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USSR Report

AGRICULTURE

(FOUO 8/81)



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REGIONAL DEVELOPMENT

UDC 631.452(470.31)

INCREASING PRODUCTIVITY OF LANDS IN THE NON-CHERNOZEM ZONE

Moscow DOKLADY VASKhNIL in Russian No 8, Aug 81 pp 3-6

[Article by VASKhNIL Academician T.N. Kulakovskaya: "Basic Directions for Raising Productivity of Land in the Non-Chernozem Zone"]

[Text] Among the important factors associated with achieving high land productivity, special value is attached to raising the level of soil fertility. "The dependence of a plant upon soil is becoming more clear and more obvious" wrote K.A. Timiryazev, "At the same time, this factor lies within man's control more so than the remaining factors [9].

A large amount of experimental data obtained from all of the soil-climatic zones confirms this most important statute of the agrobiological science. But it is of special importance for the non-chernozem zone, where the conditions and character of the soil formation processes have led to the formation of low productivity soils and considerable diversity in the soil cover.

As revealed (see Table 1) by the results obtained from 317 experiments carried out with grain crops, conducted in Belorussia on soils of varying degrees of fertility, the latter determines up to 40-50 percent of the total amount of yield from less tamed soils and this yield proportion increases to 80-85 percent for soils characterized by a high degree of continuous cultivation, which is created as a result of the purposeful effect of means of intensification.

The possibility of doubling or even tripling the yields obtained from sod-podzolic soils, by achieving optimum parameters for their fertility [3, 6, 8], has been proven by studies carried out by many authors.

The present system of accounting and control over the status of land areas, based upon the soil and agrochemical services and the results of studies associated with special fixed experiments and carried out at training grounds, has shown that under the conditions of increasing intensification a rather rapid change is observed in the condition and properties of the soils [2, 7].

At the present time, in republics in the western region and in oblasts of the non-chernozem zone of the RSFSR, work is being carried out in connection with the state's all-round program for raising the fertility of soils during the 1981-1990 Period.

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TABLE 1

Degree of Continuous Cultivation of Sod-Podzolic Soils, Fertilization and Grain Crop Yields in Belorussian SSR (1970-1977)

Агрохимические свойства (1) почва				Коэффициент оккультуренности почвы (4)	Количество опытов (5)	Урожай (ц/га) (6)		Разница (ц/га) от повышения оккультуренности (9)		Урожай за счет эффек- тивного пло- дородия почвы (%) (11)
рН (KCl)	P ₂ O ₅ (2) мг/100 г	K ₂ O	гумус (3) (%)			(7) контроль (без удоб- рений)	(8) NPK (200- 250 кг/га)	(10) контроль	NPK	
5.0	9.5	9.5	1.43	0.78	26	14.5	25.8	-	-	56.2
5.2	9.7	9.5	1.60	0.81	72	19.0	28.5	+4.5	+2.7	56.6
5.3	12.3	9.3	1.60	0.86	108	20.7	32.4	+6.2	+6.6	53.8
5.4	13.1	10.4	1.68	0.89	72	23.5	34.1	+9.0	+8.3	68.6
5.6	16.0	14.0	1.90	0.95	39	29.4	35.5	+14.9	+9.7	82.8

Key:

1. Agrochemical properties of soils
2. Milligrams per 100 grams
3. Humus (%)
4. Coefficient of continuous cultivation
5. Number of experiments
6. Yield (quintals per hectare)
7. Control (without fertilizers)
8. NPK (200-250 kilograms per hectare)
9. Difference (quintals per hectare) from increase in continuous cultivation
10. Control
11. Yield owing to effective fertility of soils (%)

The implementation of these programs is associated with determining the best variants for capital investments in measures aimed at raising the fertility of soils (hydraulic engineering land reclamation, anti-erosion and soil improvement measures, volumes of resources employed in the use of chemical processes and so forth).

In this regard, it will be necessary to have a clearer understanding of the system of expanded reproduction for soil fertility, as a most important part of the intensification of agricultural production.

A scientific substantiation for the problem of expanded reproduction for soil fertility was furnished in the works of K. Marx, who studied this problem in connection with differential rent for land. His main thesis held that soil fertility changes as the productive forces and social relationships become further developed and that the advantage possessed by land compared to other means of production lies in the fact that it is constantly being improved, assuming that it is handled properly, that is, the expanded reproduction of soil fertility takes place according to modern terminology [5].

The soil fertility achieved under the influence of intensification factors includes its initial condition as an integral whole; this comes about owing to the constant interchange of substances in the soil substrate and the conversion of chemical elements participating in the plant nutritional processes from one form into another. This is clearly traced both in the ratio of organic compounds found in the soil and those entering from without and in the ratio of the mineral substance in the soil, especially biogenic elements.

In examining the fertility of soils, not only as a purely natural category but also as one which is dependent upon the social and economic conditions, the possibility

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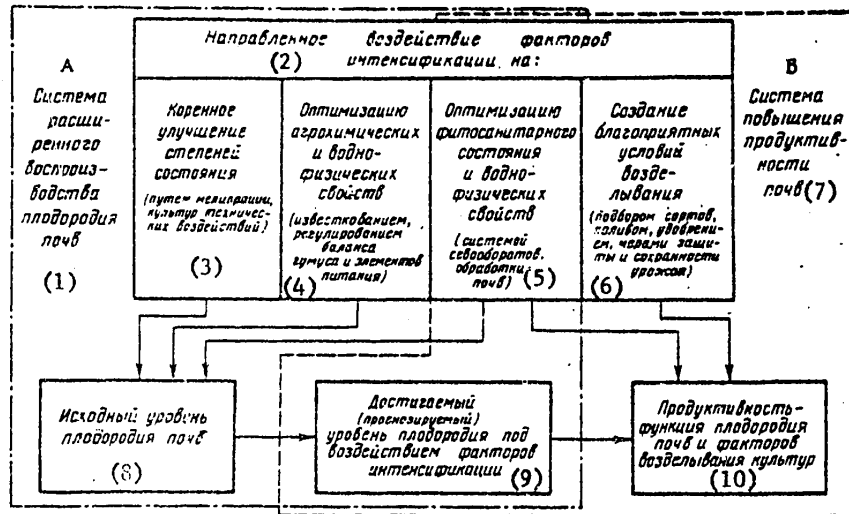


Diagram of Directed Increase in Soil Productivity Under the Influence of Intensification Factors

Key:

1. A -- System of expanded reproduction for soil fertility
2. Directed influence of intensification factors on:
3. Radical improvement of degrees of condition (by means of land reclamation, soil improvement influences)
4. Optimization of agrochemical and water-physical properties (lime applications and controlling humus and nutrient balance)
5. Optimization of phyto-sanitary status and water-physical properties (through system of crop rotation plans and soil cultivations)
6. Creation of favorable cultivation conditions (selection of varieties, irrigation, fertilization, measures for protecting and preserving crops)
7. Б -- System for raising productivity of soils
8. Initial level of soil fertility
9. Achieved (forecast) level of fertility under influence of intensification factors
10. Productivity -- a function of soil fertility and crop cultivation factors.

exists of furnishing a definite classification for those factors which bring about the highest agricultural crop yields (rice) for specific soil-climatic zones.

Emphasis should be placed upon the fact that soil productivity is a broad category and one which includes the fact or soil fertility, as reflected by us in the diagram. The system (Б) of productivity of soil resources is not only dependent upon but is also a function of the fertility of soils and the bioclimatic potential, determined by the flow of photosynthetic radiation and the totality of the weather conditions. It is also dependent upon an additional supply of plant nutrients available in the soil in the form of various fertilization agents and it is associated with the genetic potential of the crops under cultivation and their varieties and with the agrotechnical methods aimed at achieving the potential

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embodied in the soil and in the cultivated plants and which ensure protection of the crop against pests and diseases.

The system (A) of direct expanded reproduction for soil fertility includes the properties and condition of the soil medium, which under the influence of the factors of intensification bring about an improvement in the fertility of the soil.

The scientific-technical concept of soil fertility which we developed is aimed at revealing the causes of limited yields for cultivated plants, from the standpoint of soil factors, and disclosing the link between yields and quantitative evaluations of those soil properties which determine the status of soil fertility.

Both our own as well as foreign researchers have devoted a great amount of attention to the problem of raising the fertility (soil improvement) of soils. Nevertheless, for many long years the characteristics for soil fertility have been mainly of a descriptive nature and only during the past 15-20 years have studies along these lines made it possible to provide quantitative expressions (evaluations) for soil fertility levels [1, 4].

In conformity with the mentioned statutes, the system of measures for the expanded reproduction of soil fertility can be divided into three large groups that are closely associated in terms of their mutual effect on the soil medium.

The first group of factors limiting the fertility of soils has to do with the degrees of the condition of the soils, with the degrees requiring radical action.

Sod-podzolic soils in a number of areas are characterized by an excessive amount of water-logging (swampiness), erodibility and obstructions and in the case of many feed lands -- by heavy undergrowth.

Thus, for example, approximately 25 percent of the territory in the western region of the non-chernozem zone is characterized by excessive dampness, more than 15 percent of the agricultural territory is subject to erosion and 10 percent of the arable land contains obstructions, with small fields predominating on the whole (10-15 hectares); in some rayons the average size for a field does not exceed 5 hectares.

Studies carried out in Belorussia have shown that 38 percent of the overall reserve available for raising the fertility of soils (see Table 2) is employed for controlling these limiting factors.

In the case of sod-podzolic soils, a second and more important group of factors limiting fertility is that of complexes of internal soil properties, of which the most important are: humus content, status of soil acidity, nutrient supplies, complex of water-physical properties of the soil.

The intensity of a change in the properties of soils and in the level of their continuous cultivation is determined by the creation of a closed cycle of substances, by an increase in all of the elements required through the use of chemical agents and particularly organic substances, lime, phosphorus and

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potassium, by a reduction in the unfavorable effects of equipment on the physical properties of soil and by control over the moisture supplies in the soil.

TABLE 2

Reserves for Growth in Soil Fertility on Arable Lands in the Belorussian SSR (points)

Область (1)	(2) Балльная оценка		(6) всего	(5) Резервы роста		
	фактическая на 1/1 1976 года (3)	перспектив- ная (4)		(7) в том числе за счет		
				оптимизации агрохимических и водо-физических свойств (8)	гидротехнической мелиорации и агролесораздела (9)	противоэрозийных и культурно-технических мероприятий (10)
Брестская (11)	38	49	11	7,8	1,9	1,3
Витебская (12)	40	55	15	7,5	1,9	5,6
Гомельская (13)	38	47	9	5,9	2,0	1,1
Гродненская (14)	41	51	10	6,2	1,0	2,8
Минская (15)	41	54	13	9,2	1,8	2,0
Могилевская (16)	40	53	13	9,7	1,5	1,8
Всего по БССР (17)	40	52	12	7,5	1,8	2,7
То же в % (18)	—	—	100	62,0	15,0	23,0

Key:

- | | |
|---|--|
| 1. Oblast | 10. Anti-erosion and soil improvement measures |
| 2. Point evaluation | 11. Brestskaya |
| 3. Actual for 1 January 1976 | 12. Vitebskaya |
| 4. Long-term planning | 13. Gomel'skaya |
| 5. Reserves for growth | 14. Grodnenskaya |
| 6. Total | 15. Minskaya |
| 7. Including by means of | 16. Mogilevskaya |
| 8. Optimization of agrochemical and water-physical properties | 17. Total for BSSR |
| 9. Hydraulic engineering and agricultural land reclamation | 18. Ibid in % |

Only approximately 20 percent of the arable soils in Belorussia and Latvia, 30 percent of the soils in Lithuania and Estonia and no more than 8-10 percent of the sod-podzolic soils in the central zone of the RSFSR can be classified as highly cultivated soils in terms of these indicators. In connection with the overall reserve for growth in soil fertility in Belorussia, this factor accounts for a decrease of more than 60 percent, with considerable fluctuations for individual oblasts throughout the republic and especially so for certain rayons and farms (see Table 2).

