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AGRICULTURE

(FOUO 9/80)

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LIVESTOCK FEED PROCUREMENT

MEASURES TAKEN FOR IMPROVEMENT OF FODDER STORAGE

Moscow KORMOPROIZVODSTVO in Russian No 8, 1980 pp 9-11

[Article by N. K. Yevseyev, Main Administration of Fodder Resources, Meadows and Pastures, MSKh [Ministry of Agriculture] USSR: "Fodder Resources--Safe Storage"]

[Text] Fodder production has now become one of the most important sectors of agriculture. The projected trend toward industrialization of this sector and conversion of it to an industrial basis is becoming more intense with each passing year. The implementation of comprehensive measures for stepping up the yield of fodder crops and the productivity of the natural haying and pasture areas, the widespread introduction of more progressive technologies for fodder procurement, the increased production of valuable mixed feed in the state and interorganizational enterprises, and the expanded use of various fodder additives--all this has enabled us in recent years to significantly increase the country's supply of fodder resources and to improve the structure of the rations for the cattle and poultry. In the 4 years of the current five-year plan the average yearly expenditure of succulent fodder is 20 percent greater than in the Ninth Five-Year Plan; it is 8 percent greater for concentrated fodder and 17 percent greater for coarse feed. In the animal regions there has been an increase in the proportion of the hay yield, the artificially dehydrated fodder, the briquetted and the granulated full-ration fodder mixtures, the silage enriched with carbamide, and other high-quality fodder as well as fodder additives.

However, the results achieved still fall short of satisfying the needs of animal husbandry both as to the quantity and the quality of the fodder procured. Many kolkhozes and sovkhozes are not only failing to put into operation the available reserves for increasing the production of coarse and rich fodder but are not giving proper attention to the task of increasing the quality of the fodder and cutting down the losses in the period of storage. The use of poor-quality fodder in this industry is resulting in a large overexpenditure of concentrates, particularly of grain, in the production of animal husbandry output.

According to the long-term data of the VNII [Scientific Research Institute] of Fodder Resources, violation of the technology for procurement of coarse and rich fodder and poor storage are resulting in loss of 20-30 percent of the nutrients contained in them. When hay is stored in the field the losses range from 20 to 40 percent and the losses of silage and hay in bins, mounds and earthen trenches reach 30 percent and more. At the same time, when hay is stored in sheds or hay storehouses these losses do not exceed 3-5 percent of the weight and in compressed form not more than .5 percent. Storage of silage, hay and other fodder in substantial structures enables us to achieve a 10-20 percent reduction in the losses of fodder and the nutrients contained in it.

At present the farms have substantial storehouses for only 45 percent of the silage and hay products procured, 10 percent of the hay, and 8-12 percent of the root plants, briquettes and granules. And only the grain fodder and the other concentrated feeds are stored primarily in warehouse spaces. This indicates a definite lack of appreciation of the importance of coarse and rich fodder in the fodder balance. Many farm managers regard it as quite normal to store hay in the field and to lay up silage and hay products in earthen trenches, bins and mounds; nor do they bear any responsibility for the fodder losses incurred. If we examine this matter from the standpoint of economics, then this is the picture that emerges. According to the data compiled in the kolkhozes and sovkhozes, the cost of production of one quintal of rich fodder units averages more than 10 rubles, of hay and silage about 8 rubles, of fodder root plants about 20 rubles and grain forage 6.5 rubles. The question that arises is how can we be so inefficient in respect to the storage of coarse and rich fodder if one fodder unit of it is more expensive than a unit of grain fodder! It is our opinion that the storage of coarse and rich feed in small stacks, bins, mounds and earthen trenches should be considered a clearly unjustified waste of material assets. The yearly losses, which are counted in tens of millions of rubles, place a heavy burden on animal husbandry and reduce its profitability.

Organizing the construction of warehouses and structures for the storage of coarse and rich feed must assume a leading role in implementation of the comprehensive measures for strengthening the fodder base of animal husbandry.

The July (1978) plenum of the CPSU Central Committee adopted a fully elaborated program for the comprehensive development of an animal husbandry fodder base which, in addition to increased production of fodder and enhancement of its quality, provides for a large volume of work for construction of various kinds of fodder storage facilities on the kolkhozes and sovkhozes. The decision adopted calls for the construction before 1985 of silage and hay installations for a volume of about 236 million cubic meters, hay storage facilities with a capacity of 18 million tons, edible root storehouses--13 million tons, and storehouses for grain forage, herbal flour and briquetted and granulated fodder mistures--more than 30 million tons.

In fulfillment of the planned program, the kolkhozes and sovkhozes have developed extensive construction of storehouses for the various types of fodder. Thus, in 1979 the established assignments for building on and putting into operation silage and hay installations were overfulfilled 8.1-fold in Lithuanian SSR, 7.4-fold in Kazakh SSR, 3.4-fold in Azerbaijan SSR, and 2.3-fold in Moldavian and Armenian SSR. The organizations of Belorussian and Latvian SSR have fulfilled their assignment for the construction of storehouses of this kind.

In Estonia SSR they put into operation edible root storehouses for 40,000 tons, or 6.6 times more than the amount called for by the assignment. The plan for construction of warehouses for grain forage was overfulfilled by the organizations of Georgian and Latvian SSR and for herbal flour by those of Belorussian, Azerbaijan and Lithuanian SSR. Some oblasts of the Russian Federation are making provision for fulfillment of the planned program of fodder storage facilities two-three years ahead of schedule. Thus, in 1979 Orlovskaya Oblast built and put into operation 373,000 cubic meters of hay and silage installations, or twice the amount of storage space the organizations possessed before this.

Many kolkhozes and sovkhozes are concentrating a great deal of attention on the construction of warehouses for the preparation and storage of hay. For example, every year the sovkhoz Razdol'ye in Leningradskaya Oblast has been procuring more than 2,000 tons of pressed hay. They press it under a 30-35 moisturization and they store it in sheds with a capacity of 600-650 tons, equipped with an active blower system. To complete the drying of the pressed hay moisturized to this extent they use centrifugal blowers which create a higher air pressure than the axle type and produce a good quality fodder. The storehouses in this organization are part of a unified technological line for the preparation of high-quality hay and they guarantee dependable storage for it.

Extensive introduction of progressive technologies for the procurement and storage of all types of fodder enabled the sovkhoz Razdol'ye to year after year provide high-quality feed for the animals and to achieve a 940 kilogram increase in the productivity of the dairy cattle in the last four years, bringing this productivity up to 5363 kilograms per cow. The organization is producing 1,576 quintals of milk and 121 quintals of eggs on 100 hectares of agricultural land.

However, not every organization is giving the proper attention to the construction of storehouses for fodder. In 1979 for the country as a whole fulfillment encompassed only 31 percent of the plan for construction of hay storage facilities and only 33 percent of the plan for warehouses for the storage of herbal flour and briquetted and granulated fodder. Many republics failed to include in the 1979 plan edible root storage facilities and warehouses for hay and other types of fodder. This year the kolkhozes and sovkhozes are supposed to build and put into operation storage facilities for 30.5 million cubic meters of silage and hay, 2.4 million tons of hay

storage facilities, 1.7 million tons of edible root storehouses, and warehouses of nearly 4 million-ton capacity for grain feed, herbal flour, briquettes, and granules.

