stood at the side and watched, now everybody is busy actively making a contribution.

Growth of farm mechanization has provided the workforce resources needed to promote development of economic diversification. As a result of the steady increase in the level of mechanization at the Liangjiazi Farm in Liaoning Province, a workforce surplus in agriculture and farm machinery of more than 1,000 resulted. The action they took was: 1) large-scale farmland capital construction to which 270,000 work days were devoted for the movement of 340,000 cubic meters of earth to cure waterlogging on a 22,000 mu area and to sink 35 pump wells; 2) planting of trees for the afforestation of 6,600 mu; 3) large-scale raising of livestock, expanding the number of teams specializing in the raising of hogs, and setting up poultry raising and deer raising farms; 4) large-scale farm-operated industries with the expansion and new building of repair shops, brick and tile plants, paper making plants, and two collectively operated small industrial plants; 5) large-scale specialized raising of livestock with 128 households specializing in the raising of hogs, chickens, rabbits, sheep and goats. This promoted development of farming, forestry, livestock raising, and sideline occupations, and for 4 years grain production increased annually, and operations brought profits year after year.

The forum maintained that during the present period of national economic readjustment the program for farm mechanization should be as follows: Effective farming of existing cultivated land, and effective use, management, repair, and improvement of existing farm machinery and equipment to make the most of machine benefits for gradual realization of the "mechanization" of key areas and selective "mechanization." The basic goals are timeliness, superior quality, high efficiency, low cost, and safe production to promote increased output and increased earnings. In order to take further advantage of mechanization, work in the following realms must be taken in hand:

1. Summarization of Experiences to Improve Understanding and To Strengthen Leadership of Maintenance Work and To Build a Farm Machinery Corps

First it is necessary to strengthen political ideology leadership, simultaneously perfecting maintenance and management organizations. All levels of state farm and land reclamation units and farms should have one professionally well versed leader responsible for maintenance work.

Today 250,000 farm machine staff and workers are in the frontlines of state farms and land reclamation. In order to further consolidate and improve the quality of this corps, the following must be done: 1) attention to bringing into play the role of farm machine technicians so that they will have genuine functions, rights, and responsibilities. 2) Maintenance personnel should be maintained relatively stable in their jobs and should not be frequently transferred. In the practice of economic responsibility systems, levels of distribution of rewards to maintenance workers should be higher than that of farm workers. 3) Effective training of all personnel to develop a knowledge reserve. Expenses needed for training should be met in accordance with the stipulations of the 1981 Finance Ministry document, Caiqizi No 212.

2. Full Implementation of Maintenance Work Regulations for Steady Improvement in Management Levels

1) Improvement in quality of field operations with strict implementation of field operation operating rules and regulations, farm machines and farming techniques being closely combined. 2) Farm machine management to be the province of machine crews and maintenance teams with reliance on the masses to exercise care. 3) Setting up of models and commending the advanced, with the launching of a movement for comparison, assessment, and inspection. 4) A combination of spiritual encouragement and material awards, linking the sharing of profits and maintenance personnel income to stimulate and arouse the initiative of the broad masses of staff and workers.

3. Steady Reform and Perfection of Farm Machine Economic Responsibility Systems To Increase Farm Mechanization Economic Effectiveness

State farm machine management and promotion should be based on accounting for individual machines in an economic responsibility system in which "guarantees, fixeds, and rewards" are the main ingredients to play a very great role in giving impetus to improvement of quality of operations and economic benefits from mechanization in a preliminary surmounting of egalitarian tendencies toward "eating out of a large common pot." However, because of a shortage of time, it is necessary to further perfect and give attention to the good handling of the following several points: 1) farm machine organization and form of operations have to be subordinate to the needs of mechanized large-scale production and required concentrations with centralized management, centralized allocation, centralized repair, centralized supply of materials, and centralized accounting making the most of the role of machines. 2) Following institution of production responsibility systems, some farms adopted "contracting of small team operations," and "fixing of output quotas based on groups," each plot of cultivated land divided among several operating teams, the crops varying, production techniques varying, and farming times varying, and conflicts arising in the use of machines.

All levels of leadership should proceed from the overall situation and think about matters in an across-the-board way for satisfactory solution. The Dongxin Farm in Jiangsu and the Liangjiazi Farm in Liaoning adopted uniform crop patterns and unified production techniques, with unified machine operations, and unified allocation of machines and personnel. This was a good experience that can be promoted for use and studied.

4. Improvement of Farm Machine Repair Work To Improve the Good Condition Rate of Equipment

State farm machinery repair expenses annually amount to more than 100 million yuan. An effective job of repairs requires strengthening of the following work: 1) farm machine manufacturing and repair plants should follow a program in which repairs are first, and adhere to service to the grassroots and to agricultural production. While maintaining suitably centralized repairs, they should gradually institute specialized repairing. 2) Revival of the withholding of funds for major overhauls with centralized management by fiscal and maintenance departments, the special funds being used solely for the intended purpose. 3) Adherence to a planned preventive repair system with the formulation of equitable overhaul intervals and technical standards. The intervals for overhauls should be set according to plans; any advances or delays in the time of overhauls would have to be done on the basis of a technical appraisal and be approved by maintenance departments in charge; otherwise they would bear responsibility for shortening the life of the machines. 4) Comprehensive quality controls in production with work being completed on time, and "three guarantees" instituted. Administratively, fixed quota management and economic accounting should be strengthened.

5. Tapping of Potential, Innovation, and Improvement of Existing Farm Machines and Equipment

1) Replacements should be made according to plan. Economic results derived from replacement should be the subject of all-around study with the formulation of an equitable policy for replacement. 2) The focus should be on technical improvements in existing farm implements to increase equipment performance. 3) Use of new farm machines, promotion of new techniques, and improvement of economic benefits.

Sources of Funds for Farm Machine Replacement and Technical Improvements, and Principles of Use.

1) Funds from basic depreciation should assure replacement of equipment, and they should not be diverted to any other use. 2) Right now the equipment depreciation rate is very low, which does not help technical development. Once the equipment utilization rate has been raised, the depreciation rate should be raised and the period over which equipment can be depreciated shortened. 3) Basic depreciation funds should be kept by enterprises for the most part, and all of them used for the replacement or technical improvement of equipment. 4) For equitable use of overhaul funds, technical and economic analysis of overhaul must be done. Should overhaul not make as much economic sense as replacement, the overhaul funds should be used in replacing the equipment.

6. Effective Technical and Economic Analysis and Study of Technical Equipment Policies

Reliable production, advanced technology and economic sense should be part of a piece. Effectiveness of investment in farm machines, effectiveness of the use of farm machines, and ultimate economic effectiveness of farm mechanization are organically linked to form farm mechanization technical and economic evaluation criteria. All jurisdictions should adapt general methods to specific situations to arrive at their own farm machine system and equipment principles, and plans for equipping themselves, hurried at first and slow later on, proceeding in an orderly way step by step, and making economic sense to establish a truly intensive farming base. Leaders at all levels should give attention to original records, quotas of various kinds, measurement statistics, quality inspections, equipment maintenance and repair, and such basic work.

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CSO: 4007/441

ACADEMY OF AGRICULTURAL SCIENCES INVESTIGATES CORN CROPS

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 1, 17 Jan 82 pp 1-3

[Article by Li Jingxiong [2621 4544 7160] and Pan Caixian [3382 2088 2554] of Chinese Academy of Agricultural Sciences]

[Text] From 25 August to 12 September 1981, the Chinese Academy of Agricultural Sciences organized 25 scientists and educators of the 5 provinces and 2 cities of North China to investigate the summer corn crops in Hebei, Henan, Shaanxi, Shanxi, Shandong, Tianjin, and Beijing for the purpose of understanding the progress gained in recent years in the breeding and cultivation condition of corn and clarifying the existing problems in production so as to develop the yield increase potential still further and to determine the ways and direction of future efforts.

Production and Cultivation

There has been some advancement in corn production. The 7 northern provinces and cities are one of the important corn producing regions of China. In the spring and the summer, 125 million mu of corn are cropped here. Compared with the time of the liberation, the acreage of corn has increased 80 percent. The increase in Shandong and Shanxi is 100 percent while that of Hebei, Henan, and Shaanxi is about 60 percent. With the improved condition of water and fertilizer, the extension of intercropping and crop repeating systems, and the utilization of hybrid seeds, the unit yield of corn in the north has been gradually raised. At present, the average yield per mu of corn in the aforementioned provinces and cities is 429 jin, slightly higher than the national average of 400 jin, and 2.1 times higher than the 136.6 jin national average per mu at the time of the liberation. The increase is also rather obvious when the current yield is compared with the average yield of 307 jin/mu of these provinces and cities a decade ago. Shandong Province now has 32 million mu of corn; the average unit yield is 514 jin, i.e. an increase of 22.6 jin per mu per year in the past 10 years. Hebei Province now has 35 million mu of corn; the unit yield is 376 jin, i.e. an increase of 8.5 jin per mu per year in the past 8 years. Henan now has 25.2 million mu of corn; the average unit yield is 423 jin, i.e. an increase of 14.7 jin per mu per year in the past 10 or 20 years. In Shanxi Province, the average yield of corn per mu has increased from the 170 jin of 1949 to 270 jin of 1959, mainly through some improvement in cultivation management, replacing hard kernel varieties with dent corn, etc. In the 60's, the double-cross varieties were extended to resolve the problem of lodging of such varieties as Jinhuanghou. At the same time, the planting density was increased to raise the yield to 370 jin/mu.

In the late 70's, the unit yield of the 11.46 million mu of corn of the province reached 509 jin. This was mainly the result of increased application of chemical fertilizers. In the past 10 years, the increase has been 14.3 jin per mu per year. Shaanxi Province now has 16 million mu of corn; the unit yield is 370 jin. Compared with the yield of 192 jin/mu 10 years ago, the increase is 17.8 jin per mu per year.

If the Yield of Corn is to be Increased Further, the Medium and Low Yield Areas Must be Taken Care of.

According to the observations of the team, the intercropped corn or summer seeded corn generally has a yield of 600-700 jin/mu, with the highest near 1000 jin/mu. In the hilly and mountainous regions of the north where the corn is planted, the land is thin, dry, and sandy and there is a large proportion of low-lying saline and alkaline land. The conditions of temperature, water, and fertilizer of these places are also relatively poorer, the technological and economic capabilities are weaker, and the cultivation management is also very extensive; therefore, there is no way to raise the yield of corn. These are the areas which are dragging an entire province down. In Shaanxi Province, these mountainous corn acreage amounts to nearly 1/3 of total, distributed in Qinling, Bashan, and the North Shaanxi plateau, and the yield is less than 200 jin/mu. In these areas, corn is the major food grain, however. In the eastern Henan, in the region of Yudong, Cangzhou, Dezhou, etc. all the corn fields are sandy, low, saline, and alkaline, and the yield is neither high nor stable. For these reasons, raising the crop yield of the medium and low yield areas should be regarded as a strategic matter. During the entire growth and development stage of corn, the crop is regularly affected by all types of natural calamities. In recent years, the ripening time of wheat has been delayed more than 10 days and because of that soon after the summer corn is seeded, the seedlings are easily damaged by too much moisture. In the middle and late stages, the continuous drizzling weather also easily causes the green crop to be overflowed and wilt. There have been drastic changes in the weather pattern in recent years. The floodwater is frequently early to damage the corn crop of these mountainous areas very severely. These facts should all be included in the contents of breeding and cultivation research on corn.

Changes in Intercropping and Crop Repeating Systems

In areas of the two-crop system with the summer corn as the major crop, the following 2 cultivation systems are generally adopted at present: The first is a system of intercropping corn between mounds of wheat. The acreage of this system amounts to 85 percent in Hebei, 70 percent in Shandong, 62 percent in Henan, and very small percentages in Shanxi and Shaanxi, about one million mu each. Within each of these provinces, the intercropping system gradually decreases in percentage from the north to the south. The interval between the wheat harvest and the corn seeding time is gradually longer toward the north and shorter toward the south. In areas of Tangshan, Beijing, etc. the corn is seeded about 2-3 weeks before the wheat harvest. In the area of Zhengzhou, the corn has to be seeded in the narrow rows of 5-6 cun in width between rows of wheat to cause the schedule to be extremely tight. The second system is to seed corn after the wheat as a repeated crop. This system is adopted in areas where the breeds are properly coordinated and the manpower is adequate. In the western Guanzhong region of Shaanxi, the density of the wheat crop is high and the soils are hard; therefore, the intercropping system cannot be

carried out. Hence , after the wheat harvest, the field is not plowed before seeding the corn quickly. Most recently, the trench seeding machine made in Baoji or the row seeding machine made in Wugong have been adopted to seed the corn and apply the fertilizer simultaneously. These machines create a favorable condition for orderly and strong seedlings of corn.

