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LIVESTOCK PRODUCTION

- USSR -

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FOREWORD

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LIVESTOCK PRODUCTION

-USSR-

[Following is the translation of two articles in the Russian-language periodical Zhivotnovodstvo (Animal Raising), Vol 24, No 10, 1962. Additional bibliographic information accompanies each article.]

Contents

RECOMMENDATIONS FOR THE RAISING AND FATTENING OF CATTLE, SWINE, SHEEP, AND FOWL

[Following is the translation of an unsigned article in the Russian-language periodical Zhivotnovodstvo (Animal Raising), Vol 24, No 10, 1962, pages 3-18.]

Foreword

The Central Committee of the Communist Party of the Soviet Union and the Council of Ministers USSR in their appeal to all agricultural workers on the urgent problems of the development of animal raising in June 1962 proposed for kolkhoz (collective farm) and sovkhoz (State farm) workers and managers, agricultural scientists and specialists, and workers at kolkhoz and sovkhoz production Administrations the elaboration of a concrete plan by each kolkhoz and sovkhoz for raising the output of meat, milk, and other animal products on the basis of firmly-grounded measures for improving feed production, mechanizing labor-consuming operations, and increasing labor efficiency.

Advanced practice and the data of scientific research insitutes, experimental stations, and model (oporno-pokazatel'nyye) enterprises in various zones of the USSR provide an indication of the path to be followed by kolkhozes and sovkhozes The rapid growth of meat production and the lowering of meat production costs determine the necessity of using full-valued, economically effective rations including maximum quantities of corn, sugar beets, and bean cultures.

The Agriculture Ministry USSR with the assistance of sovkhoz and kolkhoz managers and specialists, front-rank agricultural workers (peredoviki), as well as all-Union and zonal scientific research institutions have worked out model, economically-effective rations for the raising and fattening of large horned cattle, swine, sheep, and fowl for the following zones: Ukrainian SSR, Northern Caucasus, Volga region (Povolzh'ye), Central Black Earth Zone, Central Non-Black Earth Zone,

Western Siberia, Belorussia, Latvian SSR, Estonian SSR, Lithuanian SSR, and the Virgin Lands region.

In recommending the model rations, the Agriculture Ministry considers it necessary that the agriculture ministries and ministries of agricultural product processing and packing of the respective republics, in cooperation with kolkhoz-sovkhoz and sovkhoz-kolkhoz administration and enterprises, organize in each kolkhoz and sovkhoz on the basis of these recommendations the compilation of economically effective feed rations for agricultural animals with due regard for seasonal changes and the concrete potentialities of the enterprise. Such rations, with maximum use of corn, sugar beets, and bean cultures, will make possible the establishment of a more rational structure of cultivated areas in kolkhozes and sovkhozes with due regard for their specialization and the provision of abundant supplies of high-quality feeds.

The Agriculture Ministry USSR likewise considers it necessary that front-rank agricultural workers and agricultural research organizations conduct systematic programs on the improvement of rations for animal raising and fattening. This will make possible the minimization of feed expenditures per unit output and a sharp lowering of meat production costs.

Recommendations for Kolkhozes and Sovkhozes of the Ukrainian SSR:

The kolkhozes and sovkhozes of the Ukraine have planned the fattening of over 4 million head of horned cattle and 14 million swine for 1962. This will account for about 90 percent of total meat production. The remaining ten percent will be made up by mutton and fowl.

In order to increase feed production, the kolkhozes and sovkhozes of the Republic in 1962 expanded the cultivation of high-yield cultures -- grain and silo corn, peas, and sugar beets for cattle forage.

For the successful fulfillment of assignments in meat production, the front-rank oblasts and rayons of the Ukrainian SSR are carrying out thorough specialization and concentration of kolkoz production in addition to the large-scale raising and fattening of horned cattle and swine. This has given rise to the necessity for a radical restructuring of the entire production organization and has already yielded positive results. For example, in Khmel'nitskaya Oblast, 49 specialized enterprises were set up in 1961 and in the first quarter of 1962, including 18 kolkhozes for the raising and fattening of large horned cattle and 23 pig farms.

Kolkhozes located close to sugar plants and storage points specialize in beef production. Using beet pulp in combination with other cheap feeds, they obtain high meat

output with low costs. Data on the results obtained by some of these enterprises are given in Table 1.

Table 1

Economic Effectiveness of Large Horned Cattle Fattening in Specialized Enterprises in Two Regions of Khmel'nitskaya Oblast in 1961

Показатель (A)	(B) Дунаевецкий район		(C) Ярмолинецкий район	
	(D) специализированный колхоз „Украина"	(E) остальные колхозы района	(F) специализированный колхоз имени Мичурина	(E) остальные колхозы района
(G) Затраты кормов на 1 ц привеса (ц корм. ед.)	8,1	12,6	10,1	15,6
(H) Прямые затраты труда на 1 ц привеса (чел.-дней)	5,9	22,0	5,7	16,5
(I) Себестоимость 1 ц привеса (руб.)	65,3	84,9	48,3	86,6

A = Index; B = Dunayevskiy Rayon; C = Yarmolinetskiy Rayon; D = "Ukraina" Specialized Kolkhoz; E = Other kolkhozes in Rayon; F = Specialized Kolkhoz imeni Michurin; G = Feed expenditures per centner increase in weight (feed unit centners); H = Direct labor expenditures per centner increase in weight (man-days); I = Cost per centner increase in weight (rubles).

About the same results were obtained by kolkhozes specializing in swine fattening. The experience of many Ukrainian enterprizes has shown that thorough specialization of animal-raising kolkhozes is the basic means of rapidly achieving an increase in meat production with minimum labor and cost expenditures.

Feed Rations and Types of Fattening for Large Horned Cattle

The conditions of meat production in the Ukrainian SSR are non-uniform. In this regard, we can distinguish four natural economic zones: the steppe, forest-steppe, Poles'ye, and Gorno-Karpatskaya (Carpathian Mountain) regions which have characteristic peculiarities with respect to the feeding and fattening of animals.

Taking into account the special features of these zones, they can be used for intensive growing of young meat stock up to an age of 18 months and a live weight of 350-400 kg. Depending on natural-economic and raising conditions, breed of cattle, and growth intensity, young stock can be fed according to the following recommended norms (kg per head): whole milk --

200-300, skim milk -- 450-600; concentrated fodder -- 200-250; sugar beets and red carrots -- 250-300; ensilage -- 300-350; hay 150-160; green fodder -- 500-600. With such a ration, given good care and maintenance, it is possible to achieve an average daily weight increase of 700-800 grams, bringing up the live weight to 150-180 kg in six months with an expenditure of 5 feed units per kg weight increase. With further feeding and fattening of young stock, the following model rations for zones of the Republic are recommended:

Steppe zone. The raising and fattening of young stock on silo roots and sugar beet pulp rations is recommended, especially the latter. With silo root type of feeding during the period of raising and fattening of young stock to a live weight of 380 kg by the age of 18 months, the daily weight increases from the sixth to the twelfth month are 550-650 g; from the twelfth to the eighteenth month they are 650-700 g. during the final fattening period from the 15th to 18th months, the average daily weight increases must be 750-850 g per head (Table 3). The cost of one centner of meat (live weight) taking into account expenses from birth through the 18th month will be 42-46 rubles. The kolkhozes and sokhozes located near sugar plants can employ moderate beet pulp rations starting with the 6th month.