For the storage of silage and hay there are currently recommended the trench and turrent types of structures. The most widespread are the trench storage facilities. They are of three types: buried, semiburied and surface. The first two types require special devices to prevent the influx of ground water and to remove silage juice. Extracting the finished fodder from them is a rather complicated process. The existing plans for trench storage depositories mainly call for the use of nonunified designs and the dimensions in them do not always allow for the selection of an optimum volume storehouse for a particular farm. When the fodder is stored in these facilities, the transport goes right into the trenches and this leads to pollution and spoilage of the fodder.

Extensive use of this type of storage facility, especially for keeping fodder with a high moisture content (green corn with a moisture content over 70 percent, field-crop cultivation wastes, beet pulp, etc.) requires more sophisticated planning and design concepts, which will insure adherence to all the technological requirements for the procurement of high-quality fodder. The construction of these installations must therefore be organized on an industrial basis, employing standard construction designs. In compiling these plans it is necessary to resolve such problems as the addition of pulverized chaff for reducing the moisture content of the silage mass, enriching it with various additives, loading the storage facility without penetration by the transport means, etc. Deserving of attention in this regard is the plan for a completely assembled silage storage facility prepared by the Orelsel'khozproyekt [Orel Agricultural Planning Institute]--it provides for plant manufacture of the storage structures in a completely prefabricated variant.

The storage facility of the turret type is used mainly for the preparation of hay. The combines of the Goskomsel'khuztekhnika [State Committee for Agricultural Equipment] manufacture top-unloading hay turrets made from BS-9.15 cement blocks and possessing a capacity of 1600 cubic meters for accommodating 900 tons of fodder. For unloading the fodder from the turret there is a 520 by 546-millimeter side hatch. The unloading hatches are enclosed throughout their height in a semicylindrical housing which serves as an unloading shaft to prevent wind-blown losses of hay. The height of the turret and cover is 29 meters. The turret is made up of a pneumatic TZB-30 carrier, an RMB-9.15 hay distributor, an RBV-6 hay unloader, and a multistage TKS-6 fodder carrier. Installation of the turrets and the sets of equipment for them is carried out by mobile mechanized detachments of Goskomsel'khoztekhnika.

The kolkhozes and sovkhozes have now erected 4,811 of these structures and the plan calls for the construction of 910 more turrets in 1980. Because of the difficulties entailed in maintenance, the imperfections in the loading

and unloading equipment, and several other planning and design deficiencies, the BS-9.15 haying turrets do not possess the advantages which were projected for this type of structure.

The scientific research institutes have determined that storage of the hay in turrets results in a better quality and less losses of fodder, reduces the adverse effect of the storage process on the environment, and creates better conditions for mechanization of the fodder distribution and for enhancement of the labor expertise of the maintenance personnel and the aesthetics of production. In light of these factors, the turret-type storehouses designed for the storage of fodder with decreased moisture should be considered of greater long-term advantage than the trench type. The important thing is to achieve a technological process in which the direct costs for the storage and use of the fodder are not greater than the costs entailed in the use of trenches. This requires that the large capital investments for the construction of turrets should pay off in the form of reduced losses, enhanced quality of the fodder, and reduction of the labor input entailed in the fodder distribution and other production processes. It is essential to develop as rapidly as possible improved types of turret storage facilities and to design highly productive equipment for the loading and unloading of fodder. The scientific research work on hay turrets has been in progress in the country for more than 10 years but the matter has still not been satisfactorily resolved.

Currently developed and in use are several plans for barns and sheds for the storage of hay. The Gipronisel'khoz [State Scientific Research Institute for Agricultural Planning] offered standard plan 817-150 for a 10,000-ton hay shed based on prefabricated reinforced concrete and employing asbestos sheet for the walls and roof. This facility is equipped with mechanisms for loading and pulverizing the hay. The storage cost per ton of hay is 40.4 rubles and the technological equipment represents 6.8 percent of the total cost. The Mosgipronisel'stroy [Moscow Branch of the State Institute for Agricultural Construction] worked out a plan for 200 and 400-ton hay barns (standard plan 801-36) which stipulates the use of prefabricated reinforced concrete components for the foundations and walls and asbestos-cement sheet for the roof. Loading and unloading of the hay from these facilities is carried out by means of mobile equipment. The cost of storage in them is respectively 84 and 54.9 rubles per ton of hay and the technological equipment (400-ton shed) represents 12.6 percent of the total cost.

The Lithuanian Institute of Agricultural Planning worked out a plan (standard plan 817-10) for a hay storage barn with a 400-ton capacity. The foundation is monolithic and the walls and roof are made of asbestos cement sheet. The cost for storage in this facility is 99 rubles per ton of hay and the technological equipment represents 23.4 percent of the total cost.

A plan for hay storage sheds with a capacity of 60,100 and 200 tons (standard plan 15-177) was worked out by the Gipronisel'khoz in two variants: one from prefabricated wood components with a cost for storage per ton of hay of 19.3,

17.8 and 16.2 rubles respectively for these capacities and one from prefabricated reinforced cement components with a cost for storage per ton of hay 29, 26.7 and 24.3 rubles respectively.

Judging from the data cited here, the existing plans apparently resolve to some extent the problems of hay storage but technologically they are not compatible with the procurement of quality fodder. Most of them do not provide for use of the method of active aeration as an integral part of the technology for procurement of first-class loose, pulverized and pressed hay. The standard dimensions for the hay storage facility must meet the needs of the animal husbandry complexes for this type of fodder and--most important--the plans for these structures must be inexpensive and they must provide for industrial manufacture of the components in a completely prefabricated variant.

Still unresolved are many problems pertaining to the organization of storage of fodder roots and briquetted and granulated fodder.

In accordance with a decree adopted at the July (1978) plenum of the CPSU Central Committee, Goskomsel'khoztekhnika USSR was tasked with the manufacture and installation of airtight depositories for the storage of artificially dehydrated fodder in an inert gas medium and Gosplan USSR was authorized to allocate the necessary rolled ferrous metals for these purposes. However, up to now this matter has not been satisfactorily resolved by these institutions.

The introduction in fodder production of the most effective types of storage facilities is a first-priority task in the implementation of measures for the establishment of a solid fodder base for animal husbandry. We must regard construction of the fodder storage facilities planned for the 1980-1985 period as a minimum program. Even if successfully fulfilled this program does not provide for all the needs of fodder production, particularly the need for storage facilities for silage, hay and root crops. The task of the planning and agricultural organs and the organization managers is to try to find within the 11th Five-Year Plan additional capital investments and financial assets for construction of the necessary fodder storage facilities so that by 1985 full provision will have been made for dependable storage of the fodder on the kolkhozes and sovkhozes.

At the same time, a major role in the accomplishment of this important task is played by the scientific research institutions. The existing standard plans do not take the zonal conditions into account; construction of the storage facilities is expensive; in many cases the plans call for large input of manual labor for loading and unloading of fodder; and the work has not included the preparation of a complex of highly productive and reliable machines and equipment for the warehousing operation. Because of the lack of preliminary experimental checking, the proposed plans for fodder storage have important deficiencies of a technological and design nature.

