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SOURCE Honan Jih-pao.

DIRECTIVE ON WINTER WHEAT CULTURE OF THE MINISTRY OF AGRICULTURE OF CHINA

/Summary: A Ministry of Agriculture directive on methods of increasing the production of winter wheat emphasizes that while high production records of wheat have been made recently, there are still much greater possibilities ahead. The long directive gives details on methods of plowing, cultivating, irrigating, fertilizing, and planting to increase production. It stresses taking advantage of modern Soviet practices and advocates deeper plowing and wider seed beds with less space between the rows. The directive also discusses types of fertilizers and methods of applying them. It stresses the importance of seed selection and preparation and the careful adherence to proper planting schedules./

In a recent directive on techniques to be employed in increasing winter wheat production, the Ministry of Agriculture of the Central People's Government states that general wheat production over the country now exceeds prewar production. Patriotic emulation programs have resulted in many new high production records and developed many new scientific skills. Nevertheless, there are still many situations which militate against the possibilities of wheat production increases. To assist in meeting the goal of the Central People's Government for increased production per unit of area and in accord with modern Soviet practice the following outline is offered:

1. Plowing

Early and deep plowing is an effective measure to combat drought and protects land newly opened to cultivation. Deep plowing improves soil texture, strengthens fertility, and preserves moisture. It is good for the wheat root system and effectively kills weeds. Most of the rainfall is in July, August, and September in from one third to three fifths of the wheat-growing area. Deep plowing and cultivation keep the fields in shape during the dry months. Deep plowing, 5-7 inches deep, will result in more moisture storage if it is done early.

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In one-crop areas a variety of cultivation methods should be used to take the greatest possible advantage of late summer rains. After rainfall the ground should be plowed deeply and crop roots and other vegetable matter turned under, but not harrowed. The land should be permitted to leach in the sun and wind. Later, according to rainfall conditions and grass growth, it should be given shallow cultivation. Before seeding it should be cultivated again 2-3 inches in depth. After that it should be harrowed and packed to produce uniformity.

In areas where two crops are produced in one year or three crops in 2 years, wheat may be interplanted with summer crops to take advantage of late summer rains.

In some areas the peasants have the habit of turning the ground to a depth of a foot or more with a spade every 2 or 3 years. This is a valuable practice.

In arid areas peasants should be encouraged to gather snow and ice in winter and put it on the land to build up the moisture content. South of the Yangtze River drainage should be controlled in preparation for wheat planting.

In the north, where the spring season is dry, harrowing will conserve soil moisture, provide soil ventilation, and promote growth of soil bacteria. At the same time, bacteria and insect eggs on plant leaves will be dislodged, and weeds will be killed, but wheat growth will be greatly promoted. Harrowing should begin in the spring as soon as the frost is over. Before harrowing fertilizer should be applied. After this hoeing will be unnecessary except when applying fertilizer, irrigating, or loosening the soil after a rain.

2. Close Planting

Close planting is an advantageous method of using the soil and preventing evaporation and weed growth. It is also a most effective means of increasing crop yields. A shortcoming in present methods is having the seed row too narrow and the rows too far apart. To increase the yield per unit of area it is necessary to widen the seed bed in the rows and narrow the space between rows.

In row-planting areas where the distance between rows is 6-8 inches the seed should be planted thicker and the rows closer. Where rows have been one to 1 1/2 feet apart interplanting of one or two rows should be practiced.

Where irrigation is practicable the Shantung method of planting in furrows about 6 inches wide and about 6 inches apart is a good one.

South of the Yangtze River in paddy rice country wheat should be planted in raised plots about 3 feet high for ease in draining. In upland areas where cotton is to be planted as a second crop, wheat should be planted in raised beds about 4 feet wide with a foot between rows to allow for interplanting of cotton.

By the various methods suggested above the amount of seed planted can be increased from 14 to 34 catties per mou. If sowing is early this can be reduced, if late, it should be increased. In upland soils less seed should be sown, in moist and fertile soils more seed should be sown. If spring wheat seed is used for winter planting more will be needed.