Table 2

Fodder Requirements in Raising and Fateening of Young Stock Up to 350 kg by the 18th Month (kg) in the Steppe

Корма (A)	Выращивание с 6 до 12 мес. (B)		Доращивание и откорм с 12 до 18 мес. (C)		Всего кормов на период выращивания и откорма (D)	В к ед питательности (E)
	в сутки	на период	в сутки	на период		
(H) Силос кукурузный	12,0	2160	18	3240	5400	55
(I) Свекла сахарная	2,0	360	5	900	1260	17
(J) Кукурузная дерть со стержнями	0,4	72	1	180	252	
(K) Горох (дерть)	0,3	54	—	—	54	17
(L) Сено	0,4	72	—	—	72	—
(M) Солома	2,0	360	2	360	720	11
(N) Итого корм. ед.	4,4	792	6,5	1170	1962	100
(O) Аммиачная вода	—	30	—	45	75	

A = Feeds; B = Growing from 6th to 12th months; C = Final raising and fattening from 12th to 18th months; D = Feed total during raising and fattening periods; E = Nutritive value percentage; H = Silo corn; I = Sugar beets; J = Corn flour with cobs; K = Pea (flour); L = Hay; M = Straw; N = Total feed units; O = Ammoniated water.

Table 3

Fodder Requirements for Raising and Fattening Young Stock to 380 kg by 18th Month (kg) in Forest-Steppe Zone

Корма (A)	Выращивание с 6 до 12 мес. (B)		Выращивание с 12 до 18 мес. (C)		Всего кормов на период выращивания и откорма (D)	В % по питательности (E)
	в сутки (F)	на период (G)	в сутки (F)	на период (G)		
(H) Силос кукурузный	12	2160	22	3960	6120	58
(I) Свекла сахарная	2,5	450	5	900	1350	17
(J) Кукурузная дерть со стержнями	0,6	108	0,7	126	234	15
(K) Горох — дерть	0,3	54	—	—	54	
(L) Сено	0,4	72	—	—	72	10
(M) Солома	2,0	360	2,0	360	720	
Итого корм. ед.	4,8	864	7,0	1260	2124	100
(N) Аммиачная вода	—	30	—	30	80	—

[Legend: Same as Table 2 above]

In an experiment carried out by the Animal Raising Scientific Research Institute of the Forest-Steppe and Poles'ye of the Ukrainian SSR at the Ul'yanovskiy Beet Sovkhoz in Bogodukhovskiy Rayon, Khar'kovskaya Oblast, 1897 fodder units were expended per head of youn stock from the 6th through the 18th month. The net weight of beet pulp was about 30 percent of the total nutritive intake. After 18 months the experimental animals weighed 406 kg; the average daily weight increases was 595 g; total weight increase per head was 217 kg. 8.7 fodder units were expended per centner weight increase. After weaning, the cost per centner weight increase was 42 rubles. At the Kolkhoz imeni Michurin (Table 1) with raising of young stock on beet pulp, there was a daily weight increase of 721 g; the cost of one fodder unit was 2.4 kopeks; cost of one centner of meat was 48 rubles 30 kopeks. In 1962 the Kolkhoz had 34 thousand rubles clear profit. Meat of the same cost was obtained by other specialized kolkhozes in Khmel'nitskaya and other oblasts of the Republic. On the basis of data of the Animal Raising Scientific Research Institute of the Forest-Steppe and Poles'ye of the Ukrainian SSR, as well as the experience of front-rank kolkhozes and sovkhozes, beet pulp can be recommended young horned cattle feeding following weaning. Increases to a live weight of 380 kg in the 18th month requires the following quantities of fodder (Table 4).

Taking into account all expenditures on raising and fattening during the period from birth through the 18th month, the cost of one centner of meat (live weight) will be 40-44 rubles. In specialized farms located near sugar plants, young stock with an initial weight of 280-300 kg should be fed on beet pulp for 100-110 days, in order to achieve an average daily weight

increase of 800-900 g during the fattening period. To obtain such a weight increase, it is necessary to give about 720-800 fodder units with an expenditure of 9-10 fodder units per kg weight increase. The fodder ratios in the diet are as follows: (percentages) acid beed pulp -- 60, molasses -- 15, roughage -- 10, concentrates -- 15. To increase the nutritive value of the ration with respect to carotin, it should be made to include silo fodder or hay with a proper reduction of other materials. With insufficient protein, the ration should include ammoniated water or carbamide -- these can satisfy 25 to 30 percent of the protein requirement. On the indicated ration the young stock can increase in weight by 80-90 kg by slaughter time, for a total weight of 380 kg. The cost of one centner of weight increase will be 30-36 rubles.

Table 4

Fodder Requirements for Raising and Fattening of Young Stock to Live Weight of 380kg by the 18th Month (kg) in the Forest-Steppe Zone Using Beet Pulp

(A) Корма	(B) Выращивание с 6 до 12 мес.		(C) Выращивание с 12 до 18 мес.		(D) Всего кормов на период выращивания и откорма	(E) В % по питательности
	(F) в сутки	(G) на период	(F) в сутки	(G) на период		
(H) Силос кукурузный	8	1440	10	1800	3240	31
(I) Свекла сахарная	2	360	4	720	1080	13
(J) Жом кислый	11	1980	23	4140	6120	29
(K) Кукурузная дерть со стержнями	0,6	108	0,8	144	252	16
(L) Горох	0,3	54	—	—	54	
(M) Сено	0,4	72	—	—	72	11
(N) Солома	1,5	270	3,0	540	810	
(O) Корм. ед.	4,8	864	7,0	1260	2124	100
(P) Аммиачная вода	—	45	—	60	105	

A = Type of fodder; B = Growing from 6th to 12 th months; C = Final raising and fattening from 12th to 18th months; D = Fodder total during raising and fattening periods; E = Nutritive value percentage; H = Silo corn; I = Sugar beets; J = Acid beet pulp; K = Corn flour with cobs; L = Peas; M = Hay; N = Straw; O = Fodder units; P = Ammoniated water.

Poles'ye Zone. Silo root feeding is recommended in raising and fattening young horned cattle for slaughter in the Poles'ye Region. A live weight of 350 kg by the 18th month is achieved with the same average daily weight increase during raising and fattening as in the Steppe zone (Table 5).

With 50-60 percent expenditures on fodder, the cost

per centner weight increase will be 38-40 rubles. Taking into account all expenditures on raising and fattening of young stock from birth to the 18th month, the cost of one centner of meat (live weight) can be reduced to 44-49 rubles.

Table 5

Fodder Requirements for Raising and Fattening of Young Stock to 350 kg by 18th Month (kg) in the Poles'ye Zone

Корма (A)	Выращивание от 6 до 12-месячного возраста (B)		Выращивание (откорм) от 12 до 18-месячного возраста (C)		Всего кормов на период выращивания и откорма (D)	В к по питательности (E)
	в сутки (F)	за период (G)	в сутки (F)	за период (G)		
(K) Силос кукурузный	10,0	1800	20,0	3640	5440	55
(J) Сахарная свекла	3,0	540	4,0	720	1260	17
(I) Кукурузная дерть со стержнями	0,4	72	0,5	90	162	12
(H) Горох	0,3	54	—	—	54	—
(L) Сено	0,8	144	1,0	180	324	16
(M) Солома	2,0	360	2,0	360	720	—
(N) Корм. ед.	4,4	792	6,5	1170	1962	100
(O) Аммиачная вода	—	25	—	45	70	—

[Legend: Same as for Table 2 above]

Carpathian Mountain Zone. During indoor maintenance, it is recommended that the young stock be raised and fattened using the same silo root fodder as in the Poles'ye zone. During the summer, the wide use of mountain pastures is suggested. All rations are to include sodium chloride (60-80 g per head daily) and tricalcium phosphate (80-100 g per head daily). During the summer period, the sugar beets and roughage in rations can be replaced by equally nutritious quantities of silo, green, or other fodder; carbamide can be used in place of ammoniated water.

Fodder Rations and Types of Feeding for Swine

In the kolkhozes and sovkhozes of the Ukraine the level of pork production is lagging behind potential output. In 1961 the kolkhozes and sovkhozes produced 472.2 thousand tons of pork, or 15.7 centners (slaughter weight per 100 hectares of pastures. The low level of pork production is due primarily to the fact that the kolkhozes and sovkhozes of the Republic have insufficient supplies of full-value fodders. The experience of front-rank enterprises and the data of scientific research organizations show that the level of pork production in the Republic can be raised through the utilisation of internal

reserves. In the "Bozhkovo" Sovkhoz in Poltavskaya Oblast, with intensive meat fattening, the pigs weighed 95 kg by 6.5 months; during the fattening period the average daily weight increase was 600 g and over. The "Mayak" Kolkhoz, Vinnitskaya Oblast, in 1961 used its own fodders to produce 250 centners of pork (live weight) per 100 hectares of pasture, expending 5.9 fodder units per centner weight increase. At this enterprise, the cost of a centner of weight increase was 54 rubles.