The aforementioned 2 systems of cultivating summer corn have respective advantages and disadvantages; their formation and change are influenced by the factors of the weather, the soil, the previous crop, the breed, the manpower, the tools, and the socioeconomic condition. In central Hebei, corn had been simply planted after the previous crop was harvested. In the 60's, late ripening wheat breeds were adopted to replace previous breeds and the system of intercropping high yield late ripening corn had to be adopted to ease the intense labor demand in the summer, to gain bountiful harvests of two crops a year, and to bring no adverse effects on the wheat seeding time. The yield of the intercropped corn is generally 10-15 percent higher than summer seeded corn. The comparative experiment in Shijiazhuang indicated that the normal seeding time of summer corn is only one week later than the intercropped corn but during the seedling stage, the seedlings of the former are weak due to too much moisture and in the late stage, due to the extremely hot weather, they are severely damaged by viral diseases and the fruit tassels are smaller. When the corn is intercropped, the mounds of wheat prevent the irrigation water to be evenly distributed, the seeding work is too difficult to be of good quality, etc. Such phenomena as missing seedlings, uneven size of seedlings, etc. easily occur. In case of early seeded corn, the period of symbiotic growth of corn and wheat is relatively long; therefore, the young seedlings of corn are often weakened in the competition and their growth in the later stages is affected. At present cases of reverting from intercropping to repeated corn crops are by no means rare. The key is a proper coordination of breeds and mechanical equipment. In Shandong, with the extension of the early ripening high yield breed of Luyundan No 4, in many cases, the intercropped corn system has been quickly changed to the system of seeding corn after the wheat crop. In Beijing, the ratio of intercropped corn is very large. Some communes and brigades experimented with direct seeding of the breed Jingzao No 7 after the wheat harvest. The growth and development period of this corn breed was long and the mechanical capacity was insufficient so that less than 1/3 of the acreage could be thus seeded. The Doudian Brigade of Fangshan acquired all the needed machine tools by cooperating with other units before an experiment of summer seeding of corn in 4,000 mu was carried out in 1980. A great harvest of an average yield of 1,065.5 jin/mu was obtained. This brigade had experimented with Jingzao No 7 3 years previously, the yield of direct seeding was 100-180 jin/mu higher than that of the intercropped crop of the same breed.

A Great Deal Can be Accomplished by the Cultivation Technique

The common problem of areas of the dual system of corn [and another crop] is the decreasing soil fertility, the shortage of fertilizer supply, the deficiency of phosphorus and potassium, and a low plant density. In Guanzhong Prefecture, 60-80 percent of the total cultivated land contains less than 1 percent organic matter. The method of returning the stubble to the land was experimented but it could not be extended due to the fact that the problem of fuel shortage was intensified by this method. The region of Huixian and Boai of Henan also has the problem of decreasing soil organic matter content. Although the chemical fertilizer supplement is plentiful

the high plant density remains a competing factor to cause the current yield level of 900 jin/mu difficult to break. The application of chemical fertilizers is traditionally heavy in the summer and light in the autumn. The intercropped corn is applied with very little fertilizer to produce the result of delaying the wheat crop for keeping it green longer, while in the late stage of the corn crop, fertility is seriously deficient. When more phosphorus fertilizer is applied for the corn crop, it can balance the nitrogen fertilizer to promote early ripening and has a great effect on the late ripening corn crop. The soils of Shaanxi have a phosphorus content of 400/1,000,000. During the jointing and heading stages, the soil nitrogen content is set at 600/1,000,000 as the fertility standard and this standard often cannot be reached for the majority of the fields. At present, corn-soybean intercropping system is being experimented in many places. This system may be significant in terms of nurturing the soil and taking care of the needs for grain and beans at the same time. Yield increase is closely related to the technique of coordinating plant density with the quantity of fertilizer application. In Hebei Province, the density was only 2,000 plants/mu in the 50's; in the 60's it was raised to 2,700 plants/mu. It has been raised to above 3,000 plants/mu in recent years, while for early ripening breeds, it has reached above 4,000 plants/mu. In the high yield county of Xinxian of Shanxi, the average density of Zhongdan No 2 is 2,143 plants/mu and the yield is not as high as that of Dunliu, a low yield county, having a density of 2,840 plants/mu. In Shaanxi, the density for corn is generally no higher than 2,000 plants/mu; in Guanzhong, it is less than 2,500 plants/mu for even the high yield areas. The densities are; therefore, considerably less than the optimal density of 4,000 plants/mu determined by the result of experiments. For this reason, a suitable adjustment of density should be one way of raising the yield level of corn in the entire province.

Breeding, Breed Certification, and the Production of Seeds

A batch of superior breeds have been selected and bred out and some new combinations have been produced. After a period of using superior breeds to replace farm breeds, China's corn breeding work has undergone the 3 stages of interbreed hybridization, double cross breeds of inbred lines, and single cross hybridization. For the purpose of simplifying the breeding process and the seed production procedure, the period beginning in the late 60's was devoted mainly to selecting, breeding, and extending single cross breeds to raise the yield of corn still higher. At present, the proportion of hybrid corn is very large in the northern provinces and cities. It is 96 percent in Henan, 90 percent in Beijing, 88 percent in Shandong, 84 percent in Shanxi, 83 percent in Tianjin, 76 percent in Hebei, 75 percent in Shaanxi. In recent years, a batch of superior single cross breeds have appeared one after another. They really have the superiority of being broadly adaptable and obviously yield increasing. Of these, the ones in excess of or close to 10 million mu in cultivated acreage per year include Zhengdan No 2, Danyu No 6, Zhongdan No 2, and Lu-yuandan No 4. Those having been extended to several million mu include Yunong No740, Jingcha No 6, Yushuang No 5, Shaandan No 7, Lusan No 9, and Jingzao No 7. Those having been extended to less than 1 million mu include Jidan No 3, etc. Compared with the foreign breeds introduced to the region for experimental cultivation, these hybrid combinations are better regarding adaptability, disease resistance, production potential, and kernel quality etc. The parents of hybrids used in production in China are mostly inbred lines selected and bred out in China.

The Joint Regional Summer Corn Experiment of the North has demonstrated that new combinations having relatively better expressions include Xindan No 14, Guandan No 3, Shaandan No 9, and Yandan No 15. All obviously have a promising future. Those breeds that are being tested in various areas include Hudan No 1 (the same as Yandan No 14,) Jinxia No 1 (the same as Liaoyu No 5,) Lindan No 8, Changdan No 19, and Xinhuangdan No 56. Each of these has its own superiorities and all are being emphasized. Of these, Xinhuangdan No 56 produced extremely large ears of 37 cm in length. Those who saw them exclaimed that they had never seen anything like it. Several white kernel breeds, Taidanbai, bred out in Taiyuan also have large ears and are suitable as spring corn. They may be experimented within high fertile fields. Moreover, Yuanwu 02 x Jin 402 hybrid has been bred out in Tianjin and 107 x Huangzaosi in Yi County; both are demonstrating excellent qualities locally. They are worthy of attention.

Carrying out Breeding Work to Reduce the Cost of Production and Improve Purity of Seeds

Before the productivity of the parents of inbred lines can be raised, the cropping of single cross hybrids in production is not a practice in keeping with economical principles. The genetic foundation of a single cross is relatively narrow causing it to be unable to adapt to new diseases and pests or to withstand the attack of natural calamities. For this reason, many breeding units have experimented with many triple crosses and double crosses to supplement or replace single cross hybrids. Some combinations, such as Lusan No 9 and Yushuang No 5 have already been used in production. Others, such as Cangsan No 1 (Luyuandan No 4 x Huangzaosi,) Luyuandan No 4 x Guanhuang, Huangzaosi x Sansui/Guanhuang, 206 x Ba912 x Bai MO 17, MO 17 x 334 - 1/Zong 737 (all of which are combinations yet to be named by the breeder unit) still require further experimentation and certification. The utilization of male sterile corn can save the detasseling labor as well as improve the quality of prepared seeds. After the introduction of new C type cytoplasmic male sterile materials in 1974, the work of conversion was launched in the various areas. To date, it has been successful with regard to Yunong 704, Zhengdan No 2, Zhongdan No 2, and Jinxia No 1 and the results have begun to be extended. The male parent in the breeding line of these combinations, the 525 Huobai, the 330, and the Yuanwu 02, happens to be the natural line restoring the C type.

Determining the Breeding Target

It was in 1966 when the corn crop was attacked by the large spot disease for the first time, the importance of breeding disease resistance became commonly acknowledged, and such disease susceptible breeds as WF 9, W 24, 38-11, etc. began to be eliminated. Those that were selected in China, such as 525, Tangsiping-tou, and 330, demonstrated their superiority then. In order to overcome the regular threat of the small spot disease to summer corn, Huobai, Huangzaosi, and Yuanwu 02 were created. They were suitable as early ripening and highly compatible parents. In North China, head smut had traditionally been a severe disease of spring corn and all breeds extended before 1975 were susceptible. After the MO 17 inbred line was used to form combinations, the hybrids were not only capable of resisting head smut, they were able to resist large and small spot diseases as well. Various types of viral diseases and green wilt extensively occurred, however, to present new and even heavier jobs for the crop breeders. It appears that the target of

simultaneous resistance to 4-5 different diseases is difficult to accomplish for the time being. In corn breeding, the target should perhaps be, as much as possible, resolving the problem of 2-3 major local diseases or pests. When white kernel corn is being selected and bred, the goal should be to meet the desire of the farmers of the wheat-producing regions. This is a special characteristic of China. At present, white and yellow corn breeds are being combined in hybridization although the market price of the mixed colored corn makes it unfavorable for [State] purchase and its nutritional value is also inferior to all yellow corn. In the majority of the provinces and cities, the farmers strongly demand early ripening, high yielding white kernel corn. Early ripening, high yielding, stable yielding, adaptability, and adversity resistance remain common and important goals of corn breeding. As it is mentioned in the previous section of the paper, early maturity is the reason for Luyuandan No 4 to be quickly extended and to cause the intercropping system to reverse to the repeat crop system. Under the condition of the intercropping system in Henan, however, there remain 20 to 40 days after the corn harvest before seeding the wheat to allow the corn crop to grow longer; therefore, it is not suitable in Henan to overemphasize early maturity. The way to do it is to coordinate early, medium, and late breeds.

Aside from the common targets of crop breeding discussed above, a few units in the north are also proceeding to breed for quality (emphasizing high lysine content) and stalk shape (including short stalk, straightly standing leaves, ideal appearance, double-tassel, etc.) and some preliminary successes have been obtained. These tasks are still in the research stage, however.

Emphasizing the Sources of Breeding Materials and Opening up New Ways of Crop Breeding

Due to the fact that materials for crop breeding are limited, there are only a few mainstay lines to be selected out and when new combinations are tried, the phenomenon of repetition seems to be difficult to avoid. As a result, most superior combinations have a common parental inbred line. Three hybrids formed by three main lines are listed in the following table to explain that there is the danger of a hidden genetic weakness in the current and future corn breeds of the north.

Huobai	Mo 17	Huangzaosi
Tangsipingtou x Huobai (Zhengdan No 2)	Mo 17 x 330 (Zhongdan No 2)	Huangzaosi x Luyi-3 (Jingzao No 7)
2578 x Huobai (Jidan No 3)	Gonghuo 412 x Mo 17 (Xindan No 14)	Huangzaosi x Santuan (Yandan No 15)
Huobai x Bai525 (Bodan No 1)	Mo 17 x Fengke-1 (Yudan No 5)	Yuanwu-02 x Huangzaosi (Jinxia No 1 = Liaoyu No 5)
206 x Huobai (Shaandan No 7)	Huangzaosi x Mo 17 (Hudan No 1 = Yandan No 14)	Huangzaosi x Guanhuang (Guandan-3)

If this condition is to be changed, emphasis must be given to the origin of the breeding materials to create artificially complex breeds to reconstruct the colony before new superior inbred lines can be selected out. From the hundreds and hundreds

of farm breeds of Shaanxi, more than 20 head smut resisting materials have been selected out and some of these have a high compatibility. Moreover, a new line of Zong 737 has been selected out of another compound breed and it also has a very high compatibility. In Xinxian of Shanxi, the old lines of Jin-01 through 09 have been used to produce a compound breed and from which an inbred line Xin-305 has been selected out. It has the ability to resist large spot disease and head smut. The breed Santuan selected in Yantai is also a product of mixed pollination of many lines. Since 1978, 10 compound breeds have been produced through cooperation and the work of selection, rotated backcrossing, etc. is being carried out. Judging from the preliminary reconstructed colony, disease resistance is obviously higher and the yield is somewhat higher also. All these provinces have performed a great deal of work in terms of selecting breeding materials and ways of breeding. Some have adopted the method of extracting a second cycle line from hybrid breeds. In Shaanxi, it is believed that the backcrossing method is easier than breeding out a new line for the purpose of such a simple characteristic in Huobai inbred line as large spot disease susceptibility.