A transformation or change in soil fertility or an increase in the degree of its continuous cultivation, to the point where no limit is placed upon the requirements of highly intensive crops and plant varieties, is achieved through the effect generated by intensification means on the first two groups of factors that limit plant yields.

The third group of factors aimed at maintaining and realizing the fertility inherent in a given soil consists of a system of crop rotation plans and soil cultivations

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which, as is well known, promote improved fertility by improving the phytosanitary condition of the soil, the entry into the soil of post harvest and root residues (crop rotation plans) and the conditions for transforming them (cultivation of the soil).

A brief description of the system of expanded reproduction of soil fertility underscores the need for increasing scientific-research work associated with evaluating the fertility factors and fully taking them into account when developing all-round programs for raising the fertility of soils. A clear quantitative evaluation not only of the yields but also of the yield forming factors will make it possible to control in a purposeful manner the system for regulating soil fertility.

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DEVELOPMENT, INTRODUCTION OF NEW GRAIN VARIETIES FOR NON-CHERNOZEM ZONE

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 8, Aug 81 pp 7-10

[Article by B.S. Kurlovich, Deputy Chairman of the Crop Husbandry Section for the Breeding and Protection of Plants of the VASKhNIL Branch for the Non-Chernozem Zone of the RSFSR: "Creation and Introduction of New Grain Crop Varieties"]

[Text] The Basic Directions for the Economic and Social Development of the USSR During the 1981-1985 Period and for the Period Up To 1990 called for the accelerated development of breeding and seed production. At the present time, with the structure of the VASKhNIL Branch for the Non-Chernozem Zone of the RSFSR, the breeding of grain crops is being carried out by a breeding center for grain crops of the Scientific-Research Institute of Agriculture for the Central Regions of the Non-Chernozem Zone, by complex breeding centers for crop husbandry of the Northwestern NIISKh [Scientific-Research Institute of Agriculture], the NIISKh for the Northeast and the Urals NIISKh and also by ten oblast and republic agricultural experimental stations.

During the Tenth Five-Year Plan the plant breeders carried out work in connection with creating winter rye varieties which combine high productivity, winter hardiness, good grain quality and resistance against diseases and lodging. An expansion took place in studies aimed at breeding barley and spring wheat, developing methods for high quality agricultural practices and observing the genetic and physiological-biochemical principles of low growth, winter hardiness and immunity. Cooperation in the work of plant breeders representing different scientific institutes was strengthened. Thus individual programs are being carried out: the breeding of winter rye at the Northwestern NIISKh and the NIISKh for the Northeast; barley and clover at the Arkhangelsk Agricultural Experimental Station and at the Northwestern NIISKh. Joint work is being carried out successfully in the breeding of barley and spring wheat by the NIISKh for the Central Regions of the Non-Chernozem Zone and a number of experimental stations in the central region. Since 1979 the Northwestern NIISKh, the VNII [All-Union Scientific Research Institute] for the Protection of Plants and the VNII for Crop Husbandry have together been selecting immune initial forms and creating provocative backgrounds for evaluating the resistance of the grain crop breeding material to root rots and various types of rust. In the technological laboratories at all of the breeding centers, studies are underway on the milling-baking qualities of grain and the quality of the protein. The plant breeders are working in concert with the geneticists, cytologists, physiologists, biochemists and plant protection

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specialists. The institutes are converting over to accelerated breeding methods involving the use of artificial climate units. A breeding complex has been introduced into operations at the NIISKh for the Central Regions of the Non-Chernozem Zone.

At the present time, in oblasts and autonomous republics throughout the zone, there are regionalized varieties of grain crops having a potential cropping power of 40-50 quintals per hectare and in some instances even more. High productivity and resistance against lodging are characteristics of the winter rye varieties Voskhod 1 and Voskhod 2 (bred at the NIISKh for the Central Regions of the Non-Chernozem Zone and Yaroslavna and Omega (bred at the Northwestern NIISKh). Voskhod 1 has already been regionalized in 16 oblasts of the RSFSR, Belorussia and the Latvian SSR. In 1980, the economic effect realized from its introduction into operations amounted to more than 3.5 million rubles. The Yaroslavna variety is distinguished by winter hardiness, resistance against lodging and large grain. At strain testing stations in Leningrad Oblast, it surpassed the standard (Gibrid 173) in terms of grain yield by 5-10 quintals per hectare. In 1978, at the Northwestern NIISKh, this variety furnished 61.4 quintals of grain per hectare, thus underscoring its high potential possibilities. In 1980, Yaroslavna was included in a list of promising varieties and in 1982 it will be regionalized in Leningrad Oblast. The Omega variety also produced fine results during state strain testing. It is better than Yaroslavna in terms of cropping power and it is distinguished by higher winter hardiness. For 1981, the Omega variety was recognized as promising for Leningrad Oblast.

Zarya winter wheat, which is regionalized in Ivanovskaya, Moscow, Bryanskaya and Vladimirskaia Oblasts and recognized as promising for Gor'kovskaya, Smolenskaya and Kaluzhskaya Oblasts must be employed more extensively in the non-chernozem zone. It is distinguished by exceptionally high resistance against loose smut.

During the Tenth Five-Year Plan, the regionalized since 1975 Moskovskaya 35 spring wheat variety (bred at the NIISKh for the Central Regions of the Non-Chernozem Zone and the Ryazan' Agricultural Experimental Station) began to be used more extensively. In addition to high cropping power (up to 60 quintals per hectare), it possesses high technological grain qualities, a raised protein content, resistance against lodging, diseases and pests and it responds well to applications of mineral fertilizers. The economic effect realized from the introduction of this variety into production already amounts to more than 50 million rubles.

In 1979, the new Kodina intensive type variety, with its cropping power of up to 74 quintals per hectare, was turned over for testing. The intensive type variety Leningradka, created at the Northwestern NIISKh, has been regionalized in 23 oblasts and autonomous republics. If the agrotechnical requirements are observed and adequate amounts of fertilizer are applied, its yields can reach 50-60 and in some instances 70 quintals per hectare.

The Scientific Research Institute of Agriculture for the Northeast has had considerable success in the breeding of barley; the following varieties have been created here: Luch, Sever 1, Viking, Agat, Dar Vyatich. The introduction of the Luch variety into production operations, with its cropping power of up to 90 quintals per hectare, is providing the country with more than 40 million rubles

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worth of additional product. It has been regionalized in 12 oblasts and autonomous republics of the USSR and it is undergoing international tests in CEMA member countries. The Sever 1 variety is distinguished by its early ripening capability. Its use as a predecessor crop for winter rye makes it possible to raise the concentration of grain crops in crop rotation plans, to increase the gross production of grain and it also serves to guarantee that grain will be obtained in Kirovskaya Oblast.

The extensive work being carried out in seed production is making it possible to supply original material annually to the scientific institutes and seed production farms in the non-chernozem zone, the Urals and Siberia, while the recommendations developed for the cultivation technology for these varieties are making it possible to obtain 60-76 quintals per hectare under production conditions. The Krasnoufimskiy 95 variety (Ural'sk NIISKh) has been regionalized since 1975. In 1981 the plans called for the Belogorskiy variety (Northwestern NIISKh) to be regionalized for Leningrad Oblast. This intensive type and highly productive variety is distinguished by a raised cold hardiness and drought resistance and it furnishes stable yields from year to year.

In 1979, this institute turned the new mid-season ripening variety Atlant over for state strain testing and in 1980 -- the early-ripening Iyul'skiy variety, which ripens 8-10 days earlier than Moskovskiy 121.

The following varieties of oats are considered to be very promising for extensive introduction into production operations: Skorospelyy and Kirovskiy (NIISKh for the Northeast, Ruslan (NIISKh for the Central Regions of the Non-Chernozem Zone) and Ural and Belozernyy (Ural'sk NIISKh). During the Tenth Five-Year Plan, the Northwestern NIISKh turned over for state strain testing the new oat varieties Oktyabrenok and Izumrud, the NIISKh for the Central Regions of the Non-Chernozem Zone -- Nemchinovskiy 2 and Drug, the Ural'sk NIISKh -- the Yubileynyy 60 variety and the NIISKh for the Northeast -- Falenskiy 2, Falenskiy 3 and Falenskiy Kormovoy.

However, the production operations are confronting the plant breeders with new tasks. Owing to the unstable nature of farming conditions in the non-chernozem zone, a requirement exists first of all for early ripening varieties which are suitable for mechanized harvesting, which are stable in the face of unfavorable weather conditions and which have stable seed productivity.

In recent years the plant breeders have become attracted by the creation of late-ripening varieties which, as a rule, produce high yields on plots but under production conditions they either do not ripen or they remain unharvested since they ripen during the period of inclement autumn weather. In this regard, the farms must be supplied with more early-ripening varieties, especially oats, spring wheat and buckwheat.

Since crop husbandry in the non-chernozem zone is directed mainly towards feed production, a considerable increase should take place in the breeding of grain forage crops (barley, oats) and also pulse crops (peas, vetch, lupine). The problem of increasing the protein content in grain forage crops and especially improving its quality is particularly acute. During the next few years a requirement will exist in all of the plant breeding centers to carry out work associated with the creation of varieties which are resistant to adiabatic stresses and, in particular, to anomalous soil conditions. There is an urgent need in production operations

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for varieties which produce high yields not only on normal but also on acid soils, the area of which unfortunately is still not decreasing within the zone. The breeding of varieties which are responsive to fertilizer applications warrants special attention. It must be carried out on an all-round basis and in accordance with a single plan: variety - fertilization - yield. Similar work must be carried out aimed at raising the resistance of varieties to herbicides. In the case of immunity, the chief task of the specialists continues to be that of creating, jointly with the plant breeders, varieties which are resistant to the more harmful diseases and pests. This work must be carried out based upon an extensive search for donors of resistance, studying the structure of strains of pathogens and determining their virulence and evaluating the immunological properties of plants using the methods of induced immunity against diseases and pests.

In order to improve plant breeding in the zone, it will be necessary to concentrate forces and resources on such leading crops as winter rye, grain forage and pulse crops; carry out work aimed at achieving further specialization among the plant breeding institutes; strengthen the logistical base of the institutes and experimental stations. At the present time, the construction of facilities for plant breeding centers is being carried out in a very unsatisfactory manner at a majority of the institutes. Many oblast and republic agricultural experimental stations are still carrying out plant breeding work on an independent basis, in that they lack the proper logistical base and skilled cadres of personnel. It is difficult under such conditions to achieve noticeable results and thus it is not surprising to learn that at some stations not one variety has been created over a period of 10-15 years or more. The only correct means for raising the efficiency of plant breeding work at experimental stations is that of close collaboration between them at the plant breeding centers and the carrying out of joint scientific studies with them based upon common programs and methods and creative collaboration.