Experiments carried out by the Animal Raising Scientific Research Institute of the Forest-Steppe and Poles'ye of the Ukrainian SSR indicate that with swine fattening on protein-balanced rations containing 43 percent sugar beets, the average daily weight increase was 540 g with an expenditure of 4.4 fodder units per kg weight increase. In the Sovkhoz imeni Goloborod'ko, Poltavskaya Oblast, the ration for fattened swine contained 40-45 percent sugar beets (with respect to nutritive value); the average daily weight increase was 478 g; 4.49 fodder units were expended per kg weight increase.

In the Vinnitskaya, Poltavskaya, Zaporozhskaya, Khmel'nitskaya, and other oblasts of the Republic, kolkhozes and sovkhozes are organizing specialized farms and brigades for swine fattening on a wide scale for the purpose of improving labor productivity and lowering pork production costs. At the same time, there are programs of intra-rayon specialization including the organization of specialized farms for swine fattening with their full assurance of a supply of all types of locally-produced fodder. Thus, for example, in the "Zarya Kommunizma" Kolkhoz, Khorol'skiy Rayon, Poltavskaya Oblast, specializing in swine fattening, in 1961 fattened 6713 swine with an average daily weight increase of 460 g; the cost of one centner weight increase was 48 rubles 20 kopeks. The "Peremoga" Kolkhoz, Trostyanetskiy Rayon, Vinnitskaya Oblast, specializing in the final raising and fattening of swine in 1961 sold the State 4483 swine with an average live weight of 96 kg. During the fattening period, there was an average daily weight increase of 425 g; the production of a centner weight increase used up 6.5 fodder units and 3.54 man-days. The concentrates in the Rayon made up 63 percent; the cost per centner of pork was 47 rubles 82 kopeks, as against 101 rubles 60 kopeks for the other kokhozes in Vinnitskaya Oblast.

Taking into account the work experience of front-rank kolkhozes and sovkhozes, as well as data obtained by research institutions, all of the zones in the Republic are to undertake an intensive program of meat fattening of pigs for the purpose of achieving a weight of 95-100 kg live weight by the eighth month. Selected basic and one-time sows will be specifically fat-conditioned. In all zones of the Republic the basic

Table 6

Model Rations and Fodder Requirements in the Raising and Meat Fattening of Swine From 15 to 100 kg

A Возраст животных (мес.)	B Живой вес (кг)	C Среднесуточный прирост (г)	D Требуется корма на голову в сутки (кг): всего концентрированных кормов	в том числе: зерно-бобовых	в том числе: жмыха	F всего сочных	в том числе: сахарной свеклы и моркови **	в том числе: картофеля	в том числе: комбинированного силоса	G сенной муки	обрата	H Мел (г)	I Соль (г)	Содержится *: переваримых питательных веществ (кг)	переваримого протеина (г)	J Корм. единиц на 1 кг прироста
W Степная зона																
2—4	15— 35	300—350	1,0	0,3	0,1	1,5	1,0	—	0,5	0,2	0,5	20	15	1,70	200	4,8
4—6	35— 60	450—500	1,4	0,5	0,1	3,5	2,5	—	1,0	0,35	0,5	30	25	2,75	305	5,5
6—8	60—100	550—600	1,55	0,6	0,15	5,0	4,0	—	1,0	0,2	—	40	30	3,30	340	6,0
U Требуется кормов на весь период откорма (кг)			246	84	21	600	450	—	150	45	60	5,4	4,2	483,4	50,8	5,7
V В % по питательности			61	19	5	32	23	—	9	5	2	—	—	100	—	—
X Зона Лесостепи																
2—4	15— 35	300—350	0,9	0,3	0,1	1,8	1,3	—	0,5	0,2	1,0	20	15	1,75	215	4,8
4—6	35— 60	450—500	1,15	0,5	0,15	4,7	3,2	—	1,5	0,35	0,5	30	25	2,80	310	5,5
6—8	60—100	550—600	1,5	0,6	0,2	6,0	4,0	—	2,0	0,2	—	40	30	3,25	350	6,0
U Требуется кормов на весь период откорма (кг)			207	84	27	750	510	—	240	45	90	5,4	4,2	472	52	5,3
V В % по питательности			52	21	6	40	25	—	15	5	2	—	—	100	—	—
Y Зона Полесья																
2—4	15— 35	300—350	0,8	0,3	0,1	2,3	1,5	0,5	0,9	0,2	1,0	20	15	1,7	200	4,8
4—6	35— 60	450—500	1,15	0,5	0,15	4,5	3,0	1,0	0,5	0,5	0,5	30	25	2,75	310	5,5
6—8	60—100	550—600	1,4	0,6	0,2	6,0	4,0	1,5	0,5	0,2	—	40	30	3,3	340	6,0
U Требуется кормов на весь период откорма (кг)			200	84	26	798	510	180	78	54	90	5,4	4,2	470	51,4	5,8
V В % по питательности			51	21	6	40	26	11	3	6	3	—	—	100	—	—

A = Age of animals (months); B = Live weight (kg); C = Average daily weight increase (g); D = Fodder per head per day (kg); Containing [see note]; F = Total concentrated fodder; G = including; H = grain-bean; I = husks; J = total juice-containing fodder; K = Sugar beets, carrots [see note]; L = Potatoes; M = Combined silo fodder; N = Hay flour; O = Whey; P = Chalk (g); Q = Salt (g); R = Fodder units (kg); S = Digestible protein (g); T = Fodder units per kg weight increase; U = Fodder required over entire fattening period (kg); V = Percentage nutritive value; W = Steppe zone; X = Forest-Steppe zone; Y = Poles'ye zone.

([Note:] * 108 g digestible protein per fodder unit
** Carrots apply in the case of Forest-Steppe and Pole'ye zones).

swine fodder must be corn, sugar beets, peas, and potatoes. The fodder requirements and model average daily fodder rations for raising and meat fattening up to 95-100 kg for farms in the steppe zone, forest-steppe zone, and the Poles'ye are shown in Table 6. The rations were compiled with reference to the fall-winter period, when sugar beets are fed in natural form. In the summer period the sugar beets as well as hay flour should be replaced with combined silo and green fodder. In the absence of such supplies, they can be replaced by dry fodders of animal origin.

Through the introduction of the recommended types of swine fattening and fodder rations, the kolkhozes and sovkhozes of the Republic can continuously produce swine with an expenditure of 5-5.5 centners of fodder units per centner weight increase. This will make pig farming a profitable branch of the animal raising industry.

The recommendations were prepared with the assistance of staff members of the All-Union Animal Raising Instiute, the All-Union Agricultural Economics Institute, the All-Union Fodder Institute, the Ukrainian Agricultural Economics Institute, the Animal Raining Scientific Research Institute of the Forest-Steppe Zone and Poles'ye, and specialists from the Agriculture Ministry Ukrainian SSR and the Agriculture Ministry USSR.

Recommendations for Kolkhozes and Sovkhozes of the Northern Caucasus:

The kolkhozes and sovkhozes of the Northern Caucasus have at their disposal great reserves for increasing the output of beef, pork, and mutton. In the last few years in this zone there has been a considerable increase in the production of agricultural products, but the meat output per 100 hectares of agricultural land is still insufficient. The transition of a new system of cultivation and the expansion of corn, beet, and bean raising assure a considerable increase in fodder production. This allows kolkhozes and sovkhozes to increase their herds, employ more progressive types of feeding and fattening of cattle, raise its productivity, and assure a significant increase in the production of agricultural products. In the area of meat production, an important reserve is the intensive raising and fattening of slaughter animals.