In many institutes the research for development of the various types of fodder storage facilities is being carried out by a small collective of scientific associates and it is not producing the desired effect. Despite the importance of the problem, the technological, construction and other scientific research institutes neglected for a long time to carry out comprehensive research on the setting up of fodder storage facilities.

Improving the quality of the scientific research in the field of preparation of fodder storage facilities which conform to the present-day level of the development of fodder production requires the organization of a comprehensive solution of this problem by the institutes of the construction, engineering and technological type. The implementation of these measures should be incorporated in the 11th Five-Year Plan and the state plan for scientific research work and we should make use of the achievements of science and technology in the national economy.

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AGRO-ECONOMICS AND ORGANIZATION

IMPROVED RELATIONSHIPS BETWEEN PRIVATE PLOTS AND TRADE REQUIRED

Moscow VOPROSY EKONOMIKI in Russian No 6, 1980 pp 118-124

[Article by V. Voronin, Voronezh: "Private Plots and Trade"]

[Text] Under the conditions imposed by developed socialism, the problems concerned with increasing the food resources are solved in the interests of all members of society, with a fixed retail price level that makes it possible to satisfy the requirements of a population having different income levels. The annual state subsidy for maintaining stable retail prices for meat and dairy products alone amounted to more than 20 billion rubles. Commencing on 1 January 1979, in conformity with the decree of the July (1978) Plenum of the CPSU Central Committee, it was increased by 3.2 billion more rubles.

Our country is characterized by a smoothing out of the structure of consumption among different population groups and in individual regions of the country, by the consumption volumes for the more important food products approaching the physiological norms and improvements in their degree of balance and by a reduction in the proportion of natural consumption. This is promoted both by the development of agricultural production and high rates of growth in monetary income, especially among low and medium salary categories of the population and also by an increase in the payments and benefits issued from the public consumption funds. A solution is available at the present time for the problem of ensuring that each inhabitant (precisely each one and not the mean statistical inhabitant, as is the case in capitalist countries) is provided with high calorie nutrition (3,000 calories daily), despite the fact that the nutritional structure on the whole still requires definite improvements, that is, optimization of the proportions for proteins, carbohydrates, fats, vitamins and various types of products -- meat, milk, fruit, vegetables, for which physiological consumption norms have still not been achieved.

As monetary income increases, especially among low and medium salary categories of workers, a change is taking place in the structure of requirements and consumption; it is leveling off for the different categories of the population as a result of an increase in the demand for

more valuable and high quality food products -- meat, milk, fruit and vegetables. The demand for these products is increasing at higher rates than the average rate of growth for monetary income. The production of these products in the public sector does not always keep pace with the growth in requirements. This is why it is necessary to make more complete use of all opportunities for increasing these products. "Beyond any doubt, public production provides the foundation for the formation of state commodity food resources" noted L.I. Brezhnev during the Eleventh Congress of Professional Trade Unions, "At the same time, importance is attached to making complete use of the potential embodied in the private plots."

At the present time, LPKh's [lichnyye podzobnyye khozyaystva; private plots] are playing an important role in the production of agricultural products. At the present time, the LPKh's account for approximately 60 percent of the gross production of potatoes and honey, approximately 40 percent of the fruit, berries and eggs and approximately 30 percent of the meat, milk and vegetables. The income earned on LPKh's amounts to one fourth of the overall income of kolkhoz members and it also constitutes a substantial portion of the income earned by sovkhoz workers. According to our computations, the overall total amount of income earned on LPKh's amounts to 18 billion rubles annually.

However, the marketability of LPKh's is considerably lower than that for the public sector of production. In 1977, they accounted for only 42 percent of the overall commodity production of potatoes, 13 percent of the vegetables, 12 percent of the meat, 7 percent of the eggs and 5 percent of the milk*. This came about owing to objective factors -- first of all, there was the trend wherein a predominant portion of the products were grown for personal consumption, in some instances amounting to up to 70-80 percent of the gross production of the LPKh's. At the same time, the owners of products grown on LPKh's are experiencing difficulties in selling them. The independent sale of products on the kolkhoz market involves transport difficulties and requires a tremendous amount of free (and quite often free time as well) time. The annual losses in working time by rural inhabitants for the sale of products on the kolkhoz market are estimated to be in excess of 200 million man-days**.

For all practical purposes, no effective system of interrelationships among LPKh owners and the main procurement specialists for agricultural products is available in the rural areas. The proportion of their output in the

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* The table was computed using data from the statistical yearbook "National Economy of the USSR During 1977." Statistika Publishing House, 1978, pp 210-212, 449, 458. In the process, we have made the assumption that the sale of LPKh products to the population, output that was not included in the state statistics, is no lower than the procurement and sales volumes for surplus agricultural products on the kolkhoz market or than the output of the public sector (kolkhozes, sovkhozes).

** See A. Levin, V. Nikitin, "Kolkhoznaya torgovlya v SSSR" [Kolkhoz Trade in the USSR]. Ekonomika Izd., 1978, p 61.

TABLE 1

	1940	1965	1970	1975	1977
LPKh products in retail turnover					
through state procurements	661	1426	1874	3025	2142
through state and cooperative trade	-	1345	2204	2676	2495
through the kolkhoz market	2900	3600	4200	5200	5700
Total	3561	6371	8278	10901	10357
Products of public sector of production in retail turnover	6784	34502	48444	62552	67830
Total overall turnover	10345	40837	56722	73453	78167
Proportion of LPKh products in overall turnover	34.4	15.6	14.6	14.8	13.2

the country's retail commodity turnover reflects a tendency to decrease and yet in terms of comparable commodity groups it accounts for a considerable portion of the turnover. In 1977, according to our computations, it amounted to 13.2 percent of the overall turnover of comparable groups of food goods and the total amount exceeded 10 billion rubles.

Consumer cooperation plays a leading role with regard to ensuring timely and complete procurements of surplus agricultural products from the LPKh's. such procurements are carried out either on the basis of agreed upon prices, taking into account the prevailing prices on the kolkhoz market, or on a commission basis. For the purpose of carrying out this function, procurement offices have been created within the system of consumer cooperation. However, the organization of procurements and the sale of surplus LPKh products to the population are being carried out by consumer cooperation in insufficient volumes, as borne out by the data in Table 2.

The volume of surplus animal husbandry products procured from the population by consumer cooperative societies, in accordance with prices that were agreed upon and adopted by the commission, amounts to a negligible portion of their gross production on LPKh's. During the years of the ninth and tenth five-year plans, a definite trend was observed towards a reduction in the volumes of such procurements. Thus, in 1977 the volumes for meat and vegetables amounted to 95 percent of the figures for 1970, potatoes -- 92, eggs -- 80 and milk -- 50 percent. At the same time, a reduction took place in the proportion of animal husbandry products procured from the population by consumer cooperative societies, with regard to the overall production of such products on the LPKh's.