The return realized from the work performed by plant breeders is dependent to a decisive degree upon how rapidly the new varieties reach the kolkhoz and sovkhov fields and upon how quickly their potential is realized on these fields. Seed production plays an important role in this regard; it represents a continuation of the work performed by the plant breeders. However, not all of the new varieties are being introduced rapidly into production operations and this is the result of shortcomings in the seed production operations. Seed production has still not become an independent branch. Indeed, many specialized seed production farms are only listed as such, when in fact they are only multi-branch rank and file farms. Serious difficulties of an organizational nature are encountered when converting seed production over to an industrial basis. Such difficulties are associated mainly with firmly established specialization by a majority of the sovkhovs and kolkhozes in the zone in the production of animal husbandry products and also with a low level of cropping power. The problems concerned with increasing the specialization of many experimental-production farms of scientific institutes in the production of elite seed are being solved very slowly and, as a result, they are not being provided with adequate areas for the production of seed for buckwheat, pulse crops or forage crops.

It bears mentioning that each new variety requires special agrotechnical measures. If these measures are not observed, the new variety may produce a yield lower than the old variety. Many examples could be cited showing how farms, in recent years,

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replaced 2-3 varieties and still did not achieve higher yields; this was the result of either failure to observe the agricultural practices recommended by science or low soil fertility. In this regard, the specific conditions of an oblast, rayon or farm must be considered when selecting varieties. In some instances, the same farm must have 2-3 varieties in its plantings representing different requirements with regard to soil fertility. In order to obtain high yields, a new variety must be grown in soil that was prepared in a high quality manner, good seed must be employed and use must be made of complex mechanization and chemical processes, that is, the cultivation technology recommended by the scientific institutes must be adhered to.

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REGIONAL DEVELOPMENT

ESTONIAN SSR'S MINISTRY OF HORTICULTURE UNVEILED

[Editorial Report] Tallin SOTSIALISTLIK POLLUMAJANDUS [SOCIALIST AGRICULTURE] in Estonian No 18, September 1981, carries an article on pages 674-675 on a "new" Ministry of Horticulture. The article, entitled "A New Ministry--Production, Marketing, Processing" identifies the author, Harald Mannik, as the Estonian SSR's minister of horticulture. The article states that the "Estonian SSR's Ministry of Horticulture is a new system which is supposed to integrate the cultivation of garden produce in specialized sovkhoses as well as state purchases, storage, processing and realization with the planning and financing of horticultural work." Citing the food program enunciated at the 26th CPSU Congress, the article goes on to state that "this has special significance for the Estonian SSR because, proceeding from the norms of wholesome nutrition, we should be consuming considerably [as published] more fruit and vegetables than hitherto." Mannik cites the need to use industrial technology to raise the needed quantities of vegetables, fruit and food potatoes. He urges the introduction of hardier, more disease-resistant plant varieties.

Turning to consumer-related issues, the minister notes that "up to now the processing of garden produce and its marketing have unfortunately been left wanting. It is being demanded that we rapidly improve the situation in this area, and a compact system will create better opportunities for this than previously existed. Both the food industry as well as industrial agricultural processing sectors are pledging to take steps to address the selection of produce available over shop counters."

Mannik goes on to discuss the organization of wholesale and retail trade vis-a-vis produce. He urges individual horticulturalists and cooperative members to join together to solve their "extremely complicated problems."

Citing concrete data, Mannik states that "in the previous five-year plan, each of our sovkhoses sold an average of 2,800 tons of vegetables; in the current five-year plan, this index will increase to 4,000 tons, and in a few sovkhoses it will exceed 10,000 tons." He notes that "in the first half of this year the plan for the sale of early vegetables was fulfilled by 127 percent... the goal for meat sales was fulfilled by 101 percent."

Finally, Mannik deals with the "building problem." He notes that "two large warehouses with adjustable climate control systems, each having a 10,000-ton capacity, are under construction." The creation of a special motor pool to insure the prompt delivery of produce to the shops is also encouraged.

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AGRO-ECONOMIC AND ORGANIZATION

FOOD PROGRAM, ORGANIZATIONAL STRUCTURE OF FOOD COMPLEX REVIEWED

Moscow VOPROSY EKONOMIKI in Russian No 7, Jul 81 pp 20-30

[Article* by Vladimir Potapovich Mozhin, corresponding member of VASKhNIL and director of the Central Scientific Research Institute of Economics of RSFSR Gosplan, El'mira Nikolayevna Krylatykh, doctor of economic sciences and professor at Moscow State University imeni M. V. Lomonosov, and Anatoliy Nikitovich Lifanchikov, candidate of economic sciences and department head at the Central Scientific Research Institute of Economics of RSFSR Gosplan: "The Food Program and the Structure of the USSR Food Complex"]

[Text] The Accountability Report of the CPSU Central Committee to the 26th party congress points out that "the party is advancing a broad program for further improvement in the well-being of the people in the 11th Five-Year Plan and the 1980's as a whole." Paramount importance in this is assigned to reliably providing the population with a broad assortment of high-quality food products. The production and consumption of food products has risen steadily in recent five-year plans. In the last five-year plan, however, the growth rate of production of agricultural output slowed down and difficulties arose with supplying animal husbandry products to the population. This was related to unfavorable weather conditions. To achieve a fundamental solution to the problem of uninterrupted supply of food products to the population, it has been recognized as necessary to develop a special food program which should serve as the basis for planning, financing, and managing the unified agroindustrial food complex. The program measures outlined for the current five-year plan are an organic part of the State Plan of Economic and Social Development of the USSR for 1981-1985.

A large volume of technical-economic and socioeconomic substantiation and calculation must be done during development of the food program. Many scientific institutions and planning agencies are working on the food program, so it is essential to develop a methodological foundation for their joint work.

The food program is one of the special-purpose comprehensive national economic programs. The ultimate goal of the special food program is full satisfaction

* The article is offered as a formulation of the problem.

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of public need for all types of food products in conformity with scientifically recommended diets. The immediate objective is to insure a stable food supply to the population in all parts of the country, to create reliable reserves, and to increase the quality of products. When establishing the goals of the food program we should envision lessening dependence on importing food products which can be efficiently produced in the country.

Because the goal is stated as satisfying the need for food products, the question of how to calculate this need arises. There are a number of methodological approaches to estimating this figure, including the normative method which involves determining physiological needs for food substances and working out balanced diets on this basis, as well as the method based on an estimate of solvent demand for food products. In this case demands can be viewed as a function of personal monetary income with different elasticities of demand for particular products depending on the growth rate of income. It seems to us that both approaches must be used to frame the quantitative indicators of the food program.

The norms of a balanced diet should be the basis for establishing the strategic goal and long-term developmental trends in the production of the most important food products. Estimates of solvent demand may be used to work out guidelines for development in medium-range planning and to supplement the dietary norms. The main goal should be broken down into a number of sub-goals and particular tasks in order to obtain quantitative estimates of needs and to determine the structure of the food program.

Various foods are needed to maintain normal metabolism, form the tissues of the organism, and regulate the process of supplying energy to the person. The most important result of scientific research in recent years has been the theory of the balanced diet, from which it follows that optimal functioning of the organism requires not only adequate amounts of energy and protein, but also observance of definite proportions among many ingredients of the diet, each of which has a specific role in metabolism. Despite their great diversity, it is customary in economic calculations to consider five basic food groups, which are the basis of the diet: proteins, including both proteins of agricultural (animal and plant) origin and the proteins in the meat of fish and sea animals; fats, including animal, fish, and vegetable fats; carbohydrates, including simple sugars (fructose, glucose, and others), disaccharides (saccharose, maltose, and lactose), and polysaccharides (starch, cellulose, and others); vitamins; minerals, other substances, and water. In conformity with this the overall goal of meeting public needs for food products can be broken down into a series of detailed sub-goals which includes satisfaction of public needs for the basic foods: proteins, fats, carbohydrates, vitamins, and mineral and other substances.

An orientation to satisfying human needs for food substances greatly expands the possibilities in searching for alternate ways to satisfy a particular need. For example, the animal protein requirement can be met with different variations of consumption of meat, meat products, fish, fish products, and dairy products on the condition that the diet is balanced in terms of essential amino acids.

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Problems of maximum receipt of protein or minimum expenditures of public labor can also be solved with different combinations of consumption of the meat of cattle, hogs, sheep, and poultry. Furthermore, it is possible to work out alternatives for using different types of raw materials to produce the same food products. For example, starch can be obtained from potatoes or from grain. Each of these alternatives, while solving the problem of meeting a certain need, has different levels of expenditures and efficiency.

The set of goals involved in providing the population with the most important dietary elements and food products should, in our opinion, be the basis of special first-level sub-programs. We suggest the following basic sub-programs: supplying public needs for proteins, fats, sugar and other carbohydrate-containing foods, fruits, berries, and vegetables and rationalizing the structure of production and consumption of drinks.

The question of the priority of particular sub-programs is difficult. During the last five-year plan the growth in per capita consumption of a number of food products slowed down, and for some it practically stabilized. The dietary level now attained does not fully provide the population with animal protein, vegetables, fruit, and berries. At the same time, the consumption of grain products, sugar, and potatoes, which means food products containing large amounts of carbohydrates, exceeds rational norms. And although the total caloric value of the actual diet provides for the energy needs of the population, its imbalance in terms of basic food substances prevents us from considering it fully satisfactory at the present time.

Carrying out all the sub-programs will demand enormous capital investment and other types of resources, most of which are in limited supply. Therefore, we must identify the programs that are most important and concentrate our efforts on them. In the first stage of working out the food program it seems wise to give preference to two special-purpose sub-programs: to supply the population with meat and dairy goods, and to supply fruit and vegetables.

We must also take up the question of the consumption of alcoholic beverages. Significant resources of agricultural raw material, labor, and the like are taken for the production of alcohol. Despite a number of measures the consumption of alcohol has not dropped in recent years. In the future the structure of consumption of alcoholic beverages must be modified in the direction of a significant increase in the proportion of grape wine, above all champagne and high-quality dry and semidry wine. This will require further development of viticulture, an expansion of lands given to vineyards, a rise in their yield, and an increase in capital investment for the development of viticulture and wine-making. This is not only a major economic problem, but also a social problem. Within the food program this problem should be reflected in a special sub-program to rationalize the consumption of alcoholic beverages.

In addition to the special sub-program the structure of the special-purpose comprehensive food program should also single out what are called "service" sub-programs. The most important of the common sub-programs should be, in our opinion, the following: raising soil fertility and improving the use of land

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resources; full mechanization and electrification; development of the non-production infrastructure and solving social problems in the countryside; development of scientific research (in the fields of agriculture and the sectors that serve it) and raising its efficiency; developing socialist economic integration and cooperation in the production of food products; and, foreign trade in agricultural raw material and foodstuffs.