The Problems of Regional Experimentation and Seed Quality

In the past 3 years, experiments in the summer corn regions of the north have been uninterrupted. They have proceeded in the 2 groups of early and medium ripening breeds. There have been serious and detailed studies on field management and identification and not a few superior breeds have been selected and judged for extension. The current problem in regional experimentation is the relatively confused leadership organization. There is no clear delineation of job responsibility and the phenomenon of multiple and overlapping authority exists. In some provinces and cities, the scientific research unit cooperates with the seed company with the former taking on some jobs and the latter providing support in matters of distribution points and expenditure. The work of certification and summarization was performed jointly by both parties. In some provinces, there are not only national and provincial regional experiments, but also similar experiments arranged by different systems and different departments. There are even many sets of experiments with similar contents arranged in the same location to bring unfavorable effects on all the work.

Production demonstrations of many hybrids have been carried out in Jinxian, Chang'an, Wugong, Yixian, and Fangshan. They grew orderly and well to prove that the work of seed preparation has been satisfactorily performed. The Mo 17 seeds produced by the Yangqu Superior Seed Propagation Farm and the seeds of white kernel breeds of Qianan of Tangshan are high in quality and purity. The work of preparing corn seeds in Yantai Prefecture has earned a very good reputation. In recent years, the method of covering with bags to purify and propagating the seeds by steps has been maintained to keep the purity and quality of the inbred lines at a relatively high level. In other individual places, an imbalanced condition still exists with some breeds. Due to mixing of seeds, the green wilt disease has appeared in some Zhengdan No 2 seeds, in Luoyang the Yunong-704 is infected with head smut, and the small spot disease has been discovered in Bodan No 1. In Xuchang of Henan, there was an experiment with seeds of Zhengdan No 2 of different degrees of purity to reveal a relative difference of 145 jin/mu, amounting to 30 percent. In Changzhi, a comparative test of 6 breeds demonstrated that seeds of inferior degree of purity may result in a yield reduction as much as 21.4 percent. In some places, due to the fact that the work is not up to par, seeds that are offsprings of hybrids are continuously being used for planting. In these cases, there is no heterosis utilization to speak of.

BRIEFS

TREATING WASTEWATER--China has extensive deposits of ferric sulfate, coal, and multimetal sulfide, and a large number of these are being mined. The ores contain a certain quantity of sulfides, which, after oxidation, often turn into acidic pit water which corrodes pipes and equipment and endangers the health of the workers. When this wastewater is discharged, it pollutes the environment and the source of water supply to produce serious effects on agriculture, fish culture, and industries. The chemical process of the formation of the acidic pit water and its characteristics are described in this article. In most cases, the mines of China discharge this type of wastewater without treatment to which creates serious environmental pollution and great economic losses. In Yuntai-shan of Jiangsu Province, for example, the mine discharges 3,000 tons a month to pollute 1,600 mu of cropland. In an average year, the loss compensation amounts to 50,000-60,000 yuan per year, to reach a maximum of 86,000 yuan per year. Some data on the metal contents of contaminated soil are included in the article. Major techniques of treating the wastewater to render it harmless and the practices of some mines, such as Chuanbu Coal Mine of Jiangsu, are also noted. [Article by XIAO Youquan [5135 2589 5425]: "On Pollution and Protection of Acidic Pit Water"] [Beijing SHUIWEN DIZHI GONGCHENG DIZHI [HYDROGEOLOGY AND ENGINEERING GEOLOGY] in Chinese No 3, 15 May 82 pp 7-9] 6168

CSO: 4011/141

NEW METHOD OF HYBRID RICE SEED PRODUCTION DETAILED

Guangzhou GUANGDONG NONGMIN BAO in Chinese 20 Jun 82 p 2

[Article by Liu Wenbing [0491 2428 3521]: "A New Hybrid Rice Seed Production Method"]

[Text] There are two current ways of producing hybrid rice seeds. One is the two stage male parent seed production method whereby the male parent is sown at two different times and transplanted at two different times so as to insure that the male and female parents' (i.e. the restorer line and the sterile line) flowering periods coincide. The other way is the male transplanting seed production method whereby the male parent and the female parent are transplanted into different field plots, the male parent being sown at different times and transplanted in different batches, the male parent being transplanted into female parent fields before the female parent flowers so that the flowering periods will coincide for pollination and hybridizing. The two stage male parent seed production method is handier and requires less work than the male parent transplant method of seed production. However, as a result of the influence of climatic, soil, and man-made factors, frequently the two flowering periods do not coincide, with the result that outputs from seed production cannot be assured. By using the male transplant seed production method, coincidence of flowering seasons can be assured; however, it is necessary to set up an additional "field to provide male parents," and a great amount of work is entailed in transplanting the male parents. Furthermore, if one is not careful, roots may frequently be damaged or buds and panicles killed, the amount of pollen thereby being diminished. Consequently, as a practical matter it is difficult to promote this method for large area use.

In order to assure coincidence of the flowering seasons to win consistently high yields from seed production, the Guanqian Commune Hybrid Rice Seed Production Team in Longqi County, Fujian Province designed a three stage male parent seed production method in 1979, resulting in average yields of 196 jin per mu of intermediate hybrid rice production from the commune's more than 240 mu of fields. From the commune's more than 200 mu of continuous tract seed production fields, yields averaged more than 200 jin per mu.

The specific method they used was as follows: The male parent was sown at three different times and transplanted in two batches. In the first batch, plants from the first sowing and the second sowing were transplanted. Male

plants from the second sowing were transplanted into a single row, and male parents from the first sowing were transplanted in a row alongside the male parents from the second sowing. Furthermore, for every three plant spaces, one plant was transplanted and two spaces were left blank. In the second batch, male parents from the third sowing were transplanted in the two blank spaces left in the row in which male parents from the first sowing had been transplanted. The ratio of male parent transplants from the three sowings was 1:3:2. The second sowing of male parents was done 5 days after the first sowing, i.e. male parents from the first sowing had a seedling age of 30 days; male parents from the second sowing had a seedling age of 26 days; and male parents from the third sowing had a seedling age of 25 days. Six days following the second sowing of male parents, the third sowing of male parents began. The time of sowing of the female parent was decided largely on the basis of leaf blade differences in the second sowing of the male parent.

The three stage male parent seed production method holds the following several advantages:

1. Assures coincidence of flowering seasons. In the three stage male parent seed production method, the first sowing of the male parent is 4 to 5 days earlier than in the two stage male parent seed production method (as determined by visual inspection of combinations). Moreover, in the three stage sowing of male parent, the second sowing of the male parent is 2 days later than in the two stage male parent seed production method. This attenuates the flowering time of the male parent and assures a coincidence of flowering.
2. Attenuation of the male parent full flowering period. Many years observation shows the female parent to have a 12-14 day flowering period, while in the two stage male parent seed production method, the flowering period is only about 10 days. Because the second transplanting of male parent seedlings comes 8 days after the first one in the two stage male parent seed production method, the period of full flowering during each period is only 5-6 days, causing a period of 1-2 days of no full flowering between the first and second period with adverse consequences for pollinization. In the three stage male parent seed production method, the third transplanting is done 6 days after the second transplanting providing for an overlap in full flowering between the first male parent transplant and beginning of flowering of the second male parent transplant, and an overlap between the time of no flowering as yet for the second transplants and the beginning of flowering of the third transplants to assure no interruption in the period of full flowering of the male parent in a 13-14 day period of full flowering. This is virtually the same as the period of full flowering for the female parent for a general pollination rate of 45-48 percent, and as high as 58 percent.

This method has overcome the expenditure of manpower required by the male parent transplant seed production method and the need to set up "field to provide male parents." It has also overcome the shortcoming of an insufficient supply of pollen.

Therefore, the three stage seed production system is in some ways superior to both the two stage seed production method and the male transplant seed production method.

As schematic diagram of a three stage male parent seed production field is as follows:

(2) (1) x x x x x x x (2) (1)

(2) (3) x x x x x x x (2) (3)

(2) (3) x x x x x x x (2) (3)

(2) (1) x x x x x x x (2) (1)

(2) (3) x x x x x x x (2) (3)

(2) (3) x x x x x x x (2) (3)

(1) is the first male parent sowing; (2) is the second male parent sowing;
(3) is the third male parent sowing; and x is the female parent.

9432
CSO: 4007/460

INCREASES IN MARKETING AQUATIC PRODUCTS NOTED

Shijiazhuang HEBEI RIBAO in Chinese 26 May 82 p 1

[Article: "Tremendous Increases in Output, Procurement, and Marketing of Cangzhou Prefecture Fishing Industry. State Purchase Quotas Policy Instituted; Satisfaction of Quotas Linked to Supply of Goods"]

[Text] Cangzhou Prefecture aquatic products units have assiduously carried out a program of taking the planned economy as the key and market regulation as supplementary, have instituted state procurement quota and award sales policies for aquatic productions, and have strengthened market management to win excellent economic benefits. Statistics as of the end of April show increases of 27.6, 71.3, and 60.5 percent respectively over the same period last year in output, procurement, and marketing of aquatic products.

During the past several years, development of Cangzhou Prefecture's fishing industry has lagged. Quantities procured by the state have been small and quality poor, and market supplies short, largely as a result of failure to carry out assigned procurement quota policies, failure to honor award sale policies, and lack of improvements in the management system. This year all levels of aquatic product units and production units in Cangzhou Prefecture have proceeded from desire to improve economic benefits to implementation of fishing village economic policies, taking four actions as follows. First was assignment of assigned procurement quotas and the signing of purchase and marketing agreements. Except for prawns, all of which are to be procured by the state, for all other catches proportional assigned procurement quotas were set. Normally verification was done on proportions of sales for each tide. In the fishing season and for the year as a whole, verification was done on the basis of assigned procurement quota base figures, with amounts in excess of quotas being settled for at a negotiated price. Second was institution of award sales policies linking fishing and materials. For lumber, diesel fuel and such materials required by the fishing industry, a system whereby the greater the quantity of aquatic products surrendered the greater the supply of such materials was instituted, the less the quantity surrendered the less supplied, and nothing surrendered nothing supplied. Third was strengthening of market management for the opening of marketing channels. Both assigned procurement and negotiated procurement were handled by aquatic products supply companies, no other unit having any right to intervene, or being allowed to go directly to fishing communes to do private pre-emptive buying. Production units practicing assigned procurement quotas could not sell in markets, nor could collective products be divided among commune members and sold. Control over small pedlars was strengthened in determined

curtailment of unauthorized dealings, and profiteers and speculators were resolutely attacked. All levels of aquatic product supply and marketing units were required to determinedly carry out state delivery plans, with no shipments of inferior products while retaining the good ones or selling the good ones while delivering the poor ones being permitted. Fourth was an intensification of ideological indoctrination of fishermen in the "three concurrent concerns" to overcome and prevent a mentality of selfish departmentalism and individualism for active fulfillment of assigned procurement quotas.

Implementation of policies promoted output, procurement, and marketing. As of end April, prefecture production of aquatic products of all kinds totaled more than 17.95 million jin, a 27.6 percent increase over the same period last year. Procurement totaled more than 6.45 million jin, a 71.3 percent increase over the same period last year. Marketing within the province and in the two cities of Beijing and Tianjin amounted to more than 6.05 million jin, a 60.5 percent increase over the same period last year for a fine showing for the spring fishing season as a whole.

9432

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MEASURES TO CONTROL SERIOUS COTTON APHID OUTBREAKS OUTLINED

Shijiazhuang HEBEI RIBAO in Chinese 28 May 82 p 2

[Article: "Tremendous Outbreaks of Cotton Aphids; Need For Strenuous Efforts in Elimination and Control. Provincial Agriculture Bureau Comrades In Charge Issue Statement to Newspaper Reporters on Current Elimination and Control of Cotton Aphids"]

[Text] On 26 May, Provincial Agriculture Bureau comrades in charge pointed out the following in a statement issued on the problem of elimination and control of cotton aphids [Aphis gossypii]

By now most cotton seedlings in the province have emerged from the ground and a general outbreak of cotton aphids has occurred. Monitoring reports for the period 10 to 19 May from plant protection stations everywhere report a general 20 to 30 percent and a maximum 100 percent plant aphid infection rate. One hundred plants showed aphids numbering more than 100, and many had between 4,000 and 5,000. Curling of leaves has begun to appear on large numbers of plants. A survey done on 19 May at the Zhengding Stock Variety Farm showed a 50 percent rate of leaf curling. Generally speaking, when the plant aphid rate reaches 30 to 40 percent, when aphids number 1,000 per 100 plants, when the number of plants having curled leaves stands at 20 to 30 percent, and when the proportion of ladybugs is less than 1:150, prevention and control should be done at once, otherwise a loss in yields may result.

Aphid pest growth and development in cotton seedlings extremely damages cotton output. Studies show that when aphid pests occur in cotton seedlings during the period between the seed leaf and the first true leaf stage, the squaring stage will be delayed by from 5 to 10 days. When aphids strike cotton seedlings between the seed leaf and third true leaf stage, squaring will be delayed for 11 to 15 days. Surveys done at Shijiazhuang, Handan, Jingtai, and Baoding prefectures show that unless cotton seedling aphids and hot weather aphids are controlled, cotton output will drop by 60 percent or no crop at all will be harvested. If not properly controlled, a 10 to 30 percent drop in output will result.