On the basis of the experience of front-rank enterprises and the data of scientific research institutions, the following types and rations for raising and fattening cattle in the Northern Caucasus can be recommended.

Beef Production

The Northern Caucasus has two basic zones for which the types of cattle raising and fattening must be distinguished. The first of these is the western and northern part of Stavropol'skiy Kray, the plains and foothills of the Kabardino-Balkarskaya, Severo-Osetinskaya, Chechen-Ingushskaya, and Dagestanskaya Autonomous Republics; it is characterized by a high degree of land cultivation.

The second zone takes in the rather dry steppe regions with their vast pasture lands. This includes the entire Kalmytskaya (Kalmuk) Autonomous SSR, the southeastern part of Rostovskaya Oblast, and the eastern part of Stavropol'skiy Kray.

The kolkhozes and sovkhozes of the first zone carry on intensive feeding and fattening of large horned cattle on silo corn, sugar beets, beet pulp, and grains (distillery refuse). In cattle raising and fattening with the maximum use of silo corn, the following rations are recommended for young stock (Table 1):

Table 1

Model Rations for Raising and Fattening of Young Stock to 18 Months (kg)

Корма (A)	Молодняк с 6 до 12 мес. (B)		Молодняк с 12 до 18 мес. (C)		Итого расход кормов для молодняка с 6 до 18 мес. (D)	
	в сутки (E)	за период (F)	в сутки (G)	за период (H)	кг (G)	в % по питательности (H)
(I) Силос кукурузный	15	2700	25	4500	7200	87
(J) Свекла сахарная	4,4	800	5	900	1700	17
(K) Солома	3	540	5	900	1440	11
(L) Концентраты (50% зернобобовые + 50% зерновые)	1	180	1	180	360	15
(M) Корм. ед.	5,8	1044	8,3	1494	2538	—
(N) Переваримый протеин	0,59	106	0,8	144	250	—
(O) Карбамид	0,06	10,8	0,08	14,4	25,2	—

A = Fodders; B = Young stock from 6 to 12 months; C = Young stock from 12 to 18 months; D = Total fodder expenditure on young stock from 6 to 18 months; E = Daily; F = Over total period; G = kg; H = Percentage of nutritive value; I = Silo corn; J = Sugar beets; K = Straw; L = Concentrates (50% bean-grain + 50% grain); M = Fodder units; N = Digestible protein; O = Carbamide.

In the period from 6 to 18 months each animal receives

fodder containing 2500-2600 fodder units and 250 kg digestible protein; the protein deficiency is made up by carbamide. With such feeding, the average daily weight increase of the young stock reaches 800 g, while the live weight per head by the end of the fattening period is 380-400 kg. 7-9 fodder units are expended on each kg weight increase.

In the areas near sugar beet and distillery plants, large horned cattle should be fed beet pulp and grains.

Cattle feeding with maximum beet pulp utilisation. The experience of the "Khuterok" farm, Novo-Kubanskiy Rayon, Krasnodarskiy Kray shows that with feeding of large horned cattle for two to two and a half months on beet pulp and grains, it is possible to obtain an average daily weight increase of 500-700 g per head. 8.2 fodder units were expended per kg weight increase. In the case of beet pulp the cost of one fodder unit was 2.3 kopeks; in the case of grains it was 3.3 kopeks.

The following rations are recommended for the feeding of young and full-grown stock on beet pulp (Table 2).

In those cases where crushed corncobs are lacking, they should be replaced by straw, the protein deficiency made up by carbamide.

With such feeding the average daily weight increase of young stock is 700-800 grams, and that of full-grown stock -- 900-1000 g; the cost per centner weight increase was 35 rubles for young stock and 36 rubles for full-grown stock.

Cattle fattening with maximum grains utilisation. In the feeding of young and full-grown stock on grains, the rations given in Table 3 will produce the following average daily weight increases: young stock -- 700-800 g, full-grown stock -- 900-1000 g.

The fodder expenditure per centner weight increase for young stock will be 7-8, and for full-grown stock -- 9-10 fodder units.

Hybrid young stock provides increased meat productivity, growth rate, fattening qualities, and a lower fodder requirement per unit weight increase. For this reason, it is advisable to cross-breed some of the breeding cows (which will not provide young stock for the basic herd) with meat breed bulls (Aberdeen-Angus, shorthorn, Hereford).

In the mountain regions of the Northern Caucasus having sufficiently large pasturelands, these must be used in the summer for large horned cattle foraging with minimum supplementation with concentrated fodders.

In the second zone, with the availability of large steppe pastures, many farms wait until the 7th or 8th month before weaning their calves. In the winter period, young stock is

is fed on silo corn (60-70 percent of nutritive value of ration), and in the summer taken out to pasture, which assures high weight increases with minimum labor and monetary expenditures.

Table 2

Model Rations in Beet Pulp Feeding of 12-15 Month Young Stock and Full-Grown Large Horned Cattle (kg)

Корма (A)	Молодняк 12–15 мес. (B)			(C) Взрослый скот		
	в сутки (D)	за 90 дней откорма (кг) (E)	в % по питательности (F)	в сутки (D)	за 60 дней откорма (G)	в % по питательности (F)
(H) Жом кислый	45	4050	60	60	3600	63
(I) Солома	1	90	3	2	120	4
(J) Пробленые стержни кукурузных початков	3	270	14	3	180	10
(K) Патока кормовая	1	90	9	1,5	135	10
(L) Концентраты (50% зерно-бобовые+50% зерновые)	1	90	14	1	60	13
(M) Корм. ед.	7,4	666	—	8,9	564	—
(N) Переваримого протеина	0,7	63	—	0,86	51,6	—
(O) Карбамид	0,05	4,5	—	0,04	2,4	—

A = Fodders; B = 12-15 month young stock; C = Full-grown stock; D = daily; E = over 90 days of fattening (kg); F = Percentage of nutritive value; G = over 60 days of fattening; H = Acid beet pulp; I = Straw; J = Crushed corn cobs; K = Fodder molasses; L = Concentrates (50% grain-bean + 50% grain); M = Fodder units; N = Digestible protein; O = Carbamide.

Table 3

Model Rations in Grains Feeding of 12-15 Month Young Stock and Full-Grown Large Horned Cattle (kg)

Корма (A)	Молодняк 12–15 мес. (B)			(C) Взрослый скот		
	в сутки (D)	за 100 дней откорма (E)	в % по питательности (F)	в сутки (D)	за 70 дней откорма (F)	в % по питательности (G)
(H) Барда свежая	80	5000	74	70	4900	75
(I) Солома	2	200	8	3	210	8
(J) Пробленые стержни кукурузных початков	2	200	10	3	210	11
(K) Концентраты	0,5	50	8	0,8	56	6
(L) Корм. ед.	6,1	610	—	8,4	588	—
(M) Переваримого протеина	0,84	84	—	0,82	57,4	—

A = Fodder; B = 12-15 month young stock; C= Full-grown stock; D = daily; E = over 100 days; F = over 70 days; G = Percentage nutritive value; H = Fresh grains; I = Straw; J = Corn cobs; K = Concentrates; L = Fodder units; M = Digestible protein.

The experience of the Zimovnikovskiy Stables in Rostovskaya Oblast shows that with suckling, hybrid and purebred young stock of the Kalmyk brred attains a live weight of 180-200 kg by the 7th or 8th month. During the winter period (60-70% of nutritive value made up by silo corn), the average daily weight increase is 480-500 g; by winter a live weight of 280-300 kg is achieved. Well-prepared by the age of one year, the young stock sent out to pasture and given a minimum ration supplementation of concentrates exhibits a daily weight increase of about 900 g, for a weight of 410 kg by 18 months. The cost of one centner of live weight is 47 rubles 50 kopeks; labor expenditures per centner weight increase from weaning to slaughter time are 2.7 man-days.

In the organization of the rational feeding of young stock, the kolkhozes and sovkhozes of the eastern regions of the Northern Caucasus can turn over their cattle for slaughter with a weight of not less than 400 kg at the 18th month (slaughter yield of carcass and internal fat -- 55-58 percent (Table 4)).