Combining special-purpose programs with assignments to supply them with resources makes the food program a special-purpose (tselevoiy) and comprehensive program. Within the framework of the food program priority elements should be identified and distribution of resources must be organized in such a way that it is possible to carry out the necessary structural changes in the entire food complex.

The food complex, for which the food program is becoming the basis of development, is a part of the national agroindustrial complex. In terms of gross output the food complex accounts for 74-76 percent of the agroindustrial complex. The food complex should also include production, not related to the agroindustrial complex, which uses the wealth of the world ocean and internal bodies of water for food and fodder needs. According to rough estimates, the total volume of gross output of the food complex was 260-280 billion rubles in 1979, and about 150-170 billion rubles in final output.

Three spheres can be identified within the structures of the food complex that define its functional structure. The first sphere is the production of means of production for all the sectors. It includes tractor and agricultural machine building, machine building for animal husbandry and feed production, the production of equipment for land improvement work, the production of equipment for the food industry, trade, and public catering, the production of specialized motor vehicle transportation, shipbuilding (for the fishing industry), the production of agricultural and other accessories, the production of containers, the sectors of basic chemistry (for production of mineral fertilizer and chemical plant protection means), construction for all spheres of the food complex, the mixed feed and microbiological industry, and the production of special equipment and instruments for the sectors of the food complex. The second sphere is the production of agricultural (crop farming and animal husbandry) output, fishing and fish culture, salt mining, raising pedigreed stock, nursery plantations, raising seed material for pond culture, and various other types of activities. The third sphere comprises the processing of agricultural and other output of plant and animal origin and production of the final output of the complex. The sectors of food (with the exception of the perfume-cosmetics and tobacco sector), meat and dairy, fish processing, and flour-bran industries should be classified with the third sphere.

As the food complex develops there is an increase in the role of infrastructural elements that affect primary production and its efficiency as they gradually become independent sectors. Therefore, it is useful to single out one more structural element in the food complex. This is the production infrastructure of the complex, or the fourth sphere. It includes systems for production-technical support and service to agriculture; material-technical

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supply to the industrial sectors of the food complex, procurement of agricultural output and the elevator system; storage of output; transportation and the road system; specialized retail trade; communications and information-computer services; and, applied scientific research and design for all spheres of the food complex.

The product structure of the food complex is a set of vertically integrated sectors, the product subcomplexes. Each vertical link connects technologically and economically interrelated types of activity of the food complex spheres and infrastructural elements that are integrated to achieve the final objective of meeting needs for particular types of food products. Product subcomplexes must be singled out within the structure of the food complex in order to substantiate the economic proportions which are defined by technologically interrelated sectors, subsectors, and types of activity in the process of producing and selling the final output.

Each special sub-program is a tool for managing a set of intersectorial product complexes, particular sectors, and types of activity. The set of sub-programs, subcomplexes, and sectors that insure achievement of the established goals may appear as follows: sub-program to supply protein-rich products to the population, including programs for the development of the meat-dairy and fish subcomplexes; sub-program for development of the subcomplex to produce and process vegetable oils and animal fats; sub-program to supply the population with carbohydrate-containing foods, including sub-programs for the development of the grain product subcomplex, the sugar beet subcomplex, and the potato products subcomplex; sub-program for the development of the fruit-vegetable subcomplex; sub-program to rationalize the production and consumption of beverages, including the program to develop the vineyard-winemaking subcomplex, the beer and non-alcoholic beverage subcomplex, and the tea subcomplex.

But what should be the structure of the product subcomplexes, which in this case are considered to be objects of planning? In the opinion of some economists, it is best to include all the sectors of the first, second, and third spheres and the production infrastructure of the food complex in the product subcomplex. The most highly debated point is the issue of including the sectors that produce means of production for the second and third spheres of the food complex in the product subcomplexes. In our opinion, we should only deal with narrowly specialized sectors that produce means of production for a definite subcomplex. For this reason it seems advisable to include the sectors of the second and third spheres of the food complex in the product subcomplexes, but from the sectors of the first sphere to take only the narrowly specialized subsectors that are especially important for the development of the subcomplexes. For example, mechanization of harvesting and, accordingly, the problem of designing and series production of machines to harvest fruit, vegetables, and berries are important for the fruit-vegetable subcomplex. Another, equally important program is development of the production of containers for storing and transporting fresh produce (glass containers, tin cans, and aluminum containers) as well as polymer films and materials for preserved and quick-frozen products. The emphasis here should be on determining the need for the output of sectors of the first sphere and their requirements with respect to its quality, productivity, and other technical-economic parameters.

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The main advantage of switching to comprehensive planning of the development of the sectors that make up the product subcomplexes is that it permits the possibility of balancing the development of the particular sectors belonging to a subcomplex, eliminating disproportions, and on this basis shaping an effective structure and achieving a significant reduction in losses, more rational use of raw materials, and an increase in production efficiency. The comprehensive approach makes it possible to identify "bottlenecks" in the functioning of the entire chain from production (extraction) of the original output to sale of the final output. It helps overcome the narrowly departmental approach to the uniform process of planning and coordinating different sectors involved in the production, processing, and delivery to the customer of the actual products, and this results in optimal distribution of capital investment.

As the meat-dairy subcomplex takes shape and develops still-existing intersectorial disproportions will be eliminated. The most pressing problem now is to balance available feed and the number of stock. A protein imbalance at the 15-17 percent level is the cause of failure to receive animal husbandry output worth 9-11 billion rubles. This shortfall can be eliminated by increasing the production of protein-rich feed crops such as peas, alfalfa, clover, soybean, rape, and the like. The document "Basic Directions of Economic and Social Development of the USSR for 1981-1985 and the Period Until 1990" poses the challenge of raising the average annual production of legume crops to 12-13 million tons (the average crop in the 10th Five-Year Plan was 6.8 million tons).

Another way to overcome the protein shortage in feeds is accelerated development of the microbiological industry. It is common knowledge that protein-vitamin concentrates obtained from liquid paraffin contain 56 percent protein and using one ton of them in animal husbandry produces a gain in output of 700-900 rubles (for an expenditure of 80-90 rubles per ton of liquid paraffin in the microbiological industry). Chemical hydrolysis of wood has even better prospects in this respect. Output in the microbiological industry is to increase 1.8-1.9 times in the 11th Five-Year Plan. The development of a comprehensive program to establish a reliable, balanced feed base in the country, an important part of the overall feed program, must be completed in the near future, as envisioned in the document "Basic Directions."

One of the main areas of imbalance is in production capacities, their technical level, and the amount of meat and dairy raw materials arriving for processing. This is the reason that all the useful components are not extracted from raw material and that the assortment of output is not expanding rapidly. Milk serum, for example, is a valuable raw material that is only 10-12 percent used at present. For technological reasons 8-12 percent of the slaughtered meat remains on the bones turned over for further processing; this is 20,000-25,000 tons of a valuable product. Large losses of raw material occur during intensive periods of large-scale processing because production capacities cannot keep up with the flow of raw materials. Sometimes excessive concentration of industrial production and the establishment of very large enterprises increases the radius of delivery for livestock and milk so much that the inevitably resulting losses nullify the benefit from concentration. Therefore, the question of the rational size of meat-dairy industry capacities should be

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decided together with development of plans for specialization and concentration of animal husbandry, provision of special means of transportation, and establishment of a reliable road network. This entire set of questions applicable to particular regions should be reflected in the food program. Balance among all elements of a subcomplex is an important condition for raising the efficiency of meat and milk production.

At the present time significant disproportions have occurred in the process of production because of failure to coordinate the economic interests of the sectors that belong to the fruit-vegetable subcomplex and owing to departmental conflicts. These disproportions cause significant losses of output and an inadequate level of production efficiency. Failure to coordinate interests leads to a situation where many farms try to fulfill the plan with higher-yielding and less labor-intensive crops, which are more advantageous to the producers. Therefore, cabbage, table beets, and carrots, which have limited use in the canning industry, take up some 45 percent of the planted area designated for vegetables in the RSFSR, for example. At the same time, crops which are valuable for processing such as green vetch, pepper, marrow squash, and eggplant make up just five percent of the gross harvest of vegetables (including just 1.3 percent for green vetch) and very small amounts of early cucumbers and tomatoes, sweet peppers, bush scallop, spinach, garlic, lettuce, and various other crops are raised.

The same factors cause the unsatisfactory structure of perennial plantings. For example, in the RSFSR fruits with seeds occupy 77 percent of the area, pitted fruits are 16 percent, and berry patches are seven percent. Among the seed-type fruits the proportion of winter-keeping varieties is extremely low, while summer varieties of apples which are ill-suited for processing predominate. There are not enough mazzard cherries, apricots, and pears in the structure of pitted fruit orchards. In many regions, for example the North Caucasus, the area planted in pitted fruit trees is decreasing.

The level of specialization and concentration of production in orchard farming and vegetable and potato raising is still low in many parts of the country. Industrial methods of production are being introduced very slowly. The low level of concentration and specialization in the production of fruit and vegetable output with a concurrent increase in the level of concentration of production in the canning industry leads to a significant increase in the number of supplier farms and the radius of delivery of raw materials. For example, the Adygey canning plant in Krasnodarskiy Kray receives raw material from 48 farms with an average delivery radius of 160 kilometers. When the shipping length for tomatoes, for example, is increased from 25 kilometers to 80-100 kilometers, the proportion of first-grade tomatoes is cut in half; increasing the shipping radius by 10 kilometers raises expenditures by two percent.

Existing disproportions in price formation and narrowly sectorial and departmental interests hinder rational use of fruit and berry raw materials. For example, while overall consumption of fruit is inadequate a growing amount of fruit and berries is used to produce fruit and berry wine because its production is more profitable than canning. In the RSFSR in 1979, about 70 percent of the fruit and berries sent for processing was used to produce wine.

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Lack of coordination of departmental interests leads to certain elements of the fruit-vegetable subcomplex lagging sharply behind. At the present time, the labor-intensiveness of producing vegetables on open soil is four times greater than the labor-intensiveness of producing grain crops, while for potatoes it is 2.3 times the figure for grain crops. The labor-intensiveness of raising grapes, fruit, and berries is even higher. Harvest work accounts for a large part of the labor expenditures. Mechanization of harvesting is one of the key problems of further development of vegetable and potato growing, orchard farming, and grape growing.

Expenditures to harvest the grapes today reach 20-35 percent of labor expenditures for raising the grapes. With an average harvest norm (3-3.5 quintals per person per day), more than 500,000 persons are already employed for a month in the grape harvest, and by 1990 the number of persons employed in the manual grape harvest should exceed 1 million. Therefore, it is essential to switch to combined methods of harvesting industrial grape varieties. A number of successful designs have already been developed, including the Kuban'-1 combine which is being tested in the vineyards of the North Caucasus and Crimea. But lack of departmental coordination makes it impossible today to concentrate the efforts of the design organizations of the interested ministries on development and series production of a grape-harvesting combine.

Significant disproportions have developed between agricultural production and storage capacities for fruit and vegetables. The material-technical base for storing fruit and vegetables does not match the current scale of fruit and vegetable procurement. The 60 percent increase in capital investment to improve the storage of agricultural raw material, which is planned for the 11th Five-Year Plan, will make it possible to significantly reduce losses of output. Systems management and planning of the subcomplex on the basis of target-program methods will make it possible to eliminate the existing disproportions between the volume of production of fruit and vegetables and capacities for processing and storing it, thus insuring balanced development.