Control of cotton aphids during the seedling stage requires comprehensive control measures. From the time that thinning of seedlings begins in cotton fields, control of aphids should be done at the same time. When thinning

seedlings, attention should go to thinning of cotton seedlings bearing aphids, and uprooted aphid-infested cotton seedlings should be taken out of the fields and buried or composted.

Chemical control should emphasize stem applications of omethoate and methamidophos. Use of this method is highly effective, economical, convenient, and is not limited by lack of pesticide equipment. Peasant households can use it. Chemical control must be done in the control period, neither too early nor too late. In places where the proportion of ladybugs is greater than 1:150, attention should go to protecting and using natural enemies to effect control.

Control of aphids requires use of the plant protection organization. Particularly necessary is bringing into play the superiority of production brigades and production teams in providing centralized control. No matter the forms of production responsibility systems practiced, elimination of insects requires centralized survey of the insect situation, centralized purchases of pesticides, centralized management of pesticides, centralized preparation of insecticides, and centralized organization of control in order to reduce the incidence of accidental poisoning, improve control results, and solve problems of myriad households not having sufficient pest control equipment and inability to control the insects. Leaders at all levels and plant protection units must organize their mainstay cadre forces to go into communes and brigades to provide technical guidance and technical education. They must do a really good job of publicizing safe use of pesticides to prevent accidental poisonings.

9432

CSO: 4007/451

GUIDELINES PROVIDED FOR DISTRIBUTION OF SUMMER EARNINGS

Shijiazhuang HEBEI RIBAO in Chinese 22 May 82 p 1

[Article by Commentator: "Concurrent Concern For the Interests of the Three In Doing an Effective Job of Summer Earnings Distributions"]

[Text] Soon the work of distributing summer earnings will begin. In line with the principle of concurrent concern for the interests of the state, the collective, and individual commune members, effective distribution of summer earnings possesses major significance for implementation of party policies, consolidation and perfection of production responsibility systems, for arousal of enthusiasm for labor of commune members, and for further winning of a bumper harvest in agriculture for the year as a whole. All jurisdictions should promptly prepare to do a good job of distributing summer earnings.

This year distribution of summer earnings is being done in a situation in which universally instituted rural systems of responsibility linking output to calculation of remuneration have entered a stage of consolidation and perfection. As compared with previous years, there are numerous new problems requiring study and solution. All levels of leadership should promptly set about investigating and studying to understand base figures. Specialized rural work teams in each county should also make distribution of summer earnings the focus of their activities, focusing on helping grassroots level cadres solve a group of real problems so as to assure smooth progress in summer earnings distribution work.

This year's summer earnings distribution work must be conducted with adherence to the principle of maintaining and consolidating development of the collective economy. In some places grassroots cadres onesidedly suppose that now that responsibilities have been assigned to households there is no longer any need for accumulations. In production teams that practice the contracting of work tasks to individual households, in particular, insufficient withholdings have been made and in some production teams there have been no collective withholdings. It has to be realized that no matter the form of production responsibility system practiced, all economic activities are conducted with adherence to the path of socialism and public ownership of the major means of production such as land. The collective economy can gradually become strong only as responsibility systems are steadily improved and production steadily develops; the collective economy positively cannot be weakened.

The reasons are very clear. Only through steady development and strengthening of the collective economy can commune member contracting activities be securely backed. Therefore, effective collective withholdings and development of a robust collective economy are not only requirements for strengthening the socialist system, but also fit in with expansion of the peasants' long range interests. In the process of this year's distribution of summer earnings, it is necessary first of all, to resolve problems remaining from last year, raising the matter of required withholdings. In cases where individual commune members refuse to hand over withholdings, they should be patiently persuaded and educated. When persuasion and education do not bring them around, the collective should take back the land contracted to them. It is necessary, in addition, to institute withholdings one by one for this year. Generally withholdings will include the following: state purchase quotas, assigned procurement quotas, and agricultural taxes for grain, oil-bearing crops and other agricultural products sold to the state; public accumulation funds, public welfare funds, and management expenses (including remuneration to cadres); subsidies to various categories of people; depreciation of fixed property; farm implement overhauls; some production expenses advanced by production teams, seeds, livestock feeds, supplemental grain for commune member hog raising, newly sunk production team pump wells, investments in afforestation and a certain amount of obligatory labor and capital construction labor. Today, many places use earnings from sideline occupations to offset withholdings where sole responsibility for work tasks has been assumed. Accounts must be squared and everything about them made public; otherwise, not only will expansion of industrial sideline industry reproduction be at a disadvantage, but it will be difficult to do cost accounting for agriculture. When withholdings are made from production teams, all items for which withholdings have been made, as well as numerical amounts, must be made public to the masses and be subjected to mass scrutiny. Simultaneous with an effective job of collective withholdings, effective arrangements for commune member distributions must also be made, and an effective job done of looking after the dependents of martyrs, servicemen, and hardship households. A portion of commune and brigade industrial sideline occupation earnings should be made a part of commune member distributions. In production teams practicing assignment of full responsibility to households, how these funds will be distributed to commune members must be arrived at through discussion among commune members to find suitable ways. In making distributions, attention must be given to equitable calculation of compensation for personnel in each sector.

Conscientious honoring of contracts is a new feature of this year's summer earnings distributions. Last winter and this spring in a substantial portion of communes and brigades in Hebei Province as a result of the signing of contract agreements between collectives and commune members, state purchase quotas, assigned procurement, collective withholdings, commune member bonuses and penalty payments, and calculation of remuneration became a part of agreements. In making distribution of summer earnings, in all cases in which agreements specify that one thing or another must be honored, it must be conscientiously honored as stipulated. Commune members are to be helped with threshing and with verification of outputs to provide a basis on which agreements may be honored. Should severe natural disasters occur and it becomes difficult to make withholdings in accordance with agreement stipulations,

following democratic discussion and agreement among commune members withholdings may be deferred until year's end or reduced. In cases in which commune member distributions cannot be readily honored in accordance with previous agreements, contract norms may be revised through democratic discussions among cadres and commune members before distributions are made. Conscientious honoring of agreements is important in maintenance of the solemnity of agreements and in winning the confidence of the peasants, and no one may scrap agreements on any pretext whatsoever.

Finance and accounting personnel capabilities bear directly on summer earnings distribution work. Therefore, all jurisdictions should take the opportunity that the time remaining before the wheat harvest affords to qualify finance and accounting personnel and to set up statistical accounting forms. They should also effectively train finance and accounting personnel. In the course of training, they should be guided to the study and analysis of local realities so they will know what to do about problems that may come up in future. Professionally, they should be helped to understand difficulties so they will be able to meet new circumstances and smoothly carry out summer earnings distribution work. Finance and accounting personnel should also be helped to combine summer earnings distributions with the straightening out of fiscal matters. During the past 2 years, a considerable number of the province's communes and brigades have carried out fiscal reorganization, winning definite results. However, this has not been done evenly. Some communes and brigades did not do this, so their fiscal affairs are still in a chaotic state and losses are severe. This year these places should begin with summer earnings distributions to put their financial houses in order for the first half of the year, and following the wheat harvest, they should straighten out the earlier period. As a result of straightening out finances, the collective economy will be able to proceed along a healthy course.

9432

CSO: 4007/451

LAMB BREEDING SURVIVAL RATE BREAKS RECORD

Shijiazhuang HEBEI RIBAO in Chinese 28 May 82 p 2

[Article: State-owned Yudaokou Livestock Farm's Lamb Breeding Survival Rate Again Creates New Records This Year. This Year's Inventory Increase Reaches 123.74 Percent, 3.74 Percent Higher Than Last Year"]

[Text] Several days ago a comrade in charge at the Provincial State Farm and Land Reclamation Bureau told the reporter that the Province's Yudaokou Livestock Farm, which last year had the highest lamb breeding survival rate in the country, this year rose another notch again being the highest achiever in the country. Last year the farm mated 15,000 sheep, which produced 19,151 lambs this year with a survival rate of 18,562 lambs, an inventory increase of 123.74 percent or 3.74 percent more than last year. A look at the lamb production situation shows that adult sheep have fattened well and have sufficient milk, so lambs are healthy. This year the farm also had a new breakthrough in its lamb breeding survival rate. At the No 18 Production Team all of the 163 ewes tended by old livestock man Wang Yuchen [3076 3768 5256] were successfully mated, and the survival rate for lambs that were born was 255, the inventory increase resulting from the breeding amounting to 156.44 percent, exceeding by 6.44 percent the record national high for the same trade of a 150 percent inventory increase in the breeding of lambs in a single herd formerly held by labor model, Song Guofu [1345 1948 1381] making him the second national recorder holder at the farm. Now the Yudaokou Livestock Farm is bolstering management of feeding of ewes and of lambs following birth. As lambs increase in daily age, they gradually lengthen pasturing time, and increase time allotted to the collection of grass and the quantity hauled in order to increase milk to promote normal development of lambs.

9432

CSO: 4007/451

ALL ENCOMPASSING AGRICULTURAL, COMMERCIAL CONTRACT SYSTEM PROMOTED

Shijiazhuang HEBEI RIBAO in Chinese 24 Jun 82 p 1

[Article: "Shijiazhuang Prefecture Gives All Around Promotion to Agricultural and Commercial Contract System. Commune Members' Minds At Ease; Cadre's Confident, and State Plan Guaranteed"]

[Text] The 17 counties of Shijiazhuang Prefecture have universally promoted an agricultural and commercial contract system. The assortment of goods for which agreements have been signed include grain, fats and oils, cotton, tobacco, live hogs, fresh eggs, pears, apples, red dates, walnuts, and vegetables, diesel fuel, chemical fertilizers, and pesticides. Currently more than 89,000 individual contracts having a value totaling 449 million yuan have been signed throughout the prefecture.

Shijiazhuang Prefecture has used the institution of an agricultural and commercial contract system as a major technique in applying economics to management of the economy. All state owned commercial units (including those for business, supply and marketing, grain, and foreign trade) signed agreements with rural production teams, in accordance with state plan, for the purchase of agricultural products and the supply of materials to support agriculture. Production teams then signed, in turn, contract agreements with specialized teams (or units), or with commune member households, providing for a responsibility system linking output to calculation of remuneration. In this way not only were state plans pertaining to agricultural production put in place in the form of agreements, agricultural production thereby being put on the proper path of the state plan, but state procurement and marketing plans were dovetailed with agricultural production plans to achieve level by level control and clearly defined responsibilities, thereby assuring smooth fulfillment of state procurement and marketing plans and agricultural production plans. People said that with the signing of agricultural and commercial agreements, it is as though commune members had taken a tranquillizer, the cadres had gained confidence, and state plan was assured, all three parties being pleased. The grain and edible oil agreements signed by the prefecture this year account 94 percent of the prefecture's state procurement quotas. Those for cotton account for 103.5 percent of procurement plan; those for tobacco account for 119 percent of procurement plan; those for pears amount to 154 percent of procurement plan; and those for red dates account for 109 percent of procurement plan.

By way of strengthening management of economic agreements and assure their implementation, each county in the prefecture has set up small leadership teams for promotion of the contract system at the county and commune levels. The prefecture, counties, and communes, as well as all pertinent vocational units in charge, have designated and placed in charge leadership cadres and management personnel responsible for contracts work. Each unit signing contracts has established personnel solely responsible for signing of contracts and managing them. Throughout the prefecture a preliminary situation has come into being whereby "leaders are directly in charge of the division of labor, units in charge are in control of specifics; grassroots levels provide designated personnel to take charge; and authenticating units are in overall charge." Recently Shijiazhuang Prefecture's government administrative offices have required each jurisdiction to use various means to organize cadres and masses to thoroughly study "economic contract methods," to enhance their conception of the legal system, and to establish a fine style of "attach importance to contracts and safeguard their trustworthiness," and "fairness and honesty with no cheating of anyone." The prefecture also required that all levels of government and vocational units in charge genuinely strengthen leadership, make periodic inspections, give attention to representative examples, summarize experience, promptly discover and solve existing problems, intensify training of contract management cadres, and steadily improve management levels.

9432

CSO: 4007/460

HENAN

PAYING ATTENTION TO GRAIN PRODUCTION COMMENTED ON

Beijing RENMIN RIBAO in Chinese 13 Apr 82 p 2

[Article by Xiao Bingjun [5135 4426 6874] and Sun Xitong [1327 1585 0681]:
"Emphasize Production of Millet"]

[Text] As early as the 1950's, there had been records of per mu yield of 1,000 jin of millet in Wen County and Tangying County in Henan Province. Some counties in Shandong, Hebei and Shanxi also had millet fields of unit yields of 500 to 800 jin. Thus it can be seen that as long as the conditions of the climate, soil and water and fertilization are appropriate, and as long as there is scientific management, the yield of millet can be increased. We cannot say that millet is a low yielding crop.