3. Use of Fertilizer

The initial and subsequent applications of fertilizer should be increased to maintain the wheat-nutrient requirements of the soil. The present practices of applying fertilizer are inadequate. All localities should set norms for basic and follow-up fertilizer application in accord with local conditions and should eliminate both insufficient fertilization and the blind overfertilization practices now found. Abundant wheat production is dependent upon setting the proper norms based on the nature of the soil, type of fertilizer, and needs of the growing crop after experimentation. Below are some principles, based on experience, to be followed:

A basic factor for good wheat production is the use of organic fertilizer. Stable manure mixed with phosphates and potassium is best for initial use to increase the resistance of wheat to cold, rust, and the tendency to lodge. From 2,000 to 5,000 catties per mou of such fertilizers should be plowed under before planting. If bean and oil cakes are used the application should not be in the seed rows since the chunks of cake might impede the growth of sprouts.

Follow-up applications of fertilizer should ordinarily be made twice. Before the wheat becomes green in the spring stable manure or bean cake should be used. From 50 to 100 catties of bean cake per mou may be applied. When the heads are being pollinated an application of quick-acting fertilizer such as night soil and ammonium sulphate should be made. According to the condition of the plants from 15 to 25 catties of the latter should be used.

The masses should accumulate urine to use as a final booster fertilizer (1,000 catties of urine are equally effective with 80 catties of bean cake). The urine should be mixed with two or three parts of water and poured along the rows.

Rules for the amount of fertilizer to be used on each occasion should be developed. In general wet soils require more, dry soils less fertilizer. Different types of seed require differing amounts of fertilizer. Norms for the proper proportions of nitrogen, phosphorus, and potassium should be established. In the initial application of fertilizer, 20-30 catties of bone meal and 50 catties of wood ash per mou should be added. The bone meal should be fermented with night soil and stable manure. Follow-up applications of fertilizer should be gauged according to the initial amount of fertilizer and the condition of the crop. In rich soil, where the initial application of fertilizer was liberal and the crops are vigorous, the follow-up applications of fertilizer may be lighter; in reverse situations, more should be used. In acid soils south of the Yangtze River more lime is needed.

4. Seed Selection and the Planting Season

High yield seed are necessary to insure abundant wheat crops. Formerly, in seed selection attention was paid only to yield, quality, and disease resistance. During the last 2 years the matter of the stiffness of the straw has become important because of heavier heads. Selection whould be on a five-year basis with all the above points in mind as well as the building up of a seed history. The results obtained by some model high producers have been attained by such methods.

China's seed selection program is still unstable and without a set pattern. Field inspection of heads and their appraisal must be stepped up, the percentage of cracked kernels must not exceed 3 percent, and the sprouting quality should not be below 75 percent. Seeds should be sunned 5-8 days before sowing to increase their viability. Seeds should be tested in roily water or brine to separate those made light by internal insects, insect eggs, and blasted seeds. This will insure greater uniformity of weight and more even growth. If necessary the best seeds should be selected by hand.

The seeding time of winter wheat should be early enough to permit development of leaf and root systems. However, there should be no more than three to five leaves before winter. If the planting is too early joints may develop and this is not desirable. Hence the proper gauging of the planting time is very important to production, although the climate and the type of seed are also important considerations. In some areas old traditions may be maintained.

North of Peiping sowing should be early unless spring types, such as Pi-yu and Pi-ma, are being used. These may be planted later. Likewise sowing should be later in fertile well-watered areas than in arid thin soils. Where double cropping is practiced the early crops should be such as to permit the proper winter wheat sowing season. Summer-fallow ground should be plowed deeply in the late summer and new soil protection processes followed. In a 2-year, 3-crop area every effort should be made to plow soon after the harvest of earlier crops. The paddy rice land south of the Yangtze River should be drained as soon as the rice turns yellow to permit sufficient drying for wheat sowing as soon as the rice is off the ground.

5. Control and Timing of Water Supply

In irrigated areas the proper control of water supply can promote high production. The best way is to ditch between the ridges and soak the soil. To prevent the tendency to lodge the plan of irrigating copiously once before planting is sometimes practiced, thus enabling the wheat to get a quick start and to develop a suitable root and leaf system before winter.

The second irrigation should follow the wheat's turning green in the spring. This irrigation should be copious and timed correctly to avoid both cold and drought. The third irrigation should come 10-15 days later depending on weather and soil conditions and should be less copious. The fourth irrigation with sufficient water to soak the soil thoroughly comes after the heads are pollinated. This will hasten growth. When the grain is in the milk the fifth irrigation should be made. Unless conditions are unusually dry no further irrigation will be needed.

Irrigation when the heads are heavy will result in lodging. If conditions of soil and rainfall are favorable three irrigations corresponding to the first, second, and fourth in the above schedule may be sufficient. In sandy soils and during especially dry weather more than five irrigations may be necessary.

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