The question of the system of planning indicators is an important one. The overall system of indicators of the food program should be worked out with due regard for the following principles: correspondence between the system of food program indicators and the structure of the food complex itself; orientation of all indicators in the program to final goals; integrated systems of program measures and development of the entire food complex as a whole; reflection in the system of indicators of intersectorial links and ways to improve them for the purpose of intensifying the production of the entire food complex; delivery of program indicators and assignments to specific accountable performers in directive form; coordination of the system of indicators of the program with the overall system of national economic plan indicators.

The main target indicator of the program is final output. The calculation of final output must be based on balances of the output of agriculture and the food industry. By itself, however, the indicator of final output does not fully reflect the goals of the complex, even though it is very important. It is necessary to introduce indicators of public need for food goods taking account of rational consumption norms and predicted trends in solvent demand for food. The

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most significant harvest evaluation indicator of the food program should be the ratio between the volume of output going for personal consumption and the volume of public needs. An indicator established in the program that reflects the degree of attainment of rational norms of per capita consumption can play the same role. The target indicator should be represented in natural terms by the consolidated groups of products adopted in the USSR State Plan of Economic and Social Development.

It is useful to recalculate and give indicators of needs for the basic nutritional elements (proteins, fats, carbohydrates, and vitamins) in reference form and to introduce indicators of the degree of satisfaction of these needs by the stages in which the comprehensive food program is being developed. The introduction of this kind of indicator will make it possible to coordinate the summary section of the program more closely with the indicators of the sub-programs for satisfaction of requirements for the basic nutritional elements. In addition to the target indicators the summary section of the program must represent resource indicators, above all those which can be allocated for the entire food complex and distributed among its product subcomplexes, sectors, and subsectors. The distribution of capital investment should be done from the standpoint of the priority of the problems. Thus, at the present time the proportion of capital investment in the production infrastructure and for storage and processing of agricultural output should be increased, which will permit a significant decrease in losses of output.

Among the generalizing cost indicators that can be used are the indicators of final and net output (normative) for the entire food complex and per employee in material production in the food complex, return on capital, rate of repayment of capital investment, the indicators of relative savings of production resources, and many others. The indicators of the food complex should correspond to the indicators of the state plan of economic and social development, and the structural cross-section of the programs should be an organic part of the structure of the national economic plan.

The sub-programs of the second level, related to creation and development of the material-technical base of the food complex, should have indicators for production of program output (agricultural machinery, fertilizer, equipment, means of transportation, and the like) and development of its capacities through reconstruction, technical re-equipping, and new construction in the actual sectors that produce means of production.

For the sub-programs that aim at meeting public needs for food products it is necessary to introduce the indicators of final and gross output in a group assortment and the introduction of capacities in agriculture and the processing sectors and to set a limit on capital investment for the development of each product subcomplex for it to fulfill its assignments to deliver final program output. These sub-programs should define the requirements of the product subcomplexes for material, labor, and financial resources and the sources or ways to provide these resources. It is very important to achieve a realistic balance between the total requirement of the product subcomplexes for production resources and the volumes of production and delivery of these resources in the sub-programs for development of the material-technical base.

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In the sub-program for foreign economic links it is essential to represent indicators on the volume and structure of export and import of foodstuffs. This sub-program should include indicators and assignments from long-term special-purpose (target) comprehensive programs concluded within the CEMA framework.

Preplanning and planning materials can only be worked out with broad application of mathematical economic methods and computers. We believe that the best results can be obtained where systems of mathematical economic models of development of the food complex are employed. Different variations of balance models of production and distribution of the output of the food complex with blocks for distribution of fixed capital (capacities), capital investment, and labor can be used as a summary model. Such models are designed to correlate the indicators of production volume of the sectors, determine consumption within the complex given an assigned final product, and to identify needs for fixed capital, capital investment, labor, and — most important — output from agriculture and fishing. The cost versions of these models, covering the sectors of the food complex in consolidated form, will permit a full calculation of expenditures for the production of the basic types of output of the food complex and determination of total expenditures per unit of final output from the complex.

The development of optimization models will help substantiate the most rational structure for the food complex with maximum production of final output in an assortment that corresponds to a rational public consumption structure. The constraints in these models are land and labor resources, production capacities in the industrial sectors, fixed productive capital, and capital investment.

Another type of model is designated to optimize the development of the most important product subcomplexes of the food complex. The purpose of these models is to define balanced development of all the main vertically integrated areas of production. Unlike the consolidated models of the entire food complex, there should be a much greater degree of detail in the variables and constraints here. The most important in them is to choose the best technological procedures in each element of the technological chain from production of the means of production and raw materials to receiving the final output.

All these models are framed as a whole according to the national economic food complex and its sectors and product subcomplexes. They are supplemented by an optimization model of the composite location of production with the number of blocks in the largest territorial-production subsystems of the food complex. Because location is based on zonal specialization and concentration of agricultural production, during development of this model experience with construction of the model of location of agriculture must be used as much as possible. Experience from optimization of the location of food industry sectors is also useful. The general comprehensive model of territorial location of the food complex should be supplemented by more detailed models of the development and location of regional food complexes and the most important product subcomplexes. Considering the stochastic nature of agricultural production, probabilistic and simulation models should find broader application.

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The special-purpose comprehensive program is becoming a realistic management tool when reliable systems for controlling its use have been created. The established departmental sectorial structure of control is not adequate to the target program approach which must be followed in the food program. The document "Basic Directions" formulates the challenge as follows: "Establish and use efficient systems in control programs."

It seems to us that we must have an agency that coordinates the activities of the many ministries and departments that produce food products. Within such an agency it would be possible to gradually change the structure of management, carrying out a transition from the sectorial principle that is now prevalent to the principle of managing intersectorial product subcomplexes of the food complex. Management forms of this type have already been established, for example by the USSR Ministry of Fruit and Vegetable Industry and the corresponding republic agroindustrial committees such as the RSFSR State Committee for Wine Industry and other agroindustrial formations.

But this transition should not be limited to the sphere of planning and establishing coordinating management bodies alone. It is equally important to work out a new kind of relations between partner-sectors. The general principle of this reorganization is accountability of each element for final results, which will strengthen plan discipline and contract relations. The time has already arrived to switch to concrete forms of this. One of the forms is evaluating the results of work by sectors considering not only the sectorial impact but also the impact from the use of output of this sector in other sectors of the food complex. The unreliability of material-technical supply makes it difficult to employ such evaluations. For example, the sectors that produce agricultural machinery cannot be accountable for its efficient use in the fields and at livestock units because it is produced from low-grade metal. Therefore, we cannot fundamentally improve the economic mechanism of management of the agroindustrial complex without making profound changes in the system of intersectorial relations of the national economy as a whole.

Nonetheless, a great deal can be done at the lower levels, in particular with respect to the relations among enterprises that belong to different sectors of the food complex. Thus, the decree of the CPSU Central Committee and USSR Council of Ministers entitled "Improving Planning and Economic Stimulation of the Production and Procurement of Agricultural Output" contains a number of important ways to improve the economic mechanism. Procuring ministries and enterprises are given responsibility for accepting all the output delivered by agricultural enterprises. They can now accept above-plan nonstandard output at prices set by agreement of the party. This will make it possible to reduce direct or concealed (used for livestock feed) losses of output. It is also important to switch to receiving all output at the place of production and hauling it from the farms in vehicles belonging to the procurement agency.

Along with centralization of receiving, transporting, storing, and processing agricultural output, we must develop decentralized systems of different sizes for storing and processing output, which will make it possible to reduce peak loads in technological chains and to reduce losses. A procedure must be

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established by which output is counted in the procurement plan for the year in which it is actually marketed. The general conditions of material-technical supply for containers, fuel, and other resources that apply to enterprises of the food industry must also apply to the industrial enterprises of the kolkhozes and sovkhoses.

The role of state and cooperative trade in the entire structure of the economic mechanism should be strengthened. The operational influence of trade on shaping the assortment of industrial output, its quality, preparation and packaging, should be based on a study of public demand in each region by seasons of the year.

While strengthening the centralized principle in planning, above all in defining the structure of the food complex, we should give the farms greater opportunities to show initiative, to maneuver, and to employ healthy socialist entrepreneurship in resolving ongoing management problems. This will make it possible to receive a significant benefit while carrying out the food program.

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AGRO-ECONOMICS AND ORGANIZATION

PRIVATE PLOT ACCOUNTING, CONTRACT SYSTEM FOR LIVESTOCK OUTLINED

Moscow PLANIROVANIYE I UCHET V SEL'SKOKHOZYAYSTVENNYKH PREDPRIYATIYAKH in Russian
No. 6, Jun 81 pp 37-40

[Commentary: "On the Procedure for Registering Livestock and Poultry Being Raised
By Citizens...."]

[Text] The 8 January 1981 decree of the CC CPSU and USSR Council of Ministers "On Additional Measures to Increase the Production of Agricultural Output on the Private Subsidiary Farms of Citizens" permits sovkhozes and other agricultural enterprises and recommends to kolkhozes to conclude contracts on a strictly voluntary basis with kolkhoz workers, workers, employees, and other citizens living on their territory and conscientiously participating in public production, and also with pensioners, for the raising and purchase of livestock and poultry and for the purchase of surplus milk. The payment for the output purchased in keeping with the above contracts is performed at prices in accordance with the agreement, but not higher than the established state procurement prices.

These agreements stipulate the duties of kolkhozes, sovkhozes, and other agricultural enterprises to provide assistance to kolkhoz workers, workers, employees, and other citizens in supplying them with young livestock and poultry and feed and in granting them plots of land for haying and for pasturing.

It has been established that the livestock, poultry, and milk surpluses which are bought by kolkhozes, sovkhozes, and other agricultural enterprises through contracts with kolkhoz workers, workers, employees, and other citizens are sold by these farms to the state and are credited by it to the amount of production and the fulfillment of the state agricultural output procurements plan, with the payment of the established mark-ups for quantitative and qualitative indicators.

In accordance with the 8 January 1981 decree of the CC CPSU and USSR Council of Ministers, the USSR Central Statistical Administration, USSR Ministry of Agriculture, and USSR Ministry of Procurements, in agreement with the USSR Ministry of Finance and with Gosbank USSR and through the 30 March 1981 Instructions No. 5-77/269-1 1813-14 240, have established the following accounting procedure for the livestock and poultry being raised by citizens on contracts with kolkhozes, sovkhozes, and other agricultural enterprises, and also a procedure for crediting livestock, poultry, and milk surpluses purchased on contract to production volume and to the fulfillment of the state plan for agricultural products procure-

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ments by kolkhozes, sovkhoses, and other agricultural enterprises.

1. The transfer by kolkhozes, sovkhoses, and other agricultural enterprises of young livestock and poultry on contract to kolkhoz workers, workers, employees, and other citizens, and also to pensioners for raising is registered by a deed for the transfer (sale) and purchase of the livestock and poultry through contracts with citizens (sel'khozuchet, f. No. 956), in accordance with the appendix. One copy of the deed, signed by the chief of the livestock section (team leader of the livestock section), the zootechnician, veterinarian, financially responsible person (delivery), citizen (receipt), and approved by the director of the farm, is given to the citizen. The number of young livestock and poultry which have been transferred (accepted), their actual live mass (column 6), their cost, the state of their health, and, for cattle, the number of the animal have to be specified in the deed. After they have accepted young livestock and poultry, citizens bear complete material responsibility for them.