The nutritional content of millet is higher than other food grains and the nutrients have special functions in human health. According to analysis by research units in the health sciences, each jin of millet contains 48.5 grams of protein, 8.5 grams of fat, and a higher content of vitamin B, and the content of vitamin A is especially rich. In our nation's northern farm villages, millet is frequently used as a supplement for pregnant women and babies. People plant millet to harvest the seeds and also obtain more straw. The straw of millet is rich in nutrients. According to analysis: The straw contains 0.7 to 1.0 percent of digestable protein and a total of 47 to 51.1 percent of digestable nutrients. The amount of digestable protein in millet straw is higher than both wheat stalks and rice straws. Millet straw can be easily stored and is an indispensable feed for mules in the northern parts of our nation.

Millet husk is a good feed for hogs and chickens. As long as it is fully utilized, it can conserve a lot of fine feed.

Millet is strongly resistant to aridity. Such a situation frequently occurs. Under the same threat of drought, corn often dies from the drought while millet could still grow.

Millet can be easily stored and carried. It is the best food to prepare for war and disasters. Millet grains have a strong outer shell, and it can be called "the food grain that wears a helmet." Ancient books note that "of

all the nine grains in storage, millet is the main one." Throughout the dynasties in our nation, most of the granaries (for disaster relief) stored millet. During the War Against Japan and the war of liberation, millet was the main type of food grain for consumption by our armed forces in the northern regions.

Millet is a superior crop. In readjusting the structure of food grains, we should restore the role and the reputation of millet production. We should provide more area, more water and fertilizers and more efforts of scientific research and management to millet production. We should establish rational regulations in procurement, pricing and evaluation and awards. We should promote a relatively quick restoration and development of millet from many aspects.

9296

CSO: 4007/372

SUZHOU PADDY RICE HIGH-YIELDING CULTIVATION POPULARIZED

Beijing RENMIN RIBAO in Chinese 14 Apr 82 p 2

[Article: "Suzhou Prefecture Utilizes the Single Season Rice Cultivation Center as the Center for Demonstration To Popularize Again the Experience of Chen Yongkang To Cultivate High-Yielding Paddy Rice"]

[Text] The fervor to relearn and popularize the experience of cultivating high-yielding paddy rice by farmer-paddy rice expert Chen Yongkang [7115 3057 1660] is surging in the Suzhou Prefecture in Jiangsu Province.

During the last 2 years, Suzhou Prefecture implemented the policies of agricultural readjustment. The area of single season rice has been restored to about 50 percent. Because the broad numbers of cadres and commune members have planted very little single season rice since the 1970's, the techniques of cultivating single season rice have generally become unfamiliar. Starting from last year, the administrative office of the Suzhou Prefecture invited Chen Yongkang to establish demonstration points for the single season rice cultivation center in 8 counties of the prefecture. Each county established 16 experimental sites to learn Chen Yongkang's paddy rice cultivation techniques according to the types of zones.

In the 1960's, Suzhou Prefecture launched activities to learn Chen Yongkang's experience in paddy rice cultivation. Today, the prefecture again organized efforts to learn and popularize Chen Yongkang's experience and further pushed forward the efforts of farmers to learn science and use science. Chen Yongkang's every field conference, reporting meeting or demonstration attracted many farmers. Ordinarily, a continuous stream of people visits his demonstration center to visit and learn.

Suzhou Prefecture has realized preliminary results in relearning and popularizing Chen Yongkang's experience in cultivating high-yielding paddy rice. The unit yield of paddy rice at the 9 demonstration points of the center throughout the prefecture has averaged an increase of 21.4 percent in yield over the unit yield of the large fields planted by the local brigade. This year, Suzhou Prefecture has decided to expand the original demonstration fields of the center to become a model production team and brigade. At the same time, it will invite Chen Yongkang to help train a technical backbone force and "technical families."

9296

CSO: 4007/372

SOME TRICKY PROBLEMS IN SUMMER DISTRIBUTIONS HIGHLIGHTED

Jinan DAZHONG RIBAO in Chinese 19 May 82 p 1

[Article by Commentator: "Consider the Interests of the Three in Doing an Effective Job of Summer Distributions"]

[Text] This year Shandong Province's summer distribution work poses many new situations and new problems, the major ones of which are the following: 1. An extremely imbalanced situation in bumper and poor wheat harvests resulting from the serious drought. 2. New developments and changes in forms of agricultural production responsibility systems with a change from distributions according to workpoints to a very large increase in units that have engaged in "contracting, delivering, supplying and keeping in stock." An appreciable number of these did not change their form of responsibility system until after fall planting or even until this spring. Inasmuch as time has been short and experiences inadequate, remaining problems are considerable. 3. The grassroots leadership teams in a minority of units are slack, and some are even in a state of semi-paralysis or paralysis. The above situations demonstrate that difficulties will be great and tasks formidable in doing an effective job of summer distribution this year. All jurisdictions should genuinely strengthen leadership and take vigorous action. They should first effectively investigate and study, and devote efforts to understanding matters pertaining to this year's summer distributions such as the state of grassroots leadership teams, forms of responsibility systems, disaster situations, output, earnings, financial accounts, and cadre and mass thinking so that they will be clear about situations and do a good job about some of them straightaway. Second, they should run various kinds of pilot projects on the basis of different forms of responsibility systems to gain effective experience and provide tailored guidance. Third is attention to weak links, providing major help to those units in which leadership teams are paralyzed or semi-paralyzed, the forms of responsibility systems shaky, and financial management chaotic. When an effective job of summer distribution work has been done so that the party's policies will be carried out and honored, agricultural production responsibility systems can be further stabilized and perfected to stimulate cadres and the masses to use greater zeal in winning an all-around bumper harvest from agriculture this year.

Proper handling of the three relationship, concurrently considering the interests of the state, the collective and individuals, is a fundamental principle that must be upheld in distribution work, and it is also a major indicator in judg-

ing how well distribution has been done. Overly high state procurement and overly high accumulations in disregard of the welfare of the peasants dampen peasant enthusiasm. Consideration of peasant interests alone without consideration of the interests of the state or the collective can impair development of production, impair national construction, and in the end can also damage the peasants' long range interests. In this year's summer distributions, handling of the relationships of the three will be manifested more conspicuously in grain than in previous years, and will require arduous and meticulous work to achieve consideration of peasant interests, provide for commune members livelihoods, calm their feelings and encourage their efforts and, at the same time, to do an effective job of collective withholdings and fulfillment of state procurement quotas. Last year, despite a provincewide reduction in grain output, 10 counties contributed more than 100 million jin of grain to the state, and in 14 counties the grain contribution per capita averaged more than 130 jin. These included five counties in which per capita grain contributions averaged more than 200 jin. They supported units in which production of economic crops is concentrated where grain does not suffice, and they supported national construction. Such a spirit of love for the country, love for the collective, love for socialism, and "treating the entire country as a chessboard" should be carried forward. This year those units in which assumption of responsibility for grain quotas is small and increased wheat output great should be mobilized to carry forward this spirit. While assuring no reduction in commune member grain rations and in collective withholdings or even slight increases, they should sell some more wheat to the state. Disaster stricken units with declines in output should also give close attention to these three matters. Last year a small number of units pursued only commune member distribution norms, making no or few withholdings for accumulation. Amounts that should have been withheld were not withheld, or excess distributions were made. As a result, the collective had nothing to work with to the impairment of production growth. This lesson must be borne in mind.

Most important in distributions within the collective economy is implementation of the principle of distribution according to work. Most contract agreements signed this year by most units, production teams, and individual contractors provided for production quotas, remuneration of labor, bonuses and penalties, as well as state procurement and collective withholdings. Contracts embody the principle of distributions according to work and the principle of concurrent consideration for the welfare of the three. They should have the force of law and should be abided by and honored in the course of distribution and not scrapped at will. If serious decline in output as a result of natural disasters necessitates contract revisions, this must also be done only through discussion and concurrence on the part of both parties. Preferential treatment and care of the families of martyrs and servicemen, households enjoying the five guarantees [childless and infirm old persons who are guaranteed food, clothing, medical care, housing and burial expenses by the people's commune], and hardship households bears on cementing of relations between the military and civilians, and assuring social tranquility and unity. It is a major matter that demonstrates the superiority of socialism, and this work must be done well in accordance with policy policies. Production brigade and production team cadres carry heavy responsibilities. All work devolves upon them, and they should be given compensation that is slightly higher than that given for the same labor

in the brigade or production team. It is also essential that schoolteachers in schools run by the people, barefoot doctors, and other people providing services in collective enterprises be equitably compensated. In short, distributions are a major link in economic activity, and are the collective embodiment of the party's rural economic policies in rural villages. The time for this summer's harvest is fast approaching, and summer distribution work must be done promptly and effectively.

9432

CSO: 4007/448

TIGHT MANAGEMENT OF WATER RESOURCES URGED

Jinan DAZHONG RIBAO in Chinese 21 May 82 p 1

[Article: "Increased Centralized Management to Improve Water Conservancy Benefits. Heze Prefecture Solves New Problems in the Fight Against Drought in the Wake of Fixing Output Quotas Based on Households"]

[Text] In view of the new situation following general practice of production responsibility systems fixing outputs on a household basis or large scale assignment of responsibilities, Heze Prefecture has correctly handled the relationship between centralization and contracting in the use of water to fight drought. It has instituted a system of several centralizations and several contractings for water sources, water equipment, and water conservancy facilities to make full use of benefits from water conservation facilities.

In the course of fighting drought to save the winter wheat harvest and to save spring planting, the Heze Prefecture Committee and government administrative offices learned that all units that had done a good job of launching combat against drought had done so as a result of collective strengthening of water conservancy facilities management and their centralized use. On the other hand, because some units had slackened collective management, had divided up machine pumps, did not have open ditches, and had management that was in a state of chaos, their movement to combat drought and protect the wheat harvest and spring planting had been impaired. In light of this situation, both the CCP Committee and government administrative offices emphasized the need to give attention to "centralization" in the use of water to combat drought. Each of the brigades in the prefecture conducted surveys to find the reasons why units had not "centralized" water for irrigation, giving practical help in solving the problem. In their use of water to fight drought, each county and commune substantially used a "six centralization" method as follows: centralized planning of water conservancy facilities; centralized construction; centralized management and use; centralized allocation of water resources and water equipment, centralized fee collection standards, and centralized solution to remuneration for operators and personnel tending sluice gates and ditches. All communes and brigades adapted general methods to local situations in centralized form. The method adopted by Libentun Commune in Dingtao County was as follows: Major farmland capital construction projects such as main and branch ditches, culverts, and sluice gates were under centralized organization, management and use of communes, fees being apportioned on the basis of the amount of benefit each unit

received. Lateral ditches, sublateral ditches, and small feeder ditches under centrally organized and constructed by brigades. Canals, bridges, and culvert gates were looked after by specific people. Water resources were centrally allocated for centralized use. Centralized use arrangements were made by collectives for production team machines. There were specific operators, specific remuneration, and a well defined responsibility for maintenance and use. Machine repair expenses were paid for out of withholdings. From a foundation of centralized management of its water conservancy facilities, the Sunlaojia Commune in Cao County set up a water conservancy and irrigation service team. The service team was composed of more than 10 people, and each two operators constituted a service unit assigned to a pumping machine (including machine, pump, pipes, and associated tools) under direct commune leadership and centralized direction. Emphasis was on helping units lacking irrigation equipment to gradually set up their own irrigation system and management methods.

As a result of its centralized management and use of water to combat drought, virtually all of Heze Prefecture's more than 300 large water pumping stations, its 86 large and medium size streams, and its more than 40,000 pump wells were in use.

9432

CSO: 4007/448

SHANXI

INCREASING PURE COTTON FABRICS PRODUCTION URGED

Beijing RENMIN RIBAO in Chinese 12 Apr 82 p 2

[Article by Shang Daijiang [1424 0108 3068] and Hu Taichun [5170 1132 2504]:
"Organize Production According to State Plans; Shanxi Textile Industry
Actively Increases Production of Pure Cotton Fabric"]

[Text] Workers of the textile industry in Shanxi Province have correctly handled the relationship between local profits and overall profits, appropriately reduced the output of long staple products according to state plans, and actively increased the output of pure cotton fabric. At present, 908 weaving machines that produce long staple products have been converted for weaving pure cotton products.

The textile industry in Shanxi Province has always been involved mainly with the production of cotton cloth. Pure cotton fabric constitutes over 80 percent of total output. Besides supplying its own province, over half of the products is shipped to other provinces according to state plans. Because the production value and the profits from producing cotton textiles were low, this province has gradually converted more than 1,000 weaving machines to produce fabrics with a high production value since 1979. Up to the end of last year, the output of fabrics of a high production value as a percentage of the total output increased from 8 percent in the previous year to 13 percent.