On the whole, owing to a raised level for the procurement prices for certain types of products, the overall sales volume for food goods procured by consumer cooperative societies in accordance with prices that were agreed upon and adopted by the commission has remained unchanged since

TABLE 2

Procurements of Surplus Agricultural Products From LPKh's By Consumer Cooperative Societies*

	1970			1977		
	Gross Production on LPKh's	Procurements		Gross Production on LPKh's	Procurements	
		Quantity	Proportion in Output of LPKh's (in %)		Quantity	Proportion in Output of LPKh's (in %)
Meat (in millions of tons)	4.3	0.2	4.7	4.3	0.19	4.4
Milk (in millions of tons)	29.8	0.04	0.1	27.4	0.02	0.1
Vegetables (in millions of tons)	8.1	0.38	4.7	7.0	0.36	5.1
Potatoes (in millions of tons)	62.9	0.25	0.4	49.4	0.23	0.5
Eggs (in billions of units)	21.7	0.5	2.3	21.2	0.4	1.9

* Table was prepared using data from the statistical yearbook "National Economy of the USSR During 1977," pp 202, 204, 259 and 462.

1970 and amounts to 1.5 billion rubles. It bears mentioning that the retail price level for these products in the cooperative trade stores is on the average 25-30 percent lower than the kolkhoz market prices and this provides the consumers with an annual savings of approximately 500 million rubles. Thus, in addition to satisfying more completely the population's requirements for agricultural products, the increase in the procurement volumes of consumer cooperative societies is making it possible to carry out such trade at lower prices. Therefore a reduction in the procurement volumes for surplus agricultural products, obtained from LPKH's by consumer cooperative societies, such as has been taking place in recent years, is unacceptable.

It is our opinion that this situation developed mainly as a result of insufficient interest being displayed by the consumer cooperative societies in raising the procurement volumes for LPKh products. First of all, the economic activity of the consumer cooperative societies is multi-branch in nature: in addition to organizing retail and wholesale trade and public catering in the rural areas, they also participate in the state procurements of many types of agricultural products in the public sector of production, in the processing of agricultural raw materials, in the production of food products and non-food goods, in fur farming, animal husbandry and poultry husbandry on their own subsidiary farms (which appear as large-scale agricultural enterprises) and in the procurement of wild fruit, berries and medicinal herbs. Against the background of these large-scale operational trends, the organization of procurements of surplus LPKh products is being viewed as a matter of secondary concern. Moreover, for all practical purposes no degree of responsibility is borne by an individual for having disrupted the established tasks for procuring surplus agricultural products from the population. In addition, a reduction in the procurements of surplus agricultural products is not reflected in the amount of material compensation awarded to the cooperation specialists, in particular the amount of bonus payments for having fulfilled the plan for trade-economic and production activity. When computing the bonuses, consideration is given first of all to plan fulfillment in terms of such indicators as the overall volume of retail goods turnover, volume of state procurements and the volume of output of products.

Secondly, the sale of products procured at prices which were agreed upon and adopted by the commission is an organic part of the overall volume of retail goods turnover in consumer cooperation, occupying a negligible proportion of such turnover. In 1977, it amounted to only 2.3 percent. And although since 1969 the sales volume for such products appears as a separate line in the national economic plan for the union republics, particularly the RSFSR, still the principal indicator for evaluating the results of trade activity continues to be the overall volume of retail goods turnover. Underfulfillment of the sales plan for surplus agricultural products procured from the population can be covered through the sale of other groups of commodities (and this is actually being done). Thus in 1978, according to data supplied by TsNILS [Tsentral'naya nauchno-issledovatel'skaya laboratoriya sprosa; Central Scientific Research Laboratory on Demand] of Tsentrosoyuz [Central

Union of Consumers' Societies], the rhythimical importing and sale of agricultural products procured from LPKh's were at a low level. Over the course of a month's time, interruptions in the importing and sale of potatoes were observed at 59 percent of the stores inspected, pickled food -- at 67, pork -- at 71 and beef -- at 76 percent of the stores.

Thirdly, the labor-intensiveness of procurement work carried out on LPKh's is higher compared to procurements in the public sector of production; the products are for the most part perishable and any delays in selling them result in losses. The responsibility for such losses is considerably higher than for a disruption in the procurement plan or for simply refusing to accept the products from the population. In the latter case, the losses are borne by the owners of the LPKh's and not the trade itself.

Thus the owners of LPKh's, especially those located in remote regions, experience great difficulties in selling the products required by the population. Thus in 1977, in Saratovskaya Oblast, the owners of LPKh's were forbidden to sell their honey and in 1978, in Kirovskaya Oblast -- their meat. At the same time, five stores of Tsentrosoyuz engaged in the selling of agricultural products were closed here. In many oblasts the procurement specialists would not accept rabbit meat and, as a result, the price for such meat rose to a considerable degree on the kolkhoz market. Within Tsentrosoyuz the network of acceptance-procurement points is inadequate and, in addition, these points are distinguished by a low level of material-technical equipment. In Siberia and the Far east there is only one such point for every 2,600 farmyards and there are generally no such points available in Chitinskaya Oblast or Khabarovskiy Kray. In a number of areas the acceptance points operate at times which are inconvenient for the suppliers of the agricultural products. The suppliers are also experiencing difficulties in obtaining their money.

It bears mentioning that in carrying out the decisions handed down during the 25th CPSU Congress and the July (1978) Plenum of the CPSU Central committee, Tsentrosoyuz is pursuing a course aimed at improving the organization and increasing the procurements of agricultural products from the population and kolkhozes in accordance with the prices agreed upon and also at further developing and improving trade in these products in the cities and workers' settlements. This plan was approved in the decree handed down by the CPSU Central Committee and the USSR Council of Ministers entitled "On Further Development of and Improvements in the Work of Consumer Cooperative Societies" (1979). The plans call for the accelerated development of a network of receiving-procurement points. By the end of 1980, such points will have been created for every 200-300 farmyards and by the end of 1985 -- on the territory of each rural soviet. The capital investments required for their development in the construction plans are presently being set forth in the form of a separate line and they are being used strictly on a special purpose basis.

In addition to a network of receiving-procurement points, greater use is being made of long-term contractual agreements with the owners of LPKh's.

The introduction of contractual relationships will make it possible to determine in advance the specific procurement volumes for each type of product and this will become the economic basis for the volumes in the established plans for procurement operations by Tsentrosoyuz. The contractual system guarantees a market for the owners of LPKh's, for all of their surplus products and with minimal expenditures of forces, resources and time. However, a contractual system of interrelationships has still not been organized in a satisfactory manner in all of the union republics. Whereas 1.5 million contracts had been concluded by the end of 1978 in the Ukraine and the Russian Federation, only 40,000 were finalized in Belorussia and not one in either Georgia or Armenia.

The owners of LPKh's, with whom contracts were concluded for the procurement of surplus agricultural products, can obtain advances (by means of Gosbank credit) for procurements of animal husbandry products up to 50 percent of the total agreed upon by the sides and for crop husbandry products -- up to 30 percent. This represents a substantial stimulus for growing those products required by the country on LPKh's.

At the same time, we are of the opinion that greater economic importance must be attached to the plans established for Tsentrosoyuz for the procurement and sale to the population of surplus agricultural products, procured on the basis of agreed upon prices or prices adopted for the commission. The fulfillment of these plans must be viewed as being on an equal footing with fulfillment of the plan for retail goods turnover and the plan for state procurements.