Table 4

Model Structure of Fodder Expenditures on Raising and Fattening of Young Stock of Large Horned Cattle From Birth to 18 Months in Meat Animal Raising Regions (not including milk expenditure during suckling period)

A — Корма	B — Количество кормов за период (ц)	C — Корм. ед.	D — Соотношение кормов по питательности (%)
E — Силос кукурузный + бахчевые	65	1170	42
F — Пастбищные	41	1040	38
G — Грубые	4	170	6
H — Концентраты	3,9	390	14
I — в том числе за зимний период (от 7—8 до 13—14-месячного возраста)			
J — Силос кукурузный	30	600	62
K — Грубые	4	170	17
L — Концентраты	2	200	21

A = Fodders; B = Amount of fodder over period (centners); C = Fodder units; D = Percentage of nutritive value of fodder; E = Silo corn + melons; F = Pasture; G = Roughage; H = Concentrates; I = including the following during winter period from 7th-8th to 13th-14th months); J = Silo corn; K = Roughage; L = Concentrates.

Over the entire period of raising and pasture herding until the age of 1[illegible] months, 2700-2800 fodder units were expended on each head (not including milk). Protein insufficiency in the rations is made up by carbamide.

Swine Fattening

The experience of swine fattening in the "Kubanets" (Krasnodarskiy Kray) and Rostovskiy No 2 (Rostovskaya Oblast) Sovkhozes, as well as data from the Donskoy Agricultural and Krasnodarskiy and Donskoy Agricultural Scientific Research Institutes, show that the use of rations with 30-35 percent of the nutritive value made up by sugar beets in the meat fattening of swine is most advisable and economically profitable for the Northern Caucasus. Such feeding assures an average daily weight increase of 400-550 g.

In the experiments of the Krasnodarskiy Agricultural Scientific Research Institute, swine fed on sugar beets (32 percent of the nutritive value of ration) exhibited an average daily weight increase of 477 g.

Table 5

Model Rations and Fodder Requirement per Pig in Meat Fattening from 15 to 100 kg

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
2-4	15-35	300-350	0.95	0.2	0.1	1.6	1.0	0.5	0.25	0.5	20	15	1.7					
4-6	35-65	450-500	1.3	0.5	0.1	4.1	2.6	1.3	0.25	0.5	30	15	2.6					
6-8	65-100	500-600	1.55	0.7	0.15	6	3.5	1.5	—	—	40	20	3.2					
Требуется кормов на весь период откорма			228	96	21	606	408	198	30	60	5.4	3.6	468					
в % по питательности			60	25	5	35	23	7	3.5	1.5	—	—	100					

A = Age of animals (months); B = Live weight (kg); C = Average daily weight increase (g); D = Daily per head (kg); E = concentrates; F = juice-containing fodder; G = total; H = including; I = grain-bean; J = husks; K = sugar beets; L = silo fodder and greens; M = hay meal; N = whey and other animal fodder; O = chalk, defluorinated phosphate (g); P = salt (g); Q = nutritive value of ration; R = fodder units; S = digestible protein; T = Fodder required over entire feeding period; U = Percentage of nutritive value.

The production of one centner of pork, taking into account expenditures on the maintenance of the basic herd required 7.5 centners of fodder units. One fodder unit contains 107 g digestible protein. The cost of one centner weight increase is 36 rubles 74 kopeks.

Sheep Feeding

On the basis of a generalization of the experience of front-rank enterprises and scientific research institutitons, it is possible to recommend the following rations for the fattening of sheep (Tables 6, 7, 8, 9, and 10).

Table 6

Ration for the Fattening of Young Sheep of the Meat-Wool Breeds (Length of Fattening Period -- 70 Days; Average Daily Weight Increase -- 140 g; Initial Weight -- 30, Final Weight -- 39 kg; Fodder Expenditure per kg Weight Increase -- 8.5 fodder units)

Корм (A)	Суточный рацион (B)			Структура рациона (%) (C)	Расчетная себестоимость (коп.) (D)	
	количество корма (кг) (E)	корм. ед. (F)	переваримого протеина (г) (G)		корм. ед. (F)	суточного рациона (H)
(I) Силос кукурузно-горохо-вый	3,0	0,48	42	43	1,60	0,77
(J) Сахарная свекла	1,5	0,30	18	35	5,60	1,40
(K) Концентраты (зернобобо-вые)	0,2	0,24	40	22	1,75	0,42
(L) Итого	—	1,11	100	100	—	2,59

A = Fodder; B = Daily ration; C = Ration structure (%); D = Estimated cost (kopeks); E = Amount of fodder (kg); F = Fodder units; G = Digestible protein (g); H = of daily ration; I = Corn and pea silo fodder; J = Sugar beets; K = Concentrates (grain-bean); L = Total.

In all zones of the Northern Caucasus in the fattening of sheep it is necessary to make use of the green mass of pastures on inaccessible and untilled ground, meal, straw, husks, and other grain wastes. In the eastern regions, with the existence of natural pasturelands and in the mountain regions of the Northern Caucasus the production of mutton will continue to be based on the maximum utilization of pastures for full-grown sheep foraging, as well as for young stock with ration supplementation (concentrated fodder, 0.2-0.3 kg per head daily)..

Table 7

Model Ration for Fattening of Full-Grown Meat-Wool Sheep (Length of Fattening Period -- 70 days; Average Daily Weight Increase -- 160 g; Initial Weight -- 55 kg; Final Weight -- 65 kg; Fodder Expenditure per kg Weight Increase -- 10.4 fodder units)

A Корм	B Суточный рацион: количество корма (кг)	B: корм. ед.	B: переваримого протеина (г)	C Структура рациона (%)	D Себестоимость рациона (коп.): корм. ед.	D: суточного рациона
I Силос кукурузный	5,0	1,00	65	60	1,60	1,60
J Сахарная свекла	1,0	0,26	12	15	3,60	0,94
K Сено бобовых	0,3	0,15	24	9	1,67	0,24
L Кукуруза (зерно)	0,2	0,26	18	16	1,69	0,44
M Итого	—	1,67	119	100		3,22

A = Fodder; B = Daily ration; C = Ration structure (%); D = Estimated cost (kopeks); E = Amount of fodder (kg); F = Fodder units; G = Digestible protein (g); H = of daily ration; I = Silo corn; J = Sugar beets; K = Bean culture straw; L = Grain corn; M = Total.

Table 8

Model Rations for Fattening of Young Fine-Wool Sheep (Length of Fattening Period -- 70 days; Average Daily Weight Increase -- 120 g; Initial Weight -- 27 kg; Final Weight -- 36; Fodder Expernditure per kg Weight Increase -- 8.6 fodder units)

A Корм	B Суточный рацион: количество корма (кг)	B: корм. ед.	B: переваримого протеина (г)	C Структура рациона (%)	D Себестоимость рациона (коп.): корм. ед.	D: суточного рациона
I Силос кукурузно-бобовый	3	0,48	66	47	1,60	0,77
J Свекла сахарная	1,5	0,31	10	30	3,60	1,12
K Концентраты	0,2	0,24	19	23	1,69	0,41
L Итого	—	1,68	95	100	—	2,30

A = Fodder; B = Daily ration; C = Ration structure (%); D = Estimated cost (kopeks); E = Amount of fodder (kg); F = Fodder units; G = digestible protein (g); H = Daily ration; I = Silo corn and beans; J = Sugar beets; K = Concentrates; L = Total.