The Shanxi Textile Printing and Dyeing Plant has a total of 936 weaving machines that produce fabrics of a high production value. According to unified arrangement by the Provincial Textile Department, 600 machines had to be converted to produce pure cotton fabrics. The factory therefore lost more than 300,000 yuan in income. The workers discussed the situation and proposed that as long as the state and the people need such products, no matter how difficult, they will bear it. In less than 1 month, they completed the task of conversion. To reduce loss in conversion to the minimum, the workers of the textile industry in Shanxi exerted efforts to increase the economic gain. The three textile mills of Linfen, Xiangfen, Houma in the Linfen Prefecture launched competitive activities to compete against each other in goals, in accounting, in finding differences, and in developing potential. In January and February of this year, the quality of cotton cloth produced by these three mills visibly improved over that of the same period last year, and consumption of such raw materials as cotton yarn was reduced by a large scale.

9296

CSO: 4007/372

JINDONGNAN EXPANDS MILLET PRODUCTION

Beijing RENMIN RIBAO in Chinese 13 Apr 82 p 2

[Article: "Suiting Measures to Local Circumstances, Rationally Arranging Planting, Jindongnan Develops Advantages of the Locality To Expand the Planting of Millet"]

[Text] Editor's Note: Under the guidance of state plans, suiting measures to local circumstances in rational planting is an important principle in guiding and arranging agricultural production. Not only must food grain crops and diversification be rationally arranged, the problem of rational arrangement of food grain crops themselves also exists. The needs of the state and the masses must be satisfied. Characteristics of the natural conditions of the localities must be studied. The advantages must be developed and the shortcomings must be avoided. Superiority must be developed. Expanding the planting of millet in Jindongnan is a measure to develop the superiority of the arid mountain areas and to realize better economic gain. The masses will have millet to eat and livestock will have feed grain and grass. This benefits the nation and the people, and why should we not do such a good deed?

For a time, under "leftist" ideological influence, the Jindongnan Prefecture not only singularly emphasized planting food grains, it also allowed only sorghum, corn and such so-called "high yielding" crops to be planted, and millet was completely prohibited. In this way, one cannot talk about starting out from the actual situation. Today, communes and brigades have a definite autonomy, and under the guidance of state plans, as long as we are skilled at summarizing the experience and at suiting measures to local circumstances, agricultural production in Jindongnan Prefecture will surely develop an even greater potential.

Report by correspondents Wang Jinshui [3769 6855 3055] and Chen Maosheng [7115 5399 4141]: The Jindongnan Prefecture has suited measures to local circumstances in arranging planting, developed the superiorities of the locality, expanded the production of millet, and last year, 160,000 mu were sown, and this year, the area expanded further to about 2 million mu.

Millet is a traditional food grain crop in Jindongnan Prefecture. In the past, farmers planted millet actively and provided a large amount of millet to guarantee the needs of the military and food for civilians and to support the revolutionary war. A leading comrade of the Party Central Committee inspected Jindongnan Prefecture not long ago and pointed out: "The millet of Jindongnan is famous...In the whole nation, millet of northern Shaanxi and the millet of this region are good. I agree with you in planting more millet."

For a long time, under "leftist" ideological influence, millet was also criticized. The sowing area of millet throughout the whole region has lessened by more than 1 million mu since the beginning period of liberation. Even though unit yield has increased, because the area has lessened, the total yield has dropped from the highest annual yield of more than 600 million jin to about 500 million jin. The percentage of the supply of millet has also lessened year by year.

The natural conditions in Jindongnan Prefecture are superior for planting millet. The growth season of millet coincides with the rainy season in the southeastern Shanxi region. Therefore, the yield is more stable than that of corn, sorghum and wheat. Millet is tolerant to drought and waterlogging. Its adaptability is strong, its nutritional value is high, and the masses love to eat it. It can be planted at more than 300 communes throughout the region. Every county and commune has the typical experience of producing bumper harvests of millet. Jinqing Brigade in Huguan County is a dry rock mountain region at more than 1,200 meters above sea level, and it is a place where water sources are extremely deficient and where the frostless period is short. Farmers have developed the experience of scientific planting of millet in practices of autumn tilling to strengthen upturning of the soil, preparing the land for three types of moisture, storing water and retaining the soil, and improving soil fertility. At the beginning of the 1960's, the per mu yield of millet reached 500 jin. Since the 1970's, the per mu yield has remained at above 800 jin. There were 4 years in which the per mu yield broke the 1,000 jin mark. In the year of the highest yield, per mu yield reached 1,041 jin, and the ridiculous theory that "millet is low yielding" has been broken.

Huguan County, which is arid and lacks water, popularized the experience of Jinzhuang over large areas and realized outstanding results. Huguan had a major drought in 1980. Most communes, brigades, people and animals had difficulty in obtaining drinking water. The whole county popularized the experience of Jinzhuang on an overall basis. The average per mu yield of millet still reached 413 jin, and total yield increased by 8.7 million mu. Of the food grains submitted and sold to the state, millet constituted 53

percent. Of the rationed food grains of commune members, millet constituted 35 percent. Everyone responded by saying this is a good thing, which benefits the state and the people.

The committee and the administrative office of the Jindongnan Prefecture was inspired by the large area popularization of the Jinzhuang experience in Huguan County. They calculated that if the area of millet throughout the whole prefecture reaches 2 million mu, the yield would reach the level of output of the 1970's in Huguan County. The total yield of millet throughout the prefecture would reach more than 700 million jin, and 1.5 billion jin of straw could be produced. In this way, the masses would have millet to eat, large livestock would have straw as feed, the husk of millet could be provided as raw material for the wineries, and it could also be used to raise hogs and chickens. The production cost of millet is low, equivalent to only half that of wheat. In the overall balance, planting millet has more benefits than planting other food grain crops.

To expand the planting of millet, the committee and the administrative office of the prefecture held a field meeting on millet production for the whole prefecture at the Jinzhuang Brigade in Huguan County as early as September of last year. Delegates from all localities conscientiously learned the Jinzhuang experience. Before sowing wheat in autumn of last year, arrangements were made to expand the planting of millet. Autumn tilling and upturning of the soil were grasped in a big way, and fertility was accumulated and the land was prepared. At present, each locality throughout the prefecture is actively shipping fertilizers and preparing superior seeds to develop local superiority and seize a bumper harvest in millet, and each locality is carrying out intensive activities to prepare for planting.

9296

CSO: 4007/372

FIGHT AGAINST DEEPENING DROUGHT CONTINUES

Tianjin TIANJIN RIBAO in Chinese 17 May 82 p 1

[Article: "Four Thousand Rural Cadres Go Into Frontlines of Fight Against Drought. Cutbacks in Conferences and Temporary Halt to Vacations As Drought Dramatically Deepens"]

[Text] During this serious time of dramatic deepening of the drought, leaders at all levels in the municipality's rural villages have organized 859 suburban and county cadres and 3,677 commune cadres to hurry to the 97 key communes where tasks in fighting drought are heavy, hardships numerous, and potential for increases in yields great to struggle alongside the broad masses of the people against drought.

After these cadres had arrived in the communes and brigades, they first guided the broad masses of people in shoring up their confidence, in overcoming fear of hardships and a psychology of waiting for the heavens to rain, and worked together with the masses to study specific measures to be taken to fight drought, and solve genuine hardships in the work of fighting drought. In order to make the most of benefits from existing pump wells, principal leaders in Wuqing County diligently increased pump installations, changed pump diameters, tightly sealed pipes going into the well at the wellheads, and refitted center line wells. They led the masses in self-reliantly changing existing pumps, giving new life to 497 dead wells from which no water flowed as a result of a drop in the water table for an 18,000 mu expanding of the irrigated area. Ji County CCP Committee Secretary Wang Shuliang [3769 2885 5328] went to seriously drought stricken Tayuan Brigade in Guanzhuang Commune where 11 of the brigade's 12 pump wells have gone dry and where people and animals face extreme hardships in getting drinking water. Together with the cadres and masses he studied actions to be taken. They sank a well in each of the two hamlets of Lincun and Xiaocai, which had a fair amount of ground water, and they erected steel pipes to solve people's and animals' drinking water problems and the problem of a source of water to be carried into the fields to dibble deeds on 1,000 mu. At Taitou Commune, Jinghai County CCP Committee Secretary Tong Zemin [0157 3419 3046] made the most of the fair amount of water lying not far below the surface locally by getting the masses to sink more than 800 hand pump wells and dug wells walled with bricks. Within a period of only 3 days, he got the masses to carry water to dibble seeds on more than 1,300 mu, and he also got the commune and brigades to put up the funds to buy 10 new spray irrigation apparatuses so as to

expand the irrigated area by more than 4,000 mu. Leadership cadres in the western suburb and in Ninghe County uncovered and solved problems in cooperation with grassroots cadres and commune members, vigorously advancing progress in combating drought and doing spring planting.

In order to concentrate energies on the fight against drought, all suburbs cut back on the number of meetings and temporarily suspended regulations permitting cadres to rotate vacations. The suburbs and counties of Wuqing Baoshi, western suburb, and Tanggu set up commune cadre work position responsibility systems, and adopted methods of linking together garden team division of labor in fulfillment of grain and vegetable production norms and proportional distribution of profits from sideline occupations to solve the problem of a tendency to regard sideline occupations as superior to farming. In addition, all suburbs and counties did everything possible to reduce non-productive expenditures. More than 3.88 million yuan of local public funds was allotted to help communes and brigades in their struggle against drought, and the masses were aroused to chip in more than 11 million yuan to assure no hitches in the fight against drought to assure a wheat harvest and spring planting.

More than 900,000 people throughout the city are now engaged in the struggle against drought. Water is being hauled on carts, on poles by people, and on the backs of animals for the watering of 1.5 million of the municipality's more than 1.9 million mu of winter wheat, and a second watering of more than 880,000 mu as well. More than 2.4 million mu of field crops have been sown through fighting drought. This amounts to 60 percent of the task, and almost 400,000 mu was planted by dibbling seeds in the fight against drought.

9432

CSO: 4007/448

YUNNAN SEEKS TO REPAIR COLD WEATHER CROP DAMAGE

Kunming YUNNAN RIBAO in Chinese 14 May 82 p 2

[Article: "Zhaotong Prefecture Fights Disaster to Win Bumper Harvest. Not Fearful of Difficulties Despite Drought, Prefecture Has Resown More Than 8,000 Rice Seedlings and Replanted More than 5,000 Mu of Corn"]

[Text] Following recurring natural disasters, the rural communes and brigades of Zhaotong Prefecture did not lower their heads or fear difficulties, but aroused cadres and masses to base themselves on a fight against disasters to win a bumper harvest. As of 25 April, 8,023 of the prefecture's 9,051 mu of rotting rice seedlings had been replanted, and an additional more than 2,300 mu of flue-cured tobacco seedlings sown.

Zhaotong Prefecture has had calamitous weather ever since April, temperatures remaining low for a fairly long time. Some counties had one hailstorm after another and damage from flooding and waterlogging, which caused serious damage to both crops sown in late autumn and early spring as well as to rape and tobacco seedlings, and to fruit trees. Serious rotting of rice and tobacco seedlings occurred, and a large amount of corn rotted. After the disaster, comrades in positions of responsibility in the Prefecture CCP and government administrative offices went separately to Suijiang, Weixin, Qiaojia, Dagan, Yanjin, Zhenxiong, Shuifu, Ludian, and Zhaotong counties to survey and gain an appreciation of the disaster situation. They called upon cadres and the masses throughout the prefecture to carry forward a great dauntless spirit of courage and tenacity in the face of the disaster, to overcome fears of difficulties and slackness, and to triumph over the disaster to do a good job of spring farming. Specifically, they took three actions as follows: 1. Growing of rice and tobacco seedlings. In order to assure the right season for transplanting, they intensified care of plots where the disaster and the rotting of seedlings had not been too serious and used every available means to grow sturdy seedlings. Fields in which losses were in excess of 80 percent were plowed under and resown. For resowing of rice seedlings, intermediate and early ripening varieties were used throughout. Insofar as possible plastic mulch was used to grow seedlings and hot, quick acting fertilizer was spread. Beginning now, organizational work for the transfer of seedlings from surplus areas to shortage areas is being done. 2. Attention to the season to hasten the pace of corn planting so as to avoid summer drought and autumn waterlogging. 3. Peasant households without the resources to solve hardships created by resowing and replanting

planting following disasters plus disasters sustained to autumn sown crops were given appropriate relief by civil government departments. All counties in the prefecture responded to the Prefecture CCP Committee's call to active participation in the struggle against drought. As a result of efforts on the part of cadres and masses throughout Shuifu County, resowing of rotted seedlings has been entirely finished. Weixin County is now planting more than 130,000 mu of corn, and in order to assure full stands, in addition to increased fertilization at the time of sowing, they have promoted fine varieties, made sure to process seeds, and have done reasonably close planting. In addition 884 production teams have readied corn seedlings for prompt seedling replacement.