At the present time, the predominant portion of the surplus agricultural products of LPKh's is entering circulation by means of kolkhoz trade. In 1977, this circulation amounted to 5.7 billion rubles and it exceeded consumer cooperation turnover in the sale of surplus agricultural products by almost fourfold. Thus, some of the more important trends for increasing the country's food resources include: implementing improvements in kolkhoz trade, raising its effectiveness and introducing planning principles into its operations on a more extensive scale.

The decree handed down by the CPSU Central Committee and the USSR Council of Ministers entitled "On Measures for the Further Development of Trade," called for measures aimed at improving the organization of kolkhoz trade. The schedules for the allocation of Gosbank credit, for the construction and modernization of kolkhoz markets (there are 6,500 in the country) were increased to 6 years. The plans call for the funds from one-time collections to be used strictly for a special purpose -- for developing the logistical base of the kolkhoz markets. USSR Gosstroy has been tasked with developing standard plans for enclosed markets. The recommendation has been made to have the kolkhozes and sovkhozes furnish active assistance to the population in organizing the delivery of surplus agricultural products to the kolkhoz markets, allocating the required number of motor transport vehicles for this purpose.

The attraction of additional marketable resources is dependent to a considerable degree upon the level of organization of kolkhoz trade and upon the introduction of planning principles in its operations. One new trend in this regard is the concluding of agreements with kolkhozes and sovkhozes for the sale on the kolkhoz market of agricultural products that are not encompassed by state procurements. In the agreements it is stipulated that the kolkhozes and sovkhozes are obligated to sell their surplus products on the market and also to furnish assistance to kolkhoz members and sovkhoz workers in selling the surplus products of the LPKh's. This particular form of interrelationships, as borne out by the experience of Rostov-na-Donu and a number of other cities, produces perceptible results with regard to increasing the deliveries of products to the kolkhoz market.

It bears mentioning that in the development of LPKh's great importance is attached to having the market itself organize services for the owners of the LPKh's. For example, a specialized motor pool consisting of 80 motor vehicles was created and attached to the administration for markets at Rostov-na-Donu. Thus it is now possible, based upon requests received from kolkhoz members and other owners of LPKh's, to assign motor vehicles for transporting products to the market on definite days and at particular times. Such economic interrelationships between the kolkhoz market and the owners of LPKh's are not only convenient and economical, but in fact they make it possible to establish extended and stable contacts, a very important factor from the standpoint of ensuring continuous deliveries of the products. In turn, stable deliveries of diverse types of products to the market represent one of the conditions for lowering and maintaining a low price level. For example, after having achieved stable deliveries of rabbit meat to the kolkhoz market in Kherson, the price for a rabbit carcass became 1.5-2 times cheaper than it was the previous year and also compared to other cities.

The creation of an institute of public inspectors attached to the kolkhoz market administrations is promoting the establishment of stable contacts with the owners of LPKh's. The boards of directors of the markets maintain constant contacts with these inspectors, keeping them informed regarding the prevailing market conditions: the retail price level, the status with regard to the demand for individual types of products and the delivery volumes for the products.

It bears mentioning that in connection with solving the problem concerned with increasing the food resources, incidents involving use of the seniority approach are still taking place. Not all of the kolkhoz members nor workers are able to sell completely all of their surplus products on the spot. At times, obstacles present themselves with regard to shipping the products beyond the limits of a rayon or oblast: the information required for selling the products is not always made available and when the shipping is carried out by transport vehicles of the kolkhoz market, instructions are issued by GAI [State Automobile Inspection] calling for the rights and permits to be taken away from the drivers. In addition to failing to

promote a more complete use of the surplus products of LPKh's, such administrative measures also lead to a reduction in their production volumes.

In the development of LPKh's, great importance is attached to creating trade services bureaus attached to the kolkhoz markets -- in 1978 their number exceeded 700. They furnish assistance to the kolkhoz members in selling the products brought to market, thus providing them with more time; they accept for the commission or even make full payment for the products delivered. Last year, for the country as a whole, this made it possible for the rural workers to realize a savings of several hundreds of thousands of man-days, a factor which is of special importance during the harvest period. However, trade services bureaus were organized only at one of ten kolkhoz markets. Although they quite often perform the functions of a procurement element and in this manner realize manpower economies, the trade services bureaus nevertheless do not enjoy the rights possessed by specialized procurement elements of oblpotrebsoyuz's [oblast union of consumers' societies].

This tends to indicate that a standard statute should be developed for the trade services bureaus and coordinated with the USSR Ministry of Finances and USSR Gosbank. Moreover, such a statute should be predicated upon the requirement for ensuring a maximum possibility of achieving the final goal -- greater attraction of surplus agricultural products into circulation, with minimal losses in working time by the sellers and more complete satisfaction of the requirements of the consumers.

Public catering organizations exert a great amount of influence on the development of LPKh's. Their relationships with the owners of LPKh's should ideally also be developed on a contractual basis and thus guarantee stable deliveries of additional food resources. The procurements must be carried out on a centralized basis by the trusts and not on the kolkhoz market, but rather in the areas of production directly and according to lower procurement prices. This will promote a reduction in the retail prices for the products of public catering enterprises. Subsequently, this will make it possible to convert over to planning the deliveries of a definite and stable portion of the resources for particular enterprises, based upon procurements of surplus agricultural products from LPKh's, as is being done in consumer cooperation. In turn, the trade organizations can render effective assistance to the LPKh's mainly by supplying them with feed based upon aggreements calling for mutual deliveries of food waste products and meat products.

An important condition for raising the effectiveness of use of available food resources is that of improving the relationships between LPKh's and trade and intensifying the role played by a plan in the economic contacts between them, while simultaneously improving the organizational forms.

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AGRO-ECONOMICS AND ORGANIZATION

PROBLEMS OF INTERFARM COOPERATION AND AGRICULTURAL INTEGRATION

Accounting, Cost Computation Improvements

Moscow PROBLEMY MEZHKOZYAYSTVENNOY KOOPERATSII in Russian No 3 (86), 1978 pp 127-132

[Article by M.I. Sklirova, candidate of economic sciences: "Improvements in Accounting of Expenditures and Computation of Production Costs for Forage Crop Output"]

[Text] In conformity with the increasing requirements for production planning and control, the USSR Ministry of Agriculture is carrying out a great amount of work in connection with improving the methods employed in planning, accounting for expenditures and computing the production costs for agricultural products.

At the same time, as borne out by a study of accounting and economic practices at kolkhozes and sovkhozes and of the existing forms for accounting, planning and reporting, a number of shortcomings are still being observed in the accounting for and planning of expenditures and the quantity of output and in the computation of production costs for a number of agricultural crops, particularly forage crops.

Substantial differences exist in the forms for the accounting documents, production-financial plans and annual reports of kolkhozes and sovkhozes with regard to the nomenclature for the objects of expenditure accounting and planning and for the objects of production cost computations for forage crops and natural feed lands.

Thus, in the "Principal Statutes on Planning, Accounting and Computation of Agricultural Output" (1969), "silage crops (less corn)" were singled out as an object for the accounting and planning of expenditures. In the profinplany [production-financial plans], this group of crops was described as "Silage crops, with the exception of corn, annual and perennial grasses, including the singling out of sunflower plantings for silage (footnote to Form No. 12, line 1280).