Table 9

Model Ration for Fattening of Young Fine-Wool Sheep in Areas With High-Degree of Land Cultivation (Length of Fattening Period -- 70 days; Average Daily Weight Increase -- 120 g, Initial Weight -- 27 kg, Final Weight 35 kg; Fodder Expenditures per kg Weight Increase -- 8.7 fodder units)

Корм (A)	Суточный рацион (B)			(C) Структура рациона (%)	Себестоимость расчетная (коп.) (D)	
	количество корма (кг) (E)	корм. ед. (F)	переваримого протеина (г) (G)		корм. ед. (F)	суточного рациона (H)
(F) Силос кукурузный молочно-восковой спелости	2,0	0,40	26	39	1,60	0,64
(J) Зеленая масса	2,0	0,40	20	38	1,26	0,50
(K) Концентраты	0,2	0,24	40	23	1,82	0,44
(L) Карбамид (г)	6,0	—	15	—	—	0,10
(M) Итого	—	1,04	101	100	—	1,68

A = Fodder; B = Daily Ration; C = Ration structure (%); D = Estimated cost (kopeks); E = Amount of fodder (kg); F = Fodder units; G = digestible protein (g); H = of daily ration; I = I = Silo corn of milky-waxy ripeness; J = Green mass; K = Concentrates; L = Carbamide (g); M = Total.

Table 10

Model Ration for Fattening Full-Grown Fine-Wool Sheep (Length of Fattening Period -- 60 days; Average Daily Weight Increase -- 150 g; Initial Weight -- 45 g, Final Weight -- 54 kg; Fodder Expenditures per kg Weight Increase -- 10.3 fodder units)

Корм (A)	Суточный рацион (B)			(C) Структура рациона (%)	Себестоимость расчетная (коп.) (D)	
	количество корма (кг) (E)	корм. ед. (F)	переваримого протеина (г) (G)		корм. ед. (F)	суточного рациона (H)
(I) Силос кукурузный	4,00	0,80	52	52	1,6	1,28
(J) Свекла сахарная	1,50	0,39	18	25	3,6	1,22
(K) Солома	0,60	0,16	13	10	0,2	0,03
(L) Кукуруза (зерно)	0,15	0,20	12	13	1,7	0,34
(H) Карбамид (г)	10	—	26	—	—	0,10
(N) Итого	—	1,55	121	100	—	2,97

A = Fodder; B = Daily ration; C = Ration structure (%); D = Estimated cost (kopeks); E = Amount of fodder (kg); F = Fodder units; G = digestible protein (g); H = of daily ration; I = Silo corn; J = Sugar beets; K = Straw; L = Corn (grain); M = Carbamide (g); N = Total.

The rations were developed with the assistance of staff members of the All-Union Animal Raising Institute, the All-Union Agricultural Economics Institute, the All-Union Fodder Institute, the Donskoy Agricultural Institute, the Donskoy and Krasnodarskiy Agricultural Scientific Research Institutes, and specialists of the Agriculture Ministry USSR.

Recommendations for Kolkhozes and Sovkhozes of Western Siberia:

Beef predominates in the meat production of the kolkhozes and sovkhozes of Western Siberia, making up 52 percent of the output by weight. Pork makes up 29, mutton 7, fowl 6, and other types of meat another 6 percent.

An important reserve for increased meat output by the kolkhozes and sovkhozes of Western Siberia are the raising of the live weight of large horned cattle consigned for slaughter to an average of 300 kg and of swine to 90-100 kg. Only in this way will it be possible to obtain in this area not less than 270 thousand centners of meat (live weight). To increase live weight, it is necessary to carry out intensive feeding of animals on full-valued rations with maximum use of corn, sugar beets, and grain-bean cultures.

Beef Production

The work experience of front-rank enterprises, as well as studies by the Siberian Animal Raising Scientific Research Institute and the Altay Agricultural Scientific Research Institute show that further increases in the production of cheap beef by the kolkhozes and sovkhozes of Western Siberia can be achieved first and foremost through the correct organization of the raising, fattening, and pasture herding of large horned cattle.

In the experiments of the Siberian Animal Raising Scientific Research Institute carried out in the Kozlovskiy Sovkhoz, Barabinskiy Rayon, Novosibirskaya Oblast, castrated bullocks weigh 220-240 kg at 18 months, and 340 kg with good feeding after summer pasture foraging, i.e. 250 percent of the formerly cited weight. In the same sovkhoz, average daily weight increases of 1050 were achieved in winter fattening of 18-month bullocks; the average weight per head reached 549 kg. The fattening was done on a ration consisting of 25-30 kg silo corn, 3 kg hay, 2.5 kg straw, and 2.5 kg concentrates per head daily. With the fattening of 30-month castrated bullocks for a period of 75 days, the daily weight increases were 900 g, and the shipment weight reached 532 kg. The ration consisted of 34 kg silo corn, 3 kg hay, 4.5 kg straw, and 3 kg concentrates per head daily.

These experiments show that in the regions of Western Siberia there must be an intensive raising of young horned cattle stock to 18 months and the fattening of full-grown animals on rations consisting basically of silo corn and rough fodders.

Taking into account the experience of front-rank enterprises and studies of the Siberian Animal Raising Scientific Research Institute and the Altay Agricultural Scientific Research Institute, it is possible to recommend the following rations for the fattening of young horned cattle from the sixth through the eighteenth month (Table 1).

Table 1

Daily Rations and Fodder Requirements (kg) for the Raising and Fattening of Young Large Horned Cattle to a Live Weight of 370 kg (Forest-Steppe zone)

Корма (A)	Молодняк крупного рогатого скота в возрасте (B)						Структура рационов по питательности (M) (C)			
	6–12 мес. (D)		12–15 мес. (E)		15–18 мес. (F)		для молодняка в возрасте (G)			по всем группам (H)
	в сутки (I)	за весь период (J)	в сутки (K)	за весь период (L)	в сутки (M)	за весь период (N)	6–12 мес. (O)	12–15 мес. (P)	15–18 мес. (Q)	
(1) Кукурузно-бобовый силос	12	2160	25	2250	30	2700	45	63	71	61
(2) Свекла сахарная	3	540	3	270	—	—	15	8	—	8
(3) Сено	2	360	2	180	1	90	16	12	5	11
(4) Солома яровая	1	180	2,5	225	4	360	4	4	8	4
(5) Концентраты	1	180	1,0	90	1	90	20	13	16	16

A = Fodders; B = Young stock age; C = Nutritive structure of rations; D = months; E = for young stock of age: ; F = for all groups; G = daily; H = over netire period; I = Silo corn and grain; J = Sugar beets; K = Hay; L = Summer straw; M = Concentrates.

To balance the ration with respect to digestible protein, it is necessar to add 35-50 g carbamide per head daily.

The recommended ration for the raising of young horned cattle 6-12 months in age assures a daily weight increase of 700 g. 7.5 fodder units are expended per kg weight increase. 103 g of digestible protein are contained in each fodder unit. The cost of a centner weight increase will not exceed 40 rubles. The ration for young stock 12-15 months in age produces a 900 g daily weight increase. 8.27 fodder units are expended on each kg weight increase. There are 94.3 g of digestible protein in each fodder unit. The cost of a centner of weight increase will not exceed 36 rubles. The ration for 15-18 month stock assures a daily 900 g weight increase. 9.3 fodder units are expended on each kg weight increase. 90 g digestible protein are contained in each fodder unit. The cost of a centner weight increase will not exceed 38 rubles (Table 2).

Table 2

Steppe Zone

Daily Rations and Fodder Requirements (kg) for Raising and Fattening of Young Horned Cattle to a Live Weight of 350 kg (during period from 6 to 18 months)

Корма (A)	Молодняк крупного рогатого скота в возрасте (B)						Структура рациона по питательности (%) (C)			
	6–12 мес (D)		12–15 мес (D)		15–18 мес (D)		для молодняка в возрасте (E)			всего (H)
	в сутки (F)	за весь период (G)	в сутки (F)	за весь период (G)	в сутки (F)	за весь период (G)	6–12 мес.	12–15 мес.	15–18 мес.	
(I) Силос кукурузно-бобовый	12	2194	25	2250	30	2700	55	65	74	65
(J) Сено	1	183	—	—	—	—	10	—	—	2
(K) Солома	3,0	549	5	450	5	450	11	14	10	12
(L) Концентраты	1	183	1	90	1	90	23	21	16	21

A = Fodders; B = Young stock of age; C = Nutritive structure of ration (%); D = months; E = for young stock of age: ; F = daily; G = over entire period; H = total; I = Corn-bean silo fodder; J = Hay; K = Straw; L = Concentrates.