9432

CSO: 4007/448

Animal Husbandry

AUTHOR: CHEN Zuolin [7115 0155 7207]

ORG: None

TITLE: "Accelerating the Development of Animal Husbandry"

SOURCE: Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 6, 5 Jun 82 pp 5-7

ABSTRACT: In the past, it was said that more animals more fertilizer, more fertilizer more grains, to explain the dialectic relationship between farming and animal husbandry. This is not sufficient to illuminate the importance of animal husbandry in the national economy, however. Animal husbandry products are required by departments of textiles, foods, leather-making, feather processing, chemistry, pharmaceuticals, and export trade. Just as Chairman Mao said: "An economy without animal husbandry is an incomplete national economy." The author urges that the position and function of animal husbandry should first be fully understood and acknowledged before related policies, scientific studies, and technological extension work are developed to promote and improve animal husbandry. Detailed measures to be adopted are offered.

AUTHOR: None

ORG: Chinese Agricultural Bank Survey Group

TITLE: "Attend to the Work of Reserving and Managing the Capital Accumulated by the Collective Body"

SOURCE: Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 6, 5 Jun 82 pp 30-31

ABSTRACT: A survey was carried out in Feb-Mar 82 in Xuxian of Anhui Province for the purpose of understanding the condition of management of the originally accumulated capital and the condition of accumulation of new capital of the collective bodies after the adoption of the system of guaranteed production by households of production teams. The situation in Xuxian Prefecture is found by the survey team to be greatly improved, but new problems have also surfaced. For example, on the basis of the total value of products, the ratio of reserved common capital is lower. The paper suggests the following: (1) A percentage must be reserved from the production income for the depreciation of fixed and liquid assets which still belong to the collective body. (2) Concrete methods of managing the common capital reserve, the depreciation fund, and the loans (including seeds, chemical fertilizer, and cash) borrowed by the household for production from the common reserve. (3) There should be a definite and reasonable ratio (3-5 percent is too low) to be taken as a common reserve and the banks and credit unions should help the communes and brigades manage the funds properly.

AUTHOR: LIU Chuntang [0491 2504 1016]
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LU Shiwei [4151 1597 3634]

ORG: All of Henan Provincial Academy of Agricultural and Forestry Sciences

TITLE: "Accelerate the Pace of Agricultural Development of the Region of the Huanghe-Huaihe Plain in Eastern Henan"

SOURCE: Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 6, 5 Jun 82 pp 40-41

ABSTRACT: The Huanghe-Huaihe Plain of eastern Henan is flat. The total area of 23 thousand km² has a thick layer of topsoil. The cultivated acreage is 22.2 million mu; with a population of 13.47 million, the per capita farm land is 1.8 mu. It is a base of wheat production of the province as well as one of the 4 cotton producing regions. After carrying out a survey of the region, the authors believe that its natural conditions of light, heat, and water are relatively superior, the potential for agricultural production is great, and the capital requirement for its development is not great. The following measures and procedures are suggested: (1) The first necessary item is afforestation. (2) Aridity and low organic matter content of soil should be taken care of by irrigation with water from Huanghe and enlarging the acreage of beans, which will help resolving the problem of firewood shortage as well; (3) Reconstructing the sandy fields; (4) All out development of animal husbandry; (5) Establishing bases of wheat, soybean, cotton, etc. in a suitable degree of concentration; (6) Raising the level of scientific cultivation. 6248

CSO: 4011/148

Cotton Comparisons

AUTHOR: JIANG Fukun [3068 4395 0981]

ORG: Shanghai Cotton Spinning Plant No 7

TITLE: "Investigation Into the Quality of Shandong Cotton"

SOURCE: Shanghai FANGZHI XUEBAO [JOURNAL OF CHINA TEXTILE ENGINEERING ASSOCIATION]
in Chinese Vol 3 No 4, 1982 pp 55-57

ABSTRACT: Shandong Cotton, Lumian No 1, is the high yield breed of 1980. After it was examined, accepted, and used by the cotton spinning plants, it was compared with unprocessed cotton produced in other regions. An investigation was carried out into its quality, its degree of maturity, and the reason for its low single fiber strength. Shandong Cotton is compared with 21 other raw cottons in terms of color, luster, fineness (m/g), maturity (coefficient), strength (g), breaking length (km), length of main body of fiber, evenness, and short staple. Aside from fiber whiteness, Shandong Cotton is generally half to one grade lower than the national cotton indices. The relationship between the number of days of growth of cotton bolls and such fiber properties as fineness, length of main fiber, single fiber strength, and coefficient of maturity is discussed. Analysis reveals that color absorption is the best with American Cotton and Hubei Cotton, mainly because their degree of maturity is better. Not only that the spinning plants have had the above problems with Shandong Cotton, it is also poor in terms of economic accounting, its only advantage of low foreign matter content notwithstanding. Its high yield in 1980 remains a matter to be congratulated. It should be possible to overcome the aforementioned problems.

6248

CSO: 4011/155

Cotton Disease Research

AUTHOR: None

ORG: Yunnan Provincial Cooperative Group For Comprehensive Prevention and Control Research of Cotton Fusarium Wilt and Verticillium Wilt

TITLE: "Summary of Research on the Comprehensive Prevention and Control of Cotton Fusarium Wilt and Verticillium Wilt in Yunnan Province"

SOURCE: Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3,25 May 82 pp 26-27

ABSTRACT: Cotton wilt is a destructive fungus disease, having been listed among the objects of inspection by the State. It had been discovered in Yunnan in scattered areas long ago but there was no spreading. After a large quantity of contaminated seeds were transferred into the province from Hubei in 1969-70, the diseases surfaced in 1970 and continued to spread rather fast after 1972. The yield dropped wherever the diseases touched. In Binchuan, it had dropped from the 72 jin/mu of 1966 to the 21 jin/mu of 1973, nearly the level at the time of the liberation. The cooperative research group was organized in 1972 to launch large acreage pilot fields to demonstrate comprehensive prevention and control measures centering upon the use of disease resistant breeds. The unit yield of the pilot fields rose from the 46 jin of 1975 to the 92.57 jin of 1980. In 1975-76, a general and sample survey was carried out in areas totaling 116,441.54 mu, of which the diseases were found to affect 95,392.59 mu, amounting to 81.92 percent. The number of diseased plants may be reduced from about 50 percent to 12-20.7 percent, when the cotton field is rotated with paddy rice crops for 1-2 years and down to 0.3-3 percent after 3 years of crop rotation with paddy rice.

6248

CSO: 4011/151

Cotton Yields

AUTHOR: None

ORG: Shanghai Municipal Cotton High Yield Culture Cooperative Group

TITLE: "Potential for Yield Increase Examined From the Viewpoint of the Yield Structure of Cotton"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 6, 5 Dec 81 pp 12-13, 19

ABSTRACT: The yield structure of cotton includes the number of bolls per mu, the boll weight, and the ginning turnout. There is a mutually dependent and mutually restricting relationship among the 3 factors, however. When the degree of effect of the 3 factors on the yield is clarified, the major direction of future efforts may be more correctly determined for the purpose of developing the yield increase potential. An experiment was carried out jointly by the Shanghai Municipal Academy of Agricultural Sciences, Shanghai County Institute of Agricultural Sciences, and Chongming Institute of Agricultural Sciences in 8 plots. Statistical analysis of the resulting yield, which coincides with the result of actual production in a large extent, reveals that when the breed is not changed, the variation of ginning turnout from year to year does not change the yield regularly because the variation is often the result of the weight of some defective seeds. The number of bolls per mu is found to vary less for transplanted cotton, compared with direct seeded cotton, while there is a greater variation in weight with plants transplanted into wheat mounds than those transplanted after the wheat harvest. Aside from

[continuation of SHANGHAI NONGYE KEJI No 6, 1981 pp 12-13, 19]

conditions of the weather and the management of water and fertilizer, the authors believe the one obvious problem at present is the previous crop. If the acreage of late maturing crops before the cotton crop continues to increase, the cotton will necessarily be late flourishing, the bolls be light in weight, and the yield low and unstable. In large area production, the number of bolls per mu is found to fluctuate a great deal. The paper concludes that the ratio of cotton acreage in fields of late maturing previous crops must be reduced so as to maximize the use of effective boll formation stage. While the system of cultivating seedlings for transplanting is being developed, the area of early maturing previous crops must be guaranteed for cotton culture for the purpose of developing fully the yield increase potential of cotton.

6248

CSO: 4011/153A

AUTHOR: ZHU Peihua [2612 1173 5478]

ORG: Shenyang College of Agriculture

TITLE: "Effect of Seeding Time on the Growth and Development and the Yield Structure of Millet"

SOURCE: Dalian LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 2, 15 Apr 82 pp 11-17

ABSTRACT: For the purpose of finding the suitable millet seeding time in Shenyang and Tieling regions, the author and colleagues experimented with seeding it on 15 Apr, 25 Apr, 5 May, 15 May, and 25 May to observe the morphology of the plants and to carry out growth and quantitative analyses. The experiment was repeated for 2 years from 1980-81. The results of the experiment indicate that the suitable seeding time in these regions is the period from 15 Apr to 5 May, with the days around the 25th of Apr the best of all. Moreover, these experiments also help clarify the distribution process of the assimilation products of millet of different seeding times and the physiological basis of the yield formation. The interrelationship between the growth and development principle of millet and the internal and external factors is thus understood. Results of the experiments are analyzed and reported.

AUTHOR: WANG Zemin [3769 3419 3046]

ORG: Department of Chemistry, Jilin University

TITLE: "A General Discourse of Trace Element Fertilizers"

SOURCE: Dalian LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 2, 15 Apr 82 pp 34-36

ABSTRACT: In the growth and development process, crops need a great deal of carbon, hydrogen, oxygen, nitrogen, phosphorus, and potassium and the quantity of molybdenum, boron, zinc, manganese, copper, etc. needed by the crops is very little and these are commonly called trace elements. Generally, soils are not deficient in trace elements but their contents in soils vary as much as 100-fold. Alkaline soils may easily be deficient in boron, zinc, copper, etc. and in acid soils, effective molybdenum often precipitates under the action of the free iron and lead in the soil. Moreover, when the crop repeating index is increased, the phenomenon of trace element deficiency may also appear. These trace elements have important biological function in the body of animals, plants, and microbes; they are components or activators of many enzymes in plant bodies and they affect mainly the metabolism of the plants. In China, experiments with trace element fertilizers have had a history of only 20+ years. In 1978, about 2,000 tons were applied to 25-30 million mu of cropland, amounting to 1.7-2 percent of the total acreage of the country. The application and function of molybdenum, boron, zinc, manganese, copper fertilizers in China are briefly and separately reported. The paper also discusses briefly signs of soil trace element deficiency and the danger of overabundance of trace elements.

AUTHOR: HUA Genlin [5478 2704 2651]

ORG: Crop Breeding Institute, Liaoning Provincial Academy of Agricultural Sciences

TITLE: "A Proposal for the Development of Yams in Chaoyang Prefecture"

SOURCE: Dalian LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese
No 2, 15 Apr 82 pp 40-43

ABSTRACT: In Chaoyang Prefecture, the yield of crops is unstable. In 1979, the year of the highest yield in the 30 years since the liberation, the average yield was 412 jin/mu but it dropped to 114 jin/mu in 1981, the year of the second to the worst harvest in these 30 years. The chief problem is aridity and the solution is soil and water conservation with emphasis on afforestation and grassland culture to establish a favorable ecological system and thus reinforcing men's ability of controlling nature. On the other hand, different crops react differently to aridity and soil fertility. In thin soils with no fertilizer, the yield of sweet potato or yams is higher than corn and under the condition of high fertility, the reverse is the case. Of the 7.8 million mu of cropland in Chaoyang Prefecture, more than 70 percent are mountain slope thin soils, which are suitable for yams. For the purpose of reasonable utilization of land to improve the economic benefits, it is absolutely necessary to restore and further develop yam production. The yield increase results of yam crops, their economic benefits, their action in improving the ecological environment, and their drought resistant and poor soil tolerance are described in some detail. The author urges the establishment of experienced technical teams and the extension of technical knowledge through broadcasting, journals, and newspaper articles to reestablish and develop a sweet potato culture in the prefecture, which the masses were forced to abandon during the decade of turmoils.