The areas under crops and the expenditures for growing winter grain crops for green feed are planned and shown separately in the production-financial plans, whereas in the annual reports this is reflected on the whole as a group of annual grasses.

Distinct from the production-financial plans of kolkhozes and sovkhozes, natural pastures and wild-growing grasses are not stipulated in the nomenclature of the existing principal statutes for the objects of expenditure accounting. Rather, mention is made of improved (radically improved) haying lands -- referred to as cultivated haying lands. Natural pastures were not included in the list of feed lands or in the annual reports of kolkhozes and sovkhozes (Form No. 12).

In addition, expenditures for the cultivation of the same forage crops and their products are accounted for on the basis of different objects, depending upon their actual use. Thus, expenditures and the fodder of annual grasses used for the production of silage from isolated areas are accounted for and reflected in the annual reports under the group "Silage Crops (excluding corn)", whereas the fodder from these crops that is used for green top dressings and the production of haylage or grass meal are reflected under the group "Annual Grasses."

Another example, If individual grain crop tracts were planned for grain purposes but actually harvested and used for green feed, for silage or for the production of mono-feed, then the output and expenditures for raising and harvesting these crops, depending upon their use, are shown respectively in the annual reports of the kolkhozes in the group of annual grasses, in the group of silage crops or in the group of grain forage crops intended for use in the preparation of granules and briquettes.

Such practice in the accounting of expenditures and output results in a large volume of additional computations being carried out on the farms when validating the level for the planning indicators for output and the production costs for the feed output of individual crops (groups of crops). In addition, it inhibits control over their fulfillment and it precludes the possibility of achieving an objective economic evaluation for these crops.

The established list and description of the natural feed lands in the mentioned documents are not in agreement with the single classification developed for these lands (haying and pasture lands) and, as a result, statistical reporting on the utilization of land at kolkhozes, sovkhozes and other categories of farms has been established. Meanwhile, a single classification for the natural feed lands is not only the foundation for standardizing all work associated with intrafarm land management and for developing measures aimed at improving and achieving rational use of haying and pasture lands, but also for ensuring correct accounting of expenditures and the computation of production costs for these lands.

In the instructions for composing production-financial plans, annual reports and statistical reporting, use is made of many different names for the natural feed lands without accuractely defining their content ("natural pastures," cultivated pastures," "cultivated and improved pastures," "cultivated haying and pasture lands of many years standing," "cultivated and improved haying lands," "improved haying lands (radically improved)," "improved haying lands (surface and radical improvements and others").

The presence in the planning, accounting and reporting documentation of groups of natural feed lands that differ in terms of their composition and descriptions not only complicates and inhibits their compilation, but in addition it inevitably affects the authenticity of the data reflected in them.

The farm bookkeepers and economists have expressed many critical comments regarding the existing practice of accounting, planning and reporting on the indicators for the amount of output from natural feed lands and computing its production cost and the coefficient method for the distribution of expenditures according to types of products.

All output obtained from field forage crops that is used for different purposes is accounted for on a full-scale basis (physical weight). A product of natural feed lands is the fodder that is used for the procurement of hay, for the laying in of silage and haylage, for green top dressings and for grazing. However, distinct from sown grasses, similar output obtained from haying lands and cultivated pastures is planned, accounted for and reflected in the annual reports of farms in different ways.

For example, throughout the year the output of cultivated pastures is accounted for in physical weight separately: hay, fodder according to the trends for its use (for haylage, for silage, for green feed and separately for grazing).

The entire output from these lands is planned according to the overall physical weight of the fodder on the whole. And in the annual reports of kolkhozes and sovkhozes, the output of products from these lands is on the whole shown in a relative expression, in a conversion for air-dried bulk, that is, for hay. The cropping power of pastures is also computed in quintals of hay per hectare.

In the "Instructions for Computing Expenditures and the Cropping Power of Pastures at Kolkhozes and Sovkhozes" (1974), it was similarly recommended that the output of natural pastures be taken into account. However, the quantities and production costs for the output of natural pastures are not reflected in the annual reports of farms, in the table entitled "Production and the Production Costs of Crop Husbandry Products" (Form No. 12-agric.).

The areas and expenditures for the output of sown irrigated pastures are not reflected in the "Report on Irrigation Farming" (Supplement No. 1a-sp to the annual reports of kolkhozes and sovkhozes).

In connection with the natural and improved haying lands (radically improved), not all of the products obtained from these lands are planned, accounted for and shown in the annual reports, but rather only the hay procured not only from these lands but also from all other types of land on which hay-mowing operations were carried out (haying lands, pastures, long-fallow land, fallow, forest haying areas and other lands used for the procurement of hay).

The fodder harvested from those lands where hay-mowing work was carried out and used for green feed, for the preparation of haylage, silage and other types of feed is reflected (in physical weight) in the line item "Wild Grasses," with a breakdown for the quantity of fodder from natural and improved haying lands (together), used for haylage.

The purpose of the above-mentioned object for the accounting and planning of expenditures and output yield remains obscure. It is generally not specified in the principal statutes, it is referred to in the production-financial plans as "Wild Grasses for Silage" and in the annual reports of kolkhozes and sovkhozes (for 1977) -- "Wild Grasses Harvested for Green Feed, Haylage, Silage and Grass Meal (weight of fodder)".

Moreover, at kolkhozes, the haulm of root crops used for green feed is accounted for and reflected in the annual reports in accordance with this same object and this can by no means be justified.

As a result of these diverse methods for accounting for and planning feed output, difficulties are encountered with regard to determining correctly the productivity level for the different types of feed lands and extreme complications arise when attempting to achieve a comparative analysis of the economic effectiveness of their use.

In conformity with the existing instructions for natural feed lands, the production cost for 1 quintal of output from the principal use of such land is planned and reflected in the annual reports. Thus, for the natural and radically improved haying lands, only the production cost for the hay is computed; for the natural pastures (in the plan) -- only the fodder; for the cultivated pastures (in the plan) -- only the fodder and in the report -- the production cost per quintal of output in a conversion for hay, although hay and fodder to be used for different purposes are obtained from all of these lands.

In order to improve the accounting of expenditures and achieve a more accurate computation of the level of production costs for the various types of forage crop products and also to determine their economic effectiveness, we consider it necessary to expand the nomenclature of objects employed in the accounting of expenditures in feed production.

Towards this end, independent objects for accounting for expenditures should be singled out: from the group of silage crops (excluding corn) --

sunflowers for fodder, which occupy approximately one half of all plantings in this group; from the group of annual grasses -- winter grain crops for fodder, vetch and vetch mixtures, peas and peas-oats mixtures for fodder; from the group of perennial grasses -- alfalfa, clover.

On seed production farms engaged in the growing of seed for perennial grasses -- the accounting and computation of output production costs should be carried out for each crop of commercial seed production. On farms specializing in the production of feed -- for each forage crop separately.

To standardize completely the descriptions and content of the objects used in the accounting and planning of expenditures, the indicators for output yield and the objects employed for computing the output production costs for field forage crops, the natural feed lands and their reflection in statistical reporting and in the annual reports of kolkhozes, sovkhozes and other agricultural enterprises.