2. Young livestock and poultry which have been transferred to citizens on contracts for raising are registered in the balance of a kolkhoz, sovkhos, and other agricultural enterprises in Account No. 09 "Young Livestock and Livestock in Fattening" (Sub-Account 9 "Young Livestock and Poultry Transferred to Citizens on Contracts For Raising"). In the sub-account young livestock and poultry are registered for every person who has accepted them, and also by types and groups of livestock.

Young livestock and poultry which have been transferred for raising to citizens on contracts are reflected in accounting for credit in Account No. 09 (types and groups of livestock and poultry) and for debit in Account No. 09 (Sub-Account 9).

The number of young livestock and poultry which have been transferred for raising to citizens and their live mass on the day of the transfer are included in the total number of the livestock and poultry of a kolkhoz, sovkhos, and inter-farm enterprise and are reflected in the statistical reporting in Form No. 24 (24-skh) and in the annual bookkeeping report in Form No. 15-skh.

3. The loss of young livestock and poultry which is being raised by citizens on contracts and is on the balance of a farm is registered by a deed of loss (slaughter and disease) of livestock and poultry (sel'khozuchet, f. No. 100) which is drawn up with the participation of the zootechnician, veterinary worker, and citizen.

In the event of the loss of livestock and poultry through the fault of citizens the farm is compensated for the damages in the established procedure, on the basis of the delivered mass of livestock and poultry at state procurement prices, and the damages are transferred from Account No. 09 to Account No. 84 "Shortages and Losses From the Spoilage of Assets" at actual costs, and are simultaneously entered in the debit Account No. 84 and the credit Account No. 76 "Settlements With Various Debtors and Creditors" and in the sub-account "Settlements in Compensation of Material Damages" --at state procurement prices.

The number of young livestock and poultry which has been lost through no fault of

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citizens, their delivery mass at the date of transfer (acceptance) for raising, and their value are entered in debit Account No. 09 and credit Account No. 19 "Animal Husbandry" (mass and value) by the equal entry method. The hides which have been obtained in connection with the loss of livestock are evaluated at the prices of their possible sale and entered in debit Account No. 04 "Output of Agricultural Production" and credit Account No. 19. The value of the delivered mass of young livestock and poultry which have perished as a result natural disasters is put in debit Account No. 99 "Profits and Losses" from credit Account No. 09, Sub-Account 9.

In cases of the forced slaughter of livestock the products of the slaughter which are suitable for food purposes are surrendered to the farm at prices in keeping with the agreement but no higher than the state procurement prices for live livestock with regard to degree of fattness (minus the delivery mass of the animal and the established discount for the contents of the digestive tract) and are reflected in the debit accounts for material assets and in credit Account No. 76 "Settlements With Various Debtors and Creditors" (Sub-Account 5 "Settlements With Citizens For Agricultural Products Purchased Through Contracts").

The number of fallen livestock has to be included in the total number of fallen livestock of all ages (including young livestock and poultry) on the kolkhoz, sovkhov, and inter-farm enterprise and reflected in the statistical reporting in Form No. 24, 24-skh and in the annual report in Form No. 15-skh.

4. The sale to citizens (at their desire) of up to 20 percent of the additional livestock and poultry weight raised by them or of slaughter products calculated by the the appropriate coefficient for the given type of livestock is performed at prices which have been accepted for settlements in accordance with point 1.5 of the Standard Contract to raise on the private subsidiary farms of citizens livestock and poultry which belongs to kolkhozes, sovkhoves, and other agricultural enterprises. The release of the meat (in terms of live mass) is performed by invoices (sel'khozuchet, f. No. 87) after initial payment for it has been made to the farm's cashier; it is reflected in the accounting as (Other Sales), and is not included in the amount of the intra-farm expenditure of livestock and poultry. The release of meat can also be performed as a credit toward monies owed to citizens for livestock and poultry sold to the farm.

5. The sale to citizens of feeds for the contracted raising of young livestock and poultry is performed as follows: feeds of a farm's owned production--grain at state procurement prices, other feeds at their planned cost (in accordance with the 8 January 1981 decree of the CC CPSU and USSR Council of Ministers, points 7, 13), and bought feeds-- at their purchase prices, including delivery costs.

Feeds sold to citizens have to be reflected in the statistical reporting in Form No. 24-fattening. They are not shown in Form No. 24 (24-skh), in section II. "Existing and Received Feed For Public Animal Husbandry." These feeds are reflected in Form No. 17-SO "Movement of Output" in the annual accounting report of kolkhozes, sovkhoves, and interfarm enterprises.

6. The purchase of livestock and poultry which has been raised by citizens on

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contract is registered by a deed for the transfer (sale) and purchase of livestock and poultry on contract with citizens (sel'khozohet, f. No. 956). The purchase of milk surpluses from citizens is registered in the receipt and payments ledger for milk.

The acceptance of livestock, poultry, and milk is performed by acceptance officers of the kolkhozes, sovkhozes, and other agricultural enterprises, as a rule, at assigned reception points. Livestock and poultry are accepted by live mass and fattiness, and milk by mass and quality (fat content and others).

Payment for purchased livestock and poultry is made for additional weight which is determined by the live mass of the raised livestock minus the discount for the content of the digestive tract and the delivery mass (Column 8 of the deed in f. No. 956).

Livestock and poultry purchased from citizens, that is, additional weight (live mass minus delivery mass) --Column 7 of the deed in f. No. 956--and milk are credited in the kolkhozes, sovkhozes, and inter-farm enterprises on the basis of acceptance documents and are reflected in the accounting in debit Account No. 09 "Young Livestock and Animals at Fattening" (Sub-Account 9), No. 04 "Output of Agricultural Production" (Sub-Account 5 "Agricultural Products Purchased From Citizens on Contract") and in credit Account No. 76 "Settlements With Various Debtors and Creditors" (Sub-Account 5).

In the statistical reporting in Form No. 24, 24-skh the amount of received additional weight is reflected in the corresponding lines and columns--by the indicators: livestock raised, additional weight received, and live mass sold. Milk surpluses purchased on contract are shown in hand written lines; 07-a in the Form No. 24-skh and 11-a in the Form No. 24 as "in addition, purchased from the population on contract." The quantity of milk purchased from the population on contract is included in the amount of milk obtained in the kolkhoz, sovkhoz, inter-farm enterprise. However, this quantity of milk is not considered in calculating the average milk yield per cow on kolkhozes, sovkhozes, and inter-farm enterprises.

the annual accounting reports of kolkhozes, sovkhozes, and inter-farm enterprises livestock and poultry (additional weight) and milk surpluses which have been purchased from citizens on contract are reflected separately in Form No. 13-skh "Production and Cost of Animal Husbandry Output" and in Form No. 4-skh "Output Sales" as "in addition."

8. Settlements with citizens for purchased livestock and poultry are performed within 10 days after their acceptance and for milk--no less often than once a month.

9. The shipment to procurement points of livestock, poultry, and milk purchased from citizens on contract is registered by the appropriate commodity-transportation invoices (sel'khozuchet, f. No. 1-skh (live) and No. 1-skh (milk)).

Procurement organizations accept livestock, poultry, and milk in the established procedure. An acceptance receipt is written out for the output (f. No. PK-1 and No. PK-3) with the notation "Purchased From Citizens on Contract."

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In making up a report on procurements of livestock, poultry, and milk in f. No. 3-zag and No. 4-zag procurement organizations, when they have acceptance receipts with the notation "Purchased From Citizens on Contract," include this amount in the indicator "Purchased From Kolkhozes and Sovkhozes" and also underline "Purchased From Citizens By Contract."

On the basis of the acceptance receipts and the reports of procurement organizations, statistical agencies credit livestock, poultry, and milk to the fulfillment of the plan of the corresponding kolkhoz or sovkhoz. Agricultural enterprises are compensated by procurement organizations in the established manner for the delivery costs of output accepted from the population on contract.

10. The sale of livestock, poultry, and milk which has been accepted from citizens is accounted for in Account No. 46 "Sales" in the established procedure separately from a farm's output of its own production in Sub-Account six "The Sale of Livestock, Poultry, and Milk Purchased From Citizens on Contract." Agricultural output purchased from citizens without the contract is reflected in a separate Sub-Account of Account No. 46 as "other sales."

11. When there is an insufficiency of funds in current (special account) accounts for settlements with citizens for livestock and poultry raised by them on private subsidiary farms on contract kolkhozes, sovkhozes, and other agricultural enterprises can obtain short-term credit in the institutions of Gosbank, regardless of the state of payments on previously issued loans.

Indebtedness on this credit is reflected in Section II of the debit balance in item "Short-Term Bank Loans for Production Expenditures (on Kolkhozes)" or "Gosbank Loans for Normed Circulating Capital (on Sovkhozes and Other State Agricultural Enterprises)."

12. The value of the delivered live mass of young livestock and poultry which has been transferred to citizens on contract for raising, and also the raised livestock and poultry which has been accepted (purchased) from citizens are reflected in the second section of the assets balance in item "Young Livestock and Animals at Fattening" with a separate statement of the value of the actual additional weight of the accepted (purchased) livestock and poultry (live mass minus delivered mass) in the article "Including Livestock and Poultry Accepted (Purchased) From Citizens on Contract." The value of the milk purchased from citizens is reflected in Section III of the assets balance in article "Agricultural Products Purchased From Citizens on Contract." The indebtedness to citizens for livestock, poultry, and milk purchased from them is registered in the third section of the debit balance in the item "Settlements With Citizens For Agricultural Products Purchased on Contract."

13. The release of construction materials and the performance of work on the construction and equipping of housing for the maintenance of livestock and poultry for citizens is performed by agricultural enterprises in accordance with the purchasing prices of the materials, including delivery costs, but no higher than the state retail prices, and actual wages on the basis of the corresponding primary documents.

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Services connected with cultivating the land plot and procuring and delivery feeds and construction materials are paid by citizens in accordance with the planned cost of the current year.

14. The sale by kolkhozes, sovkhoses and other agricultural enterprises of young livestock and poultry to kolkhoz workers, workers, employees, and other citizens, and also to pensioners, on a non-contract basis is performed at state procurement prices and is registered by deed in Form 956, in Column 6 of which the actual mass of the animals sold to citizens is specified, and is reflected in the bookkeeping in debit Account No. 46 "Sales" and credit Account No. 09 (planned costs) and at the same time in debit Account No. 50 and credit Account No. 46 at state procurement prices.

15. The granting by kolkhozes, sovkhoses, and other agricultural enterprises to citizens (at their desire) of a monetary advance to purchase tools, materials, and minor mechanization equipment necessary for the production of agricultural output on their subsidiary farms is reflected in the debit Account No. 79, Sub-Account 3 "Settlements With Workers and Employees (kolkhoz workers) on Advances Received By Them on Contract to Raise Livestock and Poultry" and in the credit Account No. 50, and also in Section III of the assets balance in the item with the same name.