To balance the ration with respect ot digestible protein, it is necessary to add 30 g carbamide per head daily.

The recommended ration for young stock raising from 6-12 months assures a 700 g daily weight increase. 7.5 fodder units are expended per kg weight increase. 106 g of digestible protein are contained in each fodder unit. The cost of a centner weight increase was 36 rubles. The ration for young stock 12-15 months in age provides a weight increase of 900 g per day. 8.3 fodder units are expended per centner weight increase. 95 g digestible protein are contained in each fodder unit. The cost of a centner weight increase is 43 rubles 33 kopeks. The ration for 15-18 month stock is capable of yielding a 900 g daily weight increase. 9.3 fodder units are expended per centner weight increase. Each fodder unit contains 96 g digestible protein. The cost of a centner of weight increase does not exceed 40 rubles (Table 3).

Table 3

Model Ration for Fattening of Full-Grown Large Horned Cattle

Корма (A)	На 1 голову (B)		
	в сутки (кг) (C)	на весь период откорма (180 дней, кг)	структура рациона по питательности (%) (A)
(E) Силос кукурузно-бобовый	40,0	3600	75
(G) Грубые	3,0	270	9
(H) Концентраты	1,0	90	16
(I) Корм. ед.	9,1	819	—
(J) Переваримого протеина	830 г	78,8	—

[Table 3: Legend]
A = Fodders; B = per head; C = daily (kg); D = Over entire fattening period (90 days, kg); E = Structure of ration with respect to nutritive value (%); F = Silo corn-grain fodder; G = Roughage; H = Concentrates; I = Fodder units; J = Digestible protein.

The recommended ration assures a 900 g daily weight increase. 10.1 fodder units are expended per kg weight increase with 90.5 g digestible protein per fodder unit. The cost of a centner weight increase will not exceed 40 rubles.

In the foothill and mountain regions of Western Siberia and in farms having natural forage pastures, herding of large horned cattle must be employed on a large scale. In the "Put' Lenina" Sovkhoz, Smolenskiy Rayon, located in a terrain typical for the Altay foothills, the average daily weight increase for 20 herds (2630 head of cattle) was 830 g over an eight morth period; for individual herds it was 1008-1224 g. In 1961 on the natural pastures of the Altay foothills with herding of over 28 thousand head of young horned cattle for 102 days, the average daily weight increase was 744 g with an expenditure per centner weight increase of 14 rubles 46 kopeks. Experience of many years shows that the kolkhozes and sovkhozes of Western Siberia can widely employ summer cattle herding in foothill and mountain pastures, which assures a 50-60 percent weight increase over a period of 105-140 days. This area makes possible the herding of at least 300 thousand head of large horned cattle per year without any supplementation with concentrated of other fodder. At the present time, these pastures are being utilized quite insufficiently. For this reason, it is necessary to increase the number of head of cattle driven into the Altay foothills from the other regions of Western Siberia.

Mutton Production

The assurance of sheep fodder must be realized through fodder production with the partial utilization of pastures basically for the raising of young stock. The experience of the "Strana Sovetov" Kolkhoz has shown that with stall feeding of sheep largely with silo corn, the weight increase over two -tow and a half months was over nine kg per head with an expenditure of 5.2 fodder units per kg weight increase.

The experience of front-rank enterprises and data of scientific research institutions make it possible the following rations for sheep (Tables 4, 5, 6):

Table 4

Daily Ration for Fattening of Young Fine-Wool Sheep in the Steppe Zone. Length of Fattening Period -- 70 days; Average Daily Weight Increase -- 130 g; Initial Weight -- 27 kg; Final Weight -- 37 kg.

Корма (A)	Количество (кг) (B)	Корм. ед. (кг) (C)	Переваримого протеина (г) (D)	Структура рациона (%) (E)
(F) Силос кукурузный	3.0	0.60	39	54
(G) Сено люцерно-житняковое	0.5	0.26	54	23
(H) Концентраты	0.23	0.26	21	23
(I) Итого	—	0.11	114	100

A = Fodders; B = Quantity (kg); C = Fodder units (kg); E = Ration structure (%); F = Silo Corn; G = Alfalfa hay; H = Concentrates; I = Total.

8.5 fodder units are expended per kg weight increase. 100 g digestible protein are in each fodder unit. The cost of fodder per centner weight increase is 19 rubles 58 kopeks.

Table 5

Daily Ration for Fattening of Full-Grown Fine-Wool Sheep. Length of Fattening Period -- 75 days; Average Daily Weight Increase -- 130 g; Initial Weight -- 45 kg; Final Weight -- 55 kg.

Корма (A)	Количество (кг) (B)	Корм. ед. (кг) (C)	Переваримого протеина (г) (D)	Структура рациона (%) (E)
(F) Кукурузный силос	5.0	1.0	65	73
(G) Солома яровая	0.6	0.16	8	12
(H) Концентраты	0.17	0.20	15	15
(I) Карбамид (г)	0.6	—	20	—
(J) Итого	—	1.36	108	100

A = Fodders; B = Amount (kg); C = Fodder units (kg); D = Digestible protein (g); E = Ration structure (%); F = Silo corn; G = Summer straw; H = Concentrates; I = Carbamide (g); J = Total.

Fodder expenditure per kg weight increase -- 10.5 fodder units. Cost of fodder per centner weight increase -- 18 rubles 69 kopeks.

Table 6

Daily Ration for Fattening of Young Meat-Wool Sheep in the Forest-Steppe Zone. Length of Fattening Period -- 70 days; Average Daily Weight Increase -- 150 g; Initial Weight -- 30 kg; Final Weight -- 40 kg.

Корма (A)	Количество (кг) (B)	Корм. ед. (кг) (C)	Переваримый протеин (г) (D)	Структура (%) (E)
(F) Кукурузный силос	3.0	0.60	30	50
(G) Сахарная свекла	1.0	0.26	12	20
(H) Концентраты	0.25	0.28	51	20
(I) Летняя яровая	0.30	0.06	3	5
(J) Итого	—	1.20	105	100

A = Fodders; B = Quantity (kg); C = Fodder units (kg); D = Digestible protein (g); E = Structure (%); F = Silo corn; G = Sugar beets; H = Concentrates; I = Summer straw; J = Total.

The fodder expenditure per centner weight increase is 8.0 fodder units. The cost of fodder per centner weight increase is 19 rubles.

Pork Production

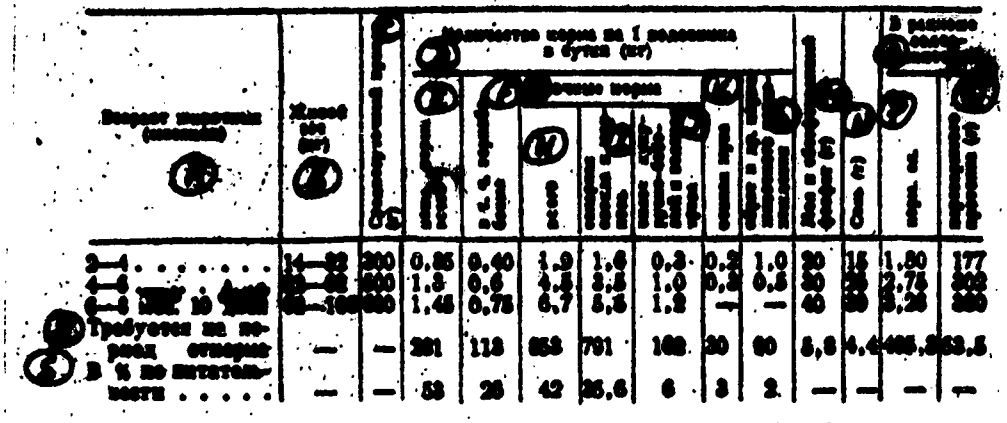
The experience of front-rank enterprises convincingly shows the existence in Western Siberia of reserves for increasing pork production. The "Belovskiy" Sovkhos, Altayskiy Kray, in 1961 used its own fodders to produce 90 centners of pork (live weight) per 100 hectares of pasture; the other sovkhozes in the Kray produced just 5.8 centners.