The accounting for the amount of credited output of sown grasses and natural feed lands in a natural expression (physical weight) and the compututation of its production cost is carried out for each type of product (hay, seed, fodder by types of processing, for green feed for grazing) actually obtained from these lands.

In order to determine the overall productivity of each forage crop (group of crops), haying lands and pastures and in the interest of comparing it against a computation of the quality of the feed output, the indicator for harvesting the product per hectare is computed in a natural expression (physical weight), in feed units and digestible protein.

When using field forage crops, improved haying lands, cultivated pastures and other natural lands for obtaining several types of products and for the purpose of determining more accurately the production cost level for each of them, a conversion must be made over to applying directly to a particular type of product those expenditures associated directly with its production, instead of an arbitrary distribution of these expenditures using established coefficients.

The overall expenses for the growing of fodder (up until harvest) that are associated with the production of several types of products are taken into account in the appropriate analytic accounts for crops (groups of crops) and natural feed lands and they are distributed by types of products proportional to the areas harvested for hay, for the procurement of fodder for its processing into hay and other types of feed, for green feed or for grazing.

For such a method for accounting for expenditures, the production cost for the fodder of sown and meadow grasses, consumed while standing, will be determined by the total amount of expenditures required for growing the grasses on the grazing area.

The production cost for the hay will derive from the expenditures incurred for raising the fodder on the haying area and all of the expenses involved in procuring the hay (cutting down of the grasses, raking into windrows, tedding, pressing, transporting to the permanent place of storage and so forth). In like manner the production cost for fodder used for silage, haylage, green feed and other types of feed is determined.

The accounting and planning for expenditures and the methods for computing the production cost for the products of sown forage crops and natural feed lands must reflect the existing technology for the cultivation, harvesting, preservation, storage and use of feed products at the kolkhozes and sovkhozes, while taking into account the prospects for developing the organization of feed production operations at agricultural enterprises.

Capital for Cattle Husbandry

Moscow PROBLEMY MEZHKHOZYAYSTVENNOY KOOPERATSII in Russian No 3 (86), 1978 pp 157-163

[Article by S.A. Kzylkhodzhayev, candidate of economic sciences: "Setting of Norms for Fixed Productive Capital for Cattle Husbandry for 1981-1985"]

[Text] In connection with ensuring that agriculture is supplied with the required material and technical resources and in consistently carrying out agricultural intensification, great importance is attached to the development of a normative base, that is, to the creation of norms and normatives which reflect the achievements of scientific-technical progress.

In the development of normatives, consideration is given to those processes for introducing scientific-technical progress which are typical for the specific conditions found in individual regions and for the peculiarities of the branches.

The normatives for the fixed productive capital for cattle husbandry for the 1981-1985 period are being developed for farms and complexes, taking into account the branch and intrabranch specialization of the branch from the standpoint of individual elements -- buildings and installations, machines and equipment, transportation resources, production and farm implements, working livestock, productive livestock, instruments.

Computations of the normative requirements for fixed productive capital for large-horned cattle have shown that an average of 3,279 rubles of fixed productive capital are required throughout the country per cow in order to ensure proper management of the branch in 1985. In the Baltic republics, the mentioned normative amounts to 3,571-3,768 rubles; in the RSFSR, the Ukrainian SSR, the Belorussian SSR, the Kazakh SSR and the Moldavian SSR -- 3,138-3,327 rubles; in the Trans-Caucasus and Central Asian republics -- 2,789-3,078 rubles. For individual republics, it is expected that the normative will fluctuate on the order of 35 percent.

A comparison of the normative requirements for fixed productive capital for 1985 against the actual level of capital availability for cattle husbandry at sovkhozes in individual regions reveals that in order to ensure that the branch is supplied with the fixed productive capital required for providing the necessary conditions for the maintenance and raising of cattle, this capital will have to be increased by a factor of 1.9 in the Central-Chernozem and eastern Siberian regions of the RSFSR, the Ukrainian SSR, the Belorussian SSR and the Trans-Caucasus republics; in the Nonchernozem Zone, the Povolzhskiy, north Caucasus, Ural'sk, west Siberian and Far East regions of the RSFSR, the Central Asian republics and Kazakhstan -- by a factor of 1.6-1.9. The normative indicators for capital availability for large-horned cattle for 1985 are higher than the approved normatives for 1980 for the union by 12.6 percent, for the Lithuanian SSR, the Armenian SSR, the Tadzhik SSR and the Kirghiz SSR -- by 5-10 percent and for the Moldavian SSR, the Georgian SSR, the Kazakh SSR and the Ukrainian SSR -- by 15 percent.

The differences with regard to increasing the standard value for cattle husbandry by regions in 1985, compared to 1980, are explained by a different level of capital availability and by the need for ensuring relatively equal conditions for management in those republics, economic regions and zones enjoying roughly the same natural and economic production conditions.

The overall growth in the normative for fixed production capital during the Eleventh Five-Year Plan is conditioned by the development of scientific-technical progress in animal husbandry and its related branches of industry, by a raised level of intensity for the branch and by other factors.

At animal husbandry complexes having a high level of mechanization and automation of production processes and remote control, the standard value for fixed production capital is higher than that on farms. On the average for the USSR, the value of the fixed productive capital in cattle husbandry being operated on an industrial basis amounts to 2,560 rubles per cow and per head of young stock -- 856 rubles. These indicators are somewhat lower on farms -- 2,216 and 709 rubles respectively.

For describing the normatives for fixed capital, special importance is attached to their specific amounts for individual elements.

In the normative structure for fixed productive capital in cattle husbandry, buildings and structures account for from 66 to 75 percent in individual republics. In the normative for capital for the element entitled "Buildings and Installations," the entire complex of objects required for the maintenance and feeding of livestock is included, that is, the value for the construction of an animal billet, not only the principal production buildings but also the capital expenditures for auxiliary structures, installations and lines of communication associated with the erection of new facilities. At the same time, the construction expenditures also include expenses associated with the surveying of objects on a territory. In order

to compute them, the estimated value of the objects is multiplied by the survey coefficient established for the particular zone.

The normative or standard vale for buildings and installations, for 40 percent of the cows in a herd, amounts to an average of 2,318 rubles per head for the USSR; these expenditures fluctuate up to 31 percent for the republics and economic regions of the USSR. Regions having a lower standard value for objects include the Armenian SSR, Azerbaijan SSR, Kirghiz SSR and the Tadzhik SSR. This indicator is considerably higher in the Lithuanian SSR and the Estonian SSR.

The indicated differentiation in normatives is explained by differences in branch specialization and intensity, by the natural-economic production conditions, by the standard dimensions for farms and complexes, by the economies realized through the use of standard plans and by the zonal coefficients for surveying objects for the construction sites.

According to construction types, the lowest normative value is that for the modernization and expansion of existing farms. The difference between the standard value for new construction and that for modernization is 20-22 percent.