The Gosbank credits which have been obtained for these purposes are accounted for by kolkhozes and sovkhoses in the balance Account No. 90, Sub-Account "Gosbank for Loans for the Issuance of Monetary Advances to Workers, Employees, and Kolkhoz Workers on Contract to Raise Livestock and Poultry" and are reflected in Section III of the debit balance in the item with the same name.

16. The repayment, in agreement with the trade union committee, on the basis of monies from the economic stimulation fund, of the credit (not more than 50 percent) extended for the purchase of cows and calves to workers and employees conscientiously performing work on sovkhoses and other state agricultural enterprises, and also to teachers and doctors working and living on the territory of these enterprises, and to pensioners who for a long time had worked at these enterprises is reflected in the debit Account No. 79, Sub-Account 1 and the credit Account No. 50 and 51 "Current "Special Current" Account", and, at the same time, Account No. 87 is debited for the decrease in load indebtedness by citizens and Account No. 79, Sub-Account 4 is credited.

Young livestock may be given out free of charge at the farm's expense to young families (on the condition that members of these families work in the given agricultural enterprise) for the creation and development of a private subsidiary farm. In accounting its value is reflected in the credit Account No. 9 (in number of head, live mass, and value) and in the debit Account No. 7 "The Economic Stimulation and Special Purpose Fund," Sub-Account "Social and Cultural Measures and Housing Construction Fund."

Help to young families in building work structures is provided for a fee and reflected in the accounting in the manner described in point 13 of the present instructions.

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18. Settlements with the population for agricultural products and livestock (without contract) which has been accepted for sale are performed in accordance with the instructions on the procedure of settlements for agricultural products and livestock being bought (accepted) by enterprises and organizations from the population which were approved by the USSR Ministry of Agriculture, USSR Ministry of Food Industry, USSR Ministry of Meat and Dairy Industry, USSR Ministry of Light Industry, and the board of the Central Union on 30 December 1975 No. 269-1/5-22/27-8-1/33-8/CP-227.

Agricultural enterprises have to provide separate accounting for the receipt and sale of agricultural products and livestock accepted from the population for consignment sale.

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TILLING AND CROPPING TECHNOLOGY

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SEED INDUSTRY PROBLEMS, PROGRESS, PROSPECTS REVIEWED

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 6, Jun 81 pp 6-11

[Article by A.S. Navolotskiy, chief of USSR All-Union Production Association for Varietal Seed Raising: "Sixty Years Later"]

[Text] At the present time, the program for improving seed production and converting it over to an industrial basis is set forth in the decrees of the CC CPSU and the USSR Council of Ministers entitled "Measures for Further Improving the Selection and Production of Seed for Grain and Oil-Bearing Crops and Grasses" (1976), "Additional Measures for Improving the Selection and Production of Seed for Corn" and "Measures for Increasing the Production and Raising the Quality of Feed (1978).

In carrying out the mentioned decrees, the USSR Ministry of Agriculture, VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin] and local soviet and agricultural organs have implemented a number of measures aimed at radically improving the production of seed. Extensive work has been carried out in connection with seed production specialization and concentration and converting it over to an industrial basis. The USSR Sortsemprom [All-Union Production Association for Varietal Seed Raising] system was created for the purpose of directing seed production work in behalf of grain, oil-bearing crops and grasses. Varietal seed production associations (sortsemproms) have been created within the USSR Ministry of Agriculture (1977), the ministries of agriculture for the union republics (with the exception of the MSSR) and also in 103 oblasts, krays and autonomous republics. Two hundred and sixteen interfarm associations have been organized for the production of seed.

A network of specialized seed production farms has been approved. Elite and primary seed production is being carried out by 288 experimental-production farms of scientific-research institutes and experimental stations, 119 uchkhozes [training farms] of agricultural VUZ's and technical schools and by 42 elite seed production kolkhozes and sovkhozes.

In order to satisfy the requirements of farms not engaged in the production of seed, 5,778 specialized seed production farms have been organized for the production of seed for grain and oil-bearing crops, 3,410 -- for perennial grasses, 2,373 -- for corn, 755 -- for soybeans, 1,361 for sunflowers, 89 -- for sorghum and 974 -- for rape.

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During the 1977-1980 period, 1,195 complex stations of varying capabilities and purposes were placed in operation at kolkhozes, sovkhoses and other state enterprises and scientific institutes. They were constructed on a large scale in the BSSR, ESSR, UkSSR, LaSSR and the Mariyskaya ASSR and in Vologodskaya, Chelyabinskaya, Permskaya and a number of other oblasts in the RSFSR. Plants were built for the processing of corn seed in the MSSR and Krasnodarskiy Kray and for the processing of sorghum -- in Rostovskaya and Krymskaya Oblasts. At the present time, there are 159 seed production stations (plants) for grasses, which process more than 100,000 tons of seed during a season.

At the grain receiving enterprises there are seed storehouses having an overall capacity of 13.3 million tons, 350 seed production departments, 500 ZAV and KZS grain cleaning units, 210 plants for the processing of corn seed and also 3,500 diverse mobile grain cleaning machines. This is making it possible, during single-shift operations, to prepare more than 4 million tons of grain crop seed during a season and to dry out up to 45,000 tons of corn seed on the ears during a 24 hour period. During the past few years, notwithstanding unfavorable weather conditions, the kolkhozes and sovkhoses in many union republics, krays and oblasts have begun receiving greater quantities of seed, the quality of the seed has been improved and the introduction into production operations of new and highly productive varieties and hybrids for grain and oil-bearing crops and grasses has been accelerated.

Seed production is being concentrated throughout the country in those zones marked by more favorable soil and climatic conditions and at specialized seed production farms. In behalf of the 1981 harvest in the KiSSR, 95 percent of the grain and pulse crop seed was produced at spetssemkhozes [spetsializirovannoye semenovodcheskoye khozyaystvo; specialized seed production farm], in the ArSSR -- 81 and in the MSSR -- 81 percent.

During the years of the Tenth Five-Year Plan, increases were recorded in the production and procurements of seed for first generation corn hybrids and also for early ripening and medium early ripening hybrids. In 1980, the experimental-production farms and training-experimental farms of VUZ's and technical schools fulfilled their tasks for the sale of elite and primary seed for grain crops (108 percent), for oil-bearing crops (101 percent and seed for the parental forms of corn hybrids (105 percent).

However, shortcomings exist in the organization of seed production operations. For the country as a whole, the plans for laying in seed for pulse crops, buckwheat, alfalfa and clover were on the average not fulfilled during the 1976-1980 period. During these years, the spring grain crop seed placed in the insurance funds (57 percent) was considerably less than the figure called for in the plan and winter grain crop seed -- for the carry-over funds (38 percent). In particular, the deliveries of seed for these crops to kolkhozes and sovkhoses in a number of oblasts and autonomous republics in the nonchernozem zone of the RSFSR, the Urals and Siberia, the BSSR, the Baltic and Trans-Caucasus republics, the UzSSR and the TaSSR were very poor. As a result, during the years of the Tenth Five-Year Plan the country's kolkhozes and sovkhoses obtained 25.7 million tons of grain crop seed from the state's resources. There was a shortage of seed for early ripening and medium-early ripening corn hybrids for sowing for forage purposes and thus less productive seed for second generation hybrids, including late ripening hybrids,

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was sown on considerable areas (for silage, green feed and also in secondary sowings) and this lowered noticeably the yields and feed qualities of the fodder.

The capabilities of the plants for processing corn seed are inadequate for the timely drying out of damp ears, the procurement volumes of which have increased noticeably in recent years. Thus their drying out is being continued for 70-80 days, the damp ears must be stored for an extended period of time on the kolkhoz and sovkhos thrashing floors and on the platforms of corn processing plants and this lowers sharply the quality of the seed.

In a number of union republics, the tasks for building seed production facilities are being carried out in an unsatisfactory manner. In the Azerbaijan SSR, for example, the plans called for 26 complex stations for the processing and storage of seed to be built during the 1977-1982 period and yet not one of these stations has as yet been placed in operation. Of 30 stations to be built in the Uzbek SSR during the 1977-1982 period, only four were built during the past 4 years. Seed production installations are being built extremely slowly in the TuSSR, ArSSR and GSSR, in Vladimirskaya, Kalininskaya, Tul'skaya, Voronezhskaya, Lipetskaya, Volgogradskaya, Omskaya, Tomskaya and Irkutskaya Oblasts and in Altayskiy, Khabarovskiy and Krasnoyarskiy Krays. The principal cause of the lag -- weak work on the part of the contractual organizations and insufficient control by the agricultural organs over the course of the construction work.

Owing to the absence of a number of important machines required for the processing of seed, the rates for creating the logistical base for seed production are being maintained. In conformity with the decree of the CC CPSU and the USSR Council of Ministers entitled "Measures for Further Improving the Selection and Production of Seed for Grain and Oil-Bearing Crops and Grasses" (1976), seven such machines were to have been developed during the 1977-1980 period. However, only two were recommended for production -- the SPS-5 pneumatic grading table and the SMSHch-4 magnetic seed cleaning machine. The five remaining machines are still undergoing state testing. Commencing in 1981, 100 sets of equipment for KTS-0.5 thermal disinfection should be produced annually and yet the plan called for only five. Over a period of many years now, a solution has still not been found for the problem of producing a stationary APZ-10 seed disinfecting apparatus and this is requiring the use, at enterprises under construction, of a mobile disinfection unit that is unsuitable for use at a permanent station.

Measures aimed at achieving concentration and specialization in the production of seed for grain and oil-bearing crops and grasses are being carried out extremely slowly in a number of republics and oblasts and, as a result, the conversion over to the system for producing seed and supplying it to kolkhozes, sovkhoses and other agricultural enterprises, as set forth in the above-mentioned decree of the CC CPSU and the USSR Council of Ministers, is being delayed. The approved network of specialized seed production farms for the production of high quality and hybrid seed for grain and oil-bearing crops and grasses, for satisfying the requirements of farms not producing such seed, and also the network of seed production farms for the production and procurements of seed for the state resources are still not operating in a satisfactory manner. Many local soviet and agricultural organs have for all practical purposes failed to examine the structure for the production and procurements of agricultural products on the seed production farms, as a result of

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which seed production occupies a low proportion of their operations. In some oblasts, up to 60 percent of the high quality seed is procured for the state's resources from non-seed production farms.

The 26th CPSU Congress assigned great and important tasks to the country's seed growers. In the Basic Directions for the Economic and Social Development of the USSR During the 1981-1985 Period and For the Period Up To 1990, the plans call for improvements in the system of seed production for agricultural crops, an acceleration in its conversion over to an industrial basis, the rapid introduction into production operations of new and highly productive varieties and hybrids and improvements in the quality of the seed.

During the Eleventh Five-Year Plan, the country's seed growers must satisfy fully the requirements of the kolkhozes and sovkhoses for high quality varietal grain crop seed, the annual requirement for which is 30 million tons, including 9.6 million tons for winter grain crop seed. In addition, there must be insurance seed funds in the amount of 4.5 million tons and carry-over seed funds for winter crops -- 1.9 million tons.

In order to solve successfully the tasks assigned by the 26th CPSU Congress with regard to increasing the production and procurements of pulse crops, millet, buckwheat and rice, the plans call for increases in the volumes of high quality seed for these crops.