6248

CSO: 4011/128

Insecticide Characteristics

AUTHOR: WU Wenjun [0702 2429 0689]

ORG: Department of Plant Protection, Northwest College of Agriculture

TITLE: "Mechanism and Toxicological Characteristics of Carbamate Insecticides"

SOURCE: Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese Vol 19 No 2, Mar 82 pp 40-42

ABSTRACT: It is generally believed that carbamate insecticides suppress the acetyl cholesterol enzyme (AChE) in the body of the insect but for a long time, there have been 2 different views on this supressing action: By combining with the AChE to produce a stable compound and thus causing the AChE to lose its activity, or by a chemical reaction with the AChE to produce aminoformacyl enzyme and thus sup-pressing the AChE activity. Through analyses of the chemical reactions, the paper demonstrates that the shortcoming of the first viewpoint is the denial of the exist-ence of the aminoformacyl reaction; that of the second is to equate carbamate in-secticides with organophosphatide insecticides. Both are onesided. Through a de-tailed explanation of the 5 toxicological characteristics of carbamate insecticides, the paper further explains that the carbamate insecticides depend mainly on their very small K_d value while the organophosphatide insecticides depend upon their re-latively large K_2 value and relatively small K_3 value. The antidote for the lat-ter is; therefore, not effective for the former, when vertebrate animals are poi-soned by either of the two.

6248

CSO: 4011/154

AUTHOR: None

ORG: Grain Cultivation Office, Institute of Crops, Shanghai Municipal Academy of Agricultural Sciences; Technology Extension Station, Municipal Bureau of Agriculture

TITLE: "Opinions Concerning the Late Crop Rice Cultivation Technology in 1982"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 82 pp 1-3

ABSTRACT: In the suburbs of Shanghai, there are 2 million mu of late rice crop, amounting to 80 percent of the total autumn grain acreage. The yield has never been stable, averaging 599.4 ± 85.8 jin, a variation coefficient as high as 14.3 percent. The yield of the 2 recent years was extremely low, only 362 jin in 1980. Based upon the experience of some high yield units and related research data of the academy, the following suggestions are offered to change the low and unstable yield condition: (1) Older and stronger seedlings should be cultivated; (2) Hurry to transplant on 2-14 Aug because a yield reduction of 23 jin may result for every one day of delay beyond this period; (3) Transplanting quality should be guaranteed through satisfactory land leveling, basic fertilizer application, and reasonable density; (4) Carrying out scientific management of fertilizer and water as well as pest and disease control measures. Details are discussed under the above categories.

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ORG: All of Shanghai Research Institute of Plant Physiology

TITLE: "Research On the Problem of Strong Late Rice Seedlings in the Dual Crop System"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 82 pp 3-5

ABSTRACT: Several years ago, the authors carried out some surveys and studies concerning the quality of late rice seedlings in a dual crop system. Results of the research are summarized in the paper: (1) An important factor affecting the quality of seedlings is seeding density, mainly in terms of the dry weight and the N, P, K, sugar + starch contents of the seedlings; (2) Management of fertilizer and water, emphasizing the promoting as well as controlling function of water and fertilizer; (3) Applying flowing water for irrigation to reduce the water temperature $1-2^{\circ}\text{C}$ to combat the hot weather condition and to improve ventilation of the seedbed.

AUTHOR: HU Dian [5170 6611 1344]
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ORG: HU of Shanghai Municipal Bureau of Agriculture Extension Station; LU of Institute of Crops, Shanghai Municipal Academy of Agricultural Sciences

TITLE: "Investigation Into Problems Relating to Greenhouse Culture of Rice Seedlings"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 82 pp 6-7

ABSTRACT: Several years of experiment indicates that when rice seedlings are cultivated in the greenhouse the yield is basically the same as that of regular seedbed cultivation but some seeds, the seedbed, and some labor may be saved. The greenhouse requires a great deal of capital investment and the ripening time of the rice crop may be delayed, however. In order to resolve the problem of capital investment, seedling trays have been created to maximize the use of greenhouse space, plastic tents may be used for vernalization, some costly tools may be omitted and replaced with manual labor. The greenhouse is used only 3-4 months a year to cultivate early rice seedlings; therefore, in order to raise its benefits, measures should be adopted to cultivate edible fungi, vegetables, decorative plants, etc. during the remaining months of the year for comprehensive utilization and fast return of capital.

AUTHOR: WANG Huiying [3769 1920 5391]
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ORG: None

TITLE: "Preliminary Investigation Into the Yield Increase Effect of the Technique of Covering the Ground Surface of Cotton Field With Plastic Film"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 82 pp 16-18

ABSTRACT: Covering the ground surface of cotton fields with plastic film is known to have the effects of raising the temperature, conserving moisture, and promoting decomposition of soil nutrients. The technique has been gradually extended in the north where the frostfree period is short, the temperature is low, and the rainfall is sparse. Obvious yield increase effects have been demonstrated there. In 1981, the authors carried out a small area experiment with this technique in the experimental farm of the academy to study its yield increase potential and economic benefits in the region of Shanghai. The following results are observed: (1) As the cotton seeding or transplanting time is delayed, the yield increase effect of the technique becomes more obvious; (2) The cost of the plastic film is 36 yuan/mu and the income of the yield increase is only 28 yuan. It may appear that the technique does not pay, but such processes as hoeing, weeding, banking with soil, and fertilizer application are all omitted to cut the labor by 2/3. (3) Effect of the technique during a wet year remains to be studied further.

AUTHOR: CHEN Quanqing [7115 0356 1987]

ORG: Blast of Rice Group, Institute of Plant Protection, Shanghai Academy of Agricultural Sciences

TITLE: "Analysis of Causes of Blast Epidemics in the Suburbs"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 82 pp 23-25

ABSTRACT: In the region of Shanghai blast of rice affects mainly the neck of the spikes, occurring from the heading blooming stage to the starch filling stage. According to the 1973-80 statistics of the municipal Plant Protection Station, the affected acreage totals 9.123 million mu in these 9 years to cause a loss of rice grains of 20.561 billion jin. The paper analyzes the causes as follows: (1) Weak blast resistance of the late rice breeds; (2) Damaging weather in favor of blast epidemics; (3) Improper cultivation measures, including the quantity of nitrogen fertilizer inducing an imbalance of carbon-nitrogen ratio in the plant tissue, prolonged deep water level causing the soil to be deficient of air and anaerobic microbes to produce such toxic substances as hydrogen sulfide to ruin the root system of the rice plant and weaken its resistance. Concrete measures are suggested to overcome the above problems and to control blast epidemics.

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TITLE: "A Research on Several Feeding Techniques to Raise the Ratio of Lean Meat of the Hybrid Swine, Du x Shang"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 82 pp 34-35, 22

ABSTRACT: On 11 Jan - 11 Apr 1981 and 18 Jun - 12 Sep 1981, 2 experiments were carried out to compare the lean meat rate of the hybrid, Du x Shang of 3 feeding methods: limited quantity dry feed, limited quantity soupy feed, and dry feed on demand. Results of both experiments indicate that the lean meat rate is the highest when the porkers are fed with limited quantity of dry feed, being 30.45 and 30.76 percent lean meat. It is lower with dry feed on demand, being 29.61 and 29.93 percent. With limited quantity soupy feed, the rate for the first experiment is 30.55 percent, the second 29.86 percent. With the limited quantity dry feed, the butcher rate is slightly lower than the limited quantity soupy feed group, however. The lean meat rate of these 2 experiments is lower than the 2 experiments carried out previously (59.81 and 59.74 percent) because this time the period after weaning and before the experiment is lengthened. This just goes to show that in order to obtain the highest lean meat rate, feeding should begin when the porker weighs about 20 kg.

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CSO: 4011/150

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TITLE: "Reasonable Utilization of the Tillering Vigor of Hybrid Rice In View of the Tillering, Spike Formation, and Fruiting Characteristics of Nanyou No 6"

SOURCE: Wuhan HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCE] in Chinese No 6, Jun 82 pp 1-5

ABSTRACT: An obvious characteristic in the yield structure of hybrid rice is the high ratio of tiller spikes, amounting to about 80-90 percent of total and about 30-50 percent higher than regular breeds. Under the condition of low density, at the age of 16 leaves on the main stem, Nanyou No 6 is observed to tiller in every node except the elongated node of the main stem. The number of tillers of a single stalk is generally 15-20, appearing in various orders, locations, and times. Their rate of spike formation and spike quality vary with obvious regularity. For the purpose of acquiring the highest number of effective spikes, the ideal situation is to have 5-6 tillers from the first tillering phase and 3-4 from the second phase. Those of the third phase are generally not effective tillers. In order to achieve this situation, the seedling should have 3 large tillers at the transplanting time. The observational data of the tillering characteristic of Nanyou No 6 and a detailed cultivation procedure for obtaining the optimal number and type of tillers in order to produce the highest number of effective spikes are given.

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TITLE: "Research on the Multiple-crop Rotation System of Rice Paddies: I.The Overall Benefits of Multiple Crop Rotation System"

SOURCE: Wuhan HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCE] in Chinese No 6, Jun 82 pp 12-15

ABSTRACT: Since the early 50's, there have been several reforms of the cropping system of rice paddies. By the early 70's, a system of 2 crops of rice and one crop of green manure was formed to produce yield increases for rice but prolonged continuous cropping led to deterioration of soil physical-chemical properties and diseases, pests, and weeds multiplied. In the winter of 1977, a project was launched to experiment with a comprehensive system of crop rotation. Results of 4 years demonstrate that this system has brought an increase of 30.78 percent in terms of total farm product value, an increase of food grain from 620 to 710 jin per person, an increase of 31.1 percent in grain sales to the State, and an increase of soil organic matter from 1.7882 to 2.0597 percent. The system involves rotating crops in the following order: (1) lima bean - rice - rice; (2) wheat - bean- green manure - rice; (3) green manure- rice - rice; (4) oil crop - rice - beans; (5) oil crop - rice - rice; (6) wheat - beans - cotton. Conditions of utilization of light and heat, the conversion rate of effective solar radiation, nitrogen and organic matter contents of soil under this system of crop rotation are analyzed in some detail.

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TITLE: "Selection Breeding and Utilization of Topcross Corn to Adapt to the
Special Ecological Condition of High Mountains"

SOURCE: Wuhan HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCE] in Chinese No 6,
Jun 82 pp 15-16, 5

ABSTRACT: In the alpine region of Enshi, the elevation is 1,400-1,800 m, the temperature is low, the humidity is high, clouds and fog are unceasing, sunlight is scarce, and the frostfree period is very short. With these unfavorable factors the corn yield has been very low all the time. In recent years, many breeds have been introduced from the outside and several types of hybrids have been tried. Most of these have a growth and development period too long for the region and cannot withstand the low temperature. Since 1979, the Corn Research Group of Enshi School of Agriculture has carried out a project of comparing and testing 232 hybrid combinations and 28 superior ones were identified in the first year. Of these 16 are topcrosses. One of these, Chunmuying Xiaozihuang x R-64, was picked for demonstrations in many areas of a range of elevation of 1,400-1,800 m. Its yield was, in the 2 years of 1980 and 81, 500-700 jin/mu, 21.1-98.7 percent higher than the control which was a local hybrid, Xiaoying. Characteristics of this topcross and the reasons for its superior yield are discussed.

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Rice Experimentation

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TITLE: "A Study on the Cultivation Characteristics of Owan No 5: I. Yield and Growth and Development Characteristics of Owan No 5"

SOURCE: Wuhan Hubei NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 5, May 82 pp 1-4

ABSTRACT: Owan No 5 is a new late Geng rice bred out by the institute; it has been extended to more than 1 million mu within the province and the acreage is being continuously enlarged. For the purpose of promoting its yield increase effect in large acreage production, the paper introduces its agronomical characteristics, based upon the high yield cultivation and experimental data of 1981. When it was seeded on 20 Jun and transplanted on 23 Jul, in a density of 3 x 5 cun of basically 238 thousand seedlings/mu, there were 369.2 thousand spikes/mu on the average, at a spike formation rate of 69 percent; 52.2 grains/spike were obtained, at a fruiting rate of 84.1 percent. The grain test weight was 21.82 g/1000 grains. The final yield was 840.2 jin/mu at a grain to straw ratio of 0.91 : 1. An experiment for determining the effects of different seeding and transplanting dates (15, 20, 25, and 30 Jun) on its growth and development and its yield, and the reaction of this breed to temperature and light are also reported. Seeding it properly late for early transplanting of young seedlings is recommended and this characteristic is considered favorable for its extension in large areas.

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TITLE: "Economic Effects and Key Techniques of Dry Culture of Hybrid Rice Seedlings"

SOURCE: Wuhan HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 5, May 82 pp 6-9

ABSTRACT: When hybrid rice is used as the second late rice crop, it is easier to obtain high yield. It matures early and is suitable for winter seeding. With the triple-crop paddy system of Huanggang Prefecture, there is a large proportion of slow ripening early rice, however, while hybrid late rice requires an early ripening previous crop. because the present hybrids all belong to the Xian type, which is very sensitive to low temperature. Results of many years of experiments at the institute indicate that seedlings grown in a dry seedbed have higher nitrogen and starch contents to cause their nutritional growth period to be prolonged and their resistance to adverse environment strengthened. There is also a reduction of labor intensity. When these upland seedlings are transplanted, they grow vigorously to form large nutritional bodies in a short time. The soil of the dry seedbed must not be too tight and must have a proper amount of moisture to allow the seedlings to be pulled easily from the soil before transplanting.

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