The standard value for buildings and installations fluctuates considerably depending upon the type of farm. In cattle husbandry, the specific capital investments for new construction of dairy complexes and farms fluctuates by more than twofold for one cattle billet, compared to the construction of complexes and farms for the raising of replacement animals and young stock for fattening and also farms specializing in the production of meat. This fluctuation in the standard value for buildings and installations, between types of farms, is explained by the fact that different age and pedigree groups of cattle require different expenditures for erecting the principal and auxiliary buildings and installations. The most capital-intensive group is the dairy herd, which requires more capital buildings than do young stock or animals undergoing fattening regimes. For example, the estimated value of buildings and installations per cow, without taking into account the coefficient for terrain surveying work, is 1,428 rubles (dairy cows) and 691 rubles (beef cattle), while at the same time the figure per head of replacement young stock is 464 rubles and for fattened young stock -- 269 rubles, or 3, 3.5 and 3 times less than the figures for dairy cows.

The estimated value for the buildings and installations of dairy farms includes the value of the delivery rooms, milking parlours, manure pits and other objects and this leads to high expenditures per cow. It is sufficient to state that the estimated value for delivery rooms, depending upon their size, ranges from 643 to 944 per cow, or 1.5-2 times higher than the value of an animal billet in a cow barn. Hence, as the proportion of cows in a herd increases, the expenditures for the construction of buildings and installations per head of long-horned cattle also increase. However, an increase takes place simultaneously in the gross production of milk.

Let us examine the effect generated by the structure of a herd on the value of buildings and installations in dairy cattle husbandry, using as an example the normatives for a number of republics (see Table 1)

TABLE 1

Normatives for the Value of Buildings and Installations in Cattle Husbandry, Depending upon the Structure of the Herd
(rubles per head of long-horned cattle)

	Proportion of Cows in Herd (%)					
	35	40	45	50	55	60
RSFSR	893	928	964	999	1034	1070
Ukrainian SSR	853	888	923	957	992	1027
Moldavian SSR	899	934	970	1006	1042	1078
Estonian SSR	1037	1078	1118	1159	1200	1240

It is apparent from the above table that a definite relationship exists between the proportion of cows in the structure of a herd and fixed capital expenditures. The higher the proportion of cows in a herd, the higher the fixed capital expenditures per head of long-horned cattle. Thus, an increase in the proportion of cows in a herd from 35 to 60 percent leads to an increase in all republics of 20 percent in the standard value for buildings and installations per structural head of long-horned cattle. But owing to a higher rate of growth for milk production, the additional capital expenditures for buildings and installations are covered by additional output. If the expenditures for buildings and installations per head of long-horned cattle increased by 1.2 times when the proportion of cows in a herd was raised from 35 to 60 percent, then milk production will increase by 1.7 times and the rate of growth in output will exceed the rate of growth in capital expenditures by 50 percent.

In analyzing the construction plans recommended by Gipronisel'khoz [All-Union Planning and Scientific Research Institute for the Planning of Standard and Experimental Agricultural Production Centers and Establishments for the Storing and Processing of Grain] for the building of long-horned cattle facilities, it is apparent that the cost for constructing one cattle billet decreases as an increase takes place in the size of a farm or in the capacity of a facility. For example, at a long-horned cattle farm for 400 dairy cows on restrained maintenance, the estimated cost per cow is 1,760 rubles, for 600 cows -- 1,631 rubles and for 800 cows -- 1,606 rubles.

The capital investment requirements for increasing the size of a farm for replacement young stock from 3,000 to 6,000 head decrease from 551 rubles to 494 rubles, or by 10 percent.

The standard value for machines and equipment, on the average for the USSR, is 214 rubles per structural cow, with fluctuations ranging from 206 to 335

rubles for the republics and economic regions of the RSFSR. Mechanization resources account for 6-10 percent of the fixed productive capital of cattle husbandry.

The size of the normative for this group of capital, per head of long-horned cattle, increases as an increase takes place in the proportion of cows in the herd. Growth in these expenditures is associated with the cow maintenance technology, which for the mechanization of production processes requires considerably more machines and equipment and higher cost than for other age groups of cattle. In conformity with the prepared normatives for fixed productive capital, the complex mechanization of dairy farms requires 3-4 times more expenditures than do farms engaged in the maturing and fattening of young stock.

The cost of mechanization equipment will increase in the future, since the complex mechanization of production processes at animal husbandry farms has still not been completed at the present time. It is sufficient to state that the overall level of mechanized operations in cattle husbandry, at sovkhozes during 1976 and on the average for the union, was as follows: issuing of water -- 83 percent, issuing of feed -- 33 percent, removing manure from facilities -- 59 percent and for machine milking of cows -- 87 percent.

The expenditures for transport equipment amount to from 88 to 138 rubles per structural cow; such expenditures constitute 2.5 to 4 percent of the standard value of the fixed productive capital.

One of the most important elements of the fixed productive capital in cattle husbandry is the productive cattle, the proportion of which constitutes from 13 percent of the standard value of the capital in the Kazakh SSR to 20 percent in the Estonian SSR. The value of the productive cattle in fixed capital, per structural cow and on the average for the USSR, amounts to 561 rubles. For individual republics and regions of the RSFSR, the expenditures for reproducing the principal herd of long-horned cattle fluctuates from 429 to 500 rubles in the Kazakh SSR, the Kirghiz SSR, the Tadzhik SSR, the Turkmen SSR, the Azerbaijan SSR and the Armenian SSR and up to 737-750 rubles in the Baltic republics. This is determined by differences in the pedigree composition of the cattle and in the expenditures required for the formation of the principal herd.

On the average for the USSR, the normative for fixed productive capital per ton of milk is 617 rubles. The output-capital ratio for milk is low -- 508-596 rubles -- in the Baltic republics, the Ukraine, the Moldavian SSR and in the northwest and central regions, that is, in those regions marked by higher milk yield levels. The output-capital ratio is high in the Tadzhik SSR, the Turkmen SSR and in the Trans-Caucasus republics -- 841-1,048 rubles, where the cow productivity is very low.

The specific amount of normative requirement of fixed capital for milk production is dependent upon the productivity of the cows and the capital

expenditures for dairy cattle husbandry. A change in one of these factors produces an increase or decrease in the output-capital ratio for the product. Allow me to cite an example showing the effect generated by the productivity of cows on the output-capital ratio for milk in the RSFSR (see Table 2).

TABLE 2

Dependence of Output-Capital Ratio for Milk Upon the Milk Yields of Cows

	Milk Yield Per Cow (kg)				
	2600	2800	2900	3000	3300
Fixed productive capital per ton of milk (in rubles)	783	727	702	679	617
With regard to lowest yield (%)	100	92.8	89.6	86.7	78.8

It is apparent from Table 2 that an inverse proportional dependence exists between the productivity level and the value for the output-capital ratio: the higher the productivity, the lower the expenditures of fixed productive capital per ton of milk. This underscores the fact that growth in output production as a result of raised productivity constitutes an important factor for lowering the output-capital ratio and raising the capital-output ratio.

Considerable regional differences are being observed in the normative output-capital ratio for the meat of long-horned cattle. Regions having a lower output-capital ratio for beef include the Povolzhskiy and north Caucasus regions of the RSFSR. The output-capital ratio for beef in the Uzbek SSR and the Turkmen SSR is considerably higher. These fluctuations in output-capital ratio are the result of various expenditures for the construction of farms in different zones of the country and also the productivity of the animals.

The use of scientifically sound normatives will make it possible to improve the planning of agricultural development and at the same time it will promote improvements in the effectiveness of capital investments and fixed productive capital.

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