In order to satisfy completely the requirements of the farms for pulse crop seed, the agricultural organs must ensure that the kolkhozes and sovkhoses lay in 2.87 million tons during 1981 and that this figure is raised to 3.66 million tons in 1985, buckwheat seed -- 183,500 and 207,800 tons respectively, millet -- 92,100 and 92,100 tons and rice -- 200,000 and 200,400 tons respectively.

In a report delivered before the 26th CPSU Congress, L.I. Brezhnev assigned the task of expanding the corn sowings for grain. For the successful carrying out of this task and also for the purpose of increasing the production of high quality succulent feed, measures are being undertaken to raise considerably the gross yields of seed for early ripening and medium early ripening hybrids. Towards this end, the fulfillment of the program developed by the USSR Ministry of Agriculture, jointly with the agricultural and planning organs of the union republics, for the production during the 1981-1985 period of seed from the standpoint of hybrids, varieties, generations, reproductions and parental forms, has been organized. This will make it possible, by 1985, to increase the production of seed for early ripening and medium-early ripening hybrids to 560,000 tons and to raise their sowing area for grain to 1.1 million hectares and for silage -- to 7 million hectares. In order to expand the sowing areas for sorghum, it will be necessary to increase the production of seed for this crop to 27,300 tons by 1985.

During the 26th CPSU Congress, a great amount of attention was given to raising the cropping power and quality of sunflower seed. In solving this task, great importance will be attached to improving seed production operations and introducing new varieties and hybrids into production. The production volumes for varietal and hybrid seed for this crop must be raised to 284,200 tons during the Eleventh Five-Year Plan.

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The USSR Ministry of Agriculture, jointly with VASKhNIL, the agricultural organs of republics and oblasts and the scientific institutes, have developed and are implementing measures for organizing seed production and the introduction of sunflower hybrids into production operations during the 1980-1985 period. The production of elite seed for parental forms must reach 1,742 quintals in 1981 and in 1985 -- 2,000 quintals and first generation hybrids -- 4,700 tons and 11,000 tons respectively. This will make it possible in the near future to grow new and highly productive early ripening hybrids on all areas deemed suitable for the cultivation of hybrid sunflowers.

The party's central committee has repeatedly underscored the need for increasing soybean production. During the 26th CPSU Congress, L.I. Brezhnev issued a specific instruction calling for an expansion in the sowings of this crop in Moldavia, the southern oblasts of the Ukraine, the north Caucasus, central Asia and the Trans-Caucasus. The fulfillment of this task requires first of all an increase in the production of seed for this crop.

At the present time, the requirements of the kolkhozes and sovkhoses for soybean seed amount to 135,000 tons, including for farms in the European part of the country -- 15,000 tons. In the interest of satisfying more completely the kolkhoz and sovkhos requirements for the seed of this crop and expanding still further its sowing areas, especially in the European part of the country, measures are being undertaken to increase the production of varietal seed in 1981 to 149,000 tons and in 1985 -- to 184,500 tons.

The experience of last year has shown that winter rape can be grown successfully in many oblasts of the Ukraine and in the north Caucasus and spring rape -- in the oblasts of Siberia, the nonchernozem zone of the RSFSR, the BSSR and the UkSSR. Available seed resources for rape (and wild cabbage) made it possible this year to plant it for seed and feed purposes on approximately 1.5 million hectares. The production of seed for these crops must be increased to 25,000 tons by 1985. This will make it possible to increase their sowing areas to 2.5 million hectares, which will constitute a worthy contribution towards solving the feed protein problem.

In 1985, the requirements of the kolkhozes, sovkhoses and other state farms for perennial grass seed will increase to 356,000 tons. USSR Sortsemprom and the agricultural organs of republics, krais and oblasts are undertaking measures to increase the production of this seed. Towards this end, the planting of perennial grass seed plants has been organized, pesticides and fertilizers are being supplied to the specialized seed production farms, bee pollination of alfalfa and clover is being organized and improvements are also being carried out in the methods employed for harvesting the seed plants.

By way of furnishing assistance to those farms which suffer from unfavorable weather conditions and in order to supply seed to those regions where it is impossible to organize stable seed production for individual crops, state resources for varietal seed will be created annually within the USSR Ministry of Procurements during the Eleventh Five-Year Plan: grain crops (excluding corn) -- 5.7 million tons (including winter grains -- 0.9 and spring grains -- 4.8 million tons); corn -- 1.3 million tons and oil-bearing crops -- 0.2 million tons.

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In conformity with the program approved by the USSR Ministry of Agriculture, by the end of the Eleventh Five-Year Plan the sowings of highly productive varieties of grain and pulse crops (including corn) must constitute approximately 70 percent of the entire area sown in crops and new varieties -- approximately 30 percent. The sowings of new varieties and hybrids of sunflowers, soybeans, sorghum and other crops will increase considerably. Thus the plans call for increases in the production of seed for grain and oil-bearing crops and grasses at specialized seed production farms and for this work to be carried out in those regions having the most favorable natural and economic conditions.

During the 1981-1985 period, the country's scientific-research institutes must make recommendations with regard to singling out such zones in the republics, krays, oblasts and administrative regions and USSR Sortsemprom and the appropriate soviet and agricultural organs must, on this basis, determine the maximum possible production volumes for varietal and hybrid seed for the crops in these areas and define more precisely the network of specialized seed production farms to produce the seed in order to satisfy the kolkhoz and sovkhoz requirements and also the network of seed production farms for the production and procurements of seed for the state resources.

The production of seed for corn, sunflowers and other crops having high coefficients of propagation must be carried out as a rule in scientific-production and production associations. The operational experience of the Gibrud Scientific-Production Association in the MSSR has revealed a high level of effectiveness for this form of seed production organization.

In addition, during the Eleventh Five-Year Plan it will be necessary to create a number of scientific-production and production associations for the production of corn seed and to ensure the production, processing and storage of 210,000 tons of hybrid seed and 22,000 tons of seed for the parental forms of hybrids.

In connection with the fact that sunflower varieties regionalized in the TsChO [Central Black Earth Region] and Volga region, when use is made of seed raised in Krasnodarskiy Kray, furnish yields in these regions which are 2-3 quintals higher than those obtained under local conditions, the RSFSR Council of Ministers and the RSFSR Ministry of Agriculture, during the Eleventh Five-Year Plan and in a planned manner, must organize the production of 17,000-18,000 tons of seed for these varieties for the given regions in Krasnodarskiy Kray. This will make it possible to increase their gross yield in the republic by 300,000-400,000 tons.

In order to supply alfalfa seed to farms located in regions where this crop does not ripen, it will be necessary, in conformity with the decree of the CC CPSU and the USSR Council of Ministers entitled "Measures for Increasing the Production and Raising the Quality of Feed" (1978), to ensure the delivery by 1985 of 3,100 tons of seed for this crop (from the UkSSR, UzSSR and KaSSR) into the all-union fund and also to organize their production in the amount of 5,000 tons in the KiSSR. Krasnodarskiy and Stavropol'skiy Krays, Rostovskaya, Volgogradskaya and Saratovskaya Oblasts, the Chuvashskaya ASSR and also the steppe regions of the Ukraine must become zones for commodity seed production for alfalfa in the European part of the USSR.

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During the Eleventh Five-Year Plan, the soviet and agricultural organs must complete the work of refining, for the benefit of the specialized seed production farms, the plans for selling agricultural products to the state. This will enable the latter to achieve a maximum increase in the production of high quality varietal seed for grain and oil-bearing crops and grasses, for sale to the kolkhozes and sovkhazes, and procurements for the state resources.

During the 26th CPSU Congress, a great amount of attention was given to those problems concerned with creating the logistical base for industrial seed production. An this is quite understandable. Indeed, in the absence of such a base it is impossible to even discuss the production of high quality seed in increasing volumes or the solving of those tasks assigned by the party and government for further raising cropping power and increasing the production of farming products. During the 1981-1985 period, the soviet and agricultural organs of union and autonomous republics, krays and oblasts must ensure the placing in operation (by means of construction and modernization at the specialized seed production farms, seed production brigades and departments of large kolkhozes and sovkhazes) of complex stations (plants) for the processing and storage of seed having an overall capacity of 8.5 million tons. In behalf of the overall plan for their construction, plants and lines must be built during the Eleventh Five-Year Plan for the processing of seed for lupine, rice, soybeans, sunflowers and perennial grasses. This will make it possible, by the end of 1985, to raise the overall capability of the plants for processing seed, taking into account those built during the Tenth Five-Year Plan, to 10.9 million tons.

During these years, 70 plants must be built at the specialized seed production farms, experimental-production farms of scientific-research institutes and at the training farms of agricultural VUZ's and technical schools for the processing of seed for the parental forms of hybrids and high reproductions of corn varieties; these plants will have capabilities of 250, 500 or 1,000 tons per season. In addition, 25 plants must be built for the processing of hybrid and varietal seed for this crop and these plants will have capabilities of 5,000 or 10,000 tons per season. The creation of a logistical base for the processing and storage of sorghum seed must be completed. In addition to the existing plants in Rostovskaya (city of Zernograd) and Krymskaya (settlement of Klepinino) Oblasts, they must be built in Stavropol'skiy Kay and in Rostovskaya and Saratovskaya Oblasts. The construction of stations (according to standard plan No. 812-1-6) for the drying and thrashing of the tassels of this crop should also be started. In view of the fact that the principal equipment for these stations -- dryers for materials which are not too free-flowing -- will not be produced until 1984, their installation will take place during the 1985-1990 period. In all, 190 such stations must be built during these years (in the RSFSR, the UkSSR, UzSSR and the KaSSR).

During the 1981-1985 period and the period up to 1990, the planning organizations of the USSR Ministry of Agriculture will continue the development of new and the modernization and correcting of the existing standard plans for complex stations (plants) for the processing and storage of seed for grain and oil-bearing crops and grasses and for seed storehouses and other seed production installations. In the process, special attention will be given to lowering the estimated cost of construction and the extensive introduction into planning practice of new and light weight construction structures, modern and highly productive equipment and progressive technological solutions.

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A great amount of work must be carried out in connection with the modernization and expansion of existing facilities for the processing and storage of seed. This will make it possible to accelerate the strengthening of the logistical base for seed production, with a considerable reduction in expenditures.

The councils of ministers of the union republics, the USSR Ministry of Agriculture, Goskomsel'khoztekhnika and the republic and local agricultural organs must ensure the allocation of tractors, agricultural machines, mineral fertilizers, chemical agents for protecting plants and other logistical resources, primarily to the scientific institutes carrying out primary seed production and also to the specialized seed production farms, as called for in the decree of the CC CPSU and the USSR Council of Ministers entitled "Measures for Further Improving the Selection and Seed Production for Grain and Oil-Bearing Crops and Grasses" (1976).

The production of high quality seed is a difficult problem of farming. But there is no doubt concerning the fact that the carrying out of the program outlined by our party and Soviet Government for converting seed production over to an industrial basis will promote its successful solution.

Thus the ideas of Vladimir Il'ich Lenin, reflected in the decree of the Sovnarkom [Soviet of People's Commissars] on seed production and signed by him at the dawn of Soviet rule, are being realized.

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