The "Belovskiy" Sovkhoz achieved its high pork production through the intensive use of the basic sows and the wide use of pigs for the single farrows, production cross-breeding, series farrows, and the separate-shop system of work organization on the farm with large-group maintenance of swine. The separate-workshop system makes possible a great increase in labor efficiency. The female swine-tenders (svinarki) produce 1000 and more pigs each per season. M.G. Tyumeneva in 1961 raised 1545 pigs, spending 50 percent of the time that the average swine tender spends in the sovkhoz. High labor productivity indices have also been achieved by male swine tenders in charge of feeding (L. Uskov, V. Domolokov, A. Yegorov) who in 1961 fattened 7895 swine. In this section, the labor expenditures for each centner weight increase were about one hour; the cost of one centner was 51 rubles.

Table 7

Forest-Steppe Zone

Model Rations and Fodder Requirement per Pig in Meat Fattening to 100 kg Live Weight (14 kg initial weight)



A = Age of animals (months); B = Live weight (kg); C = Average daily weight increase (g); D = Amount of fodder per pig daily (kg); E = total concentrated fodder; F = including grain-bean fodder; G = juicy fodders; H = total; J = grain-corn silo fodder and green grass; I = sugar beets and carrots; K = hay flour; L = whey and other fodders of animal origin; M = chalk and defluorinated phosphate (g); N = Salt (g); O = Ration contains; P = fodder units; Q = digestible protein; R = Required during fattening period; S = Percentage of nutritive value.

One fodder unit contains 110 g digestible protein. 5.7 fodder units expended per kg weight increase. Cost of centner weight increase -- 37 rubles.

The data of the Altay Agricultural Scientific Research Institute show the high effectiveness of swine fattening on sugar beets and fodder beans. With a daily ration of 4.75 kg sugar beets and 1.53 kg bean meal (42.5 and 57.5 percent of total nutritive value, respectively), the average daily weight increase was 521 g. 5.6 kg fodder units were expended per kg weight increase.

Taking into account the experience of front-rank enterprises and the suggestions of the Altay Agricultural Scientific Research Institute and the Siberian Animal Raising Scientific Research Institute, the following rations are recommended for the feeding of swine in two zones (Tables 7 and 8).

Table 8

Steppe Zone

Model Rations and Fodder Requirements per Pig in Fattening to 100 kg Live Weight (14 kg initial weight)

(A) Возраст животных (месяцев)	(B) Живой вес (кг)	(C) Среднесуточный привес (г)	(Q) Килограммов корма на 1 подсвинка в сутки — (E) концкорма: (G) всего	(E) концкорма, в том числе: (H) (1:1)	(E) концкорма, в том числе: (I)	(F) сочные: (G) всего	(F) сочные, в том числе: (J)	(F) сочные, в том числе: (K)	(L) Сенная мука	(M) Мел (г)	(N) Соль (г)	(O) В рационе содержится: (P) корм. ед.	(O) В рационе содержится: (O) переваримого протеина (г)
2—4	14—32	300	1,0	0,6	0.4	2,0	1,5	0,5	0,2	20	15	1,70	196
4—6	32—62	500	1,5	1,0	0.5	4.2	3,2	1,0	0,3	30	25	2,76	300
6—8 мес. 10 дней	62—100	600	2,0	1,4	0.6	5.0	4,0	1,0	—	70	30	3,30	340
(R) Потребуется кормов на весь период откорма	—	—	290	194	96	722	562	160	30	5,8	4,4	478,0	52,5
(S) В % по питательности	—	—	67	44	23	30	21	9	9	—	—	—	—

[Legend: Same as in Table 7 above]

110 g digestible protein are contained in each fodder unit. 5.6 fodder units expended per kg weight increase. Cost of centner weight increase -- 35 rubles.

Teh recommendations were worked out by specialists of the All-Union Animal Raising Scientific Research Institute, the All-Union Agricultural Economics Scientific Research Institute, the All-Union Fodder Scientific Research Institute, the Siberian Animal Raising Scientific Research Institute, the Altay Agricultural Scientific Research Institute, and the Agriculture Ministry USSR.

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THE USE OF PEDIGREED ANIMALS FROM THE CATTLE FARM OF THE "GORKI LENINSKIYE" EXPERIMENTAL STATION

[Following is the translation of an unsigned article in the Russian-language periodical Zhivotnovodstvo (Animal Raising), Vol 24, No 10, 1962, pages 18-19.]

As is known, the experimental farm "Gorki Leninskiye" of the Genetics Institute Academy of Sciences USSR has produced a breed of highly-productive fatty milk animals which from the breeding stanpoint will be of great value in the enrichment of cow milk produced in sovkhozes and kolkhoses (State and collective farms, respectively). However, a number of sovkhozes, kolkhozes, and even scientific research institutions are maintaining bulls acquired from "Gorki Leninskiye" in poor conditions, using them insufficiently for breeding purposes, and in individual cases even consigning them to the slaughterhouse.

The agricultural organs have not assured the proper maintenance and use of these valuable pedigreed animals; they have not organized the proper recording of their use for breeding as well as the use of bullocks they produce by the kolkhozes and sovkhozes.

To eliminate the indicated shortcomings, the Agriculture Ministry USSR on 28 August 1962 issued a directive "On the Use of Pedigreed Animals from the "Gorki Leninskiye" Experimental Base of the Genetics Institute Academy of Sciences USSR".

The agriculture ministers of the Soviet republics, the Breeding Administration, and the Administration for the Science, Propaganda and Introduction of Advanced Experience of the Agriculture Ministry USSR have been directed to determine within a month's time the regions and farms which are to use the bulls of the "Gorki Leninskiye" Station and their descendants. In the determination of the farms, it is to be a basic premise that all cows are to be inseminated only by these bulls and their descendants. On the rayon level, the bulls are to be used on the farms of one or two large enterprises, while in the oblast, kray, or republic with no oblast division, they are to be

employed in one or two rayons to inseminate all cows in the rayon.

Within the same period, it will be necessary to determine the network of scientific research institutes, agricultural schools, experimental stations, and sovkhozes for the organization on their farms of the reproduction of offspring from "Gorki Leninskiye" bulls for the purpose of supplying the consignment (tovarnyye) farms of sovkhozes and kolkhozes. These farms must be staffed with qualified zootechnicians. The level of useful characteristics of the cows in these enterprises, in addition to the fat content of the milk, must be no lower than Class I for the herd average. A necessary precondition is the maintenance of proper zootechnical and pedigree records. All bulls descending from the "Gorki Leninskiye" breed must be tested with respect to progeny and the tested animals widely used in raising the productivity and milk quality of large horned cattle.

The directive orders the timely completion of testing of the state and utilization of bulls obtained from "Gorki Leninskiye" and their descendants, as well as the productive qualities of lactating daughter-cows. Similar control is to be exercised in the future. The organization of the study and systematic generalization of work results on raising the richness of milk from cows produced from "Gorki Leninskiye" bulls and their descendants is the responsibility of the Administration on the Science, Propaganda, and Introduction of Advanced Experience of the Agriculture Ministry USSR and the All-Union Agricultural Academy imeni Lenin. The Pedigree Administration of the Agriculture Ministry USSR and the Soyuzzhivkontora (All-Union Animal Raising Office) are responsible for the preparation and correct distribution and sale of bullocks from "Gorki Leninskiye".

Scientific research institutions, agricultural schools, experimental stations, territorial production administrations, kolkhozes, and sovkhozes received the following recommendations:

hybrid bullocks raised on breeding farms from "Gorki Leninskiye" bulls must be distributed to consignment farms of kolkhozes and sovkhozes and used until the achievement of half-sister milk fat content with a load of 30-50 cows per annum. Hybrid cows obtained from "Gorki Leninskiye" bulls and their descendants both on breeding farms and consignment farms of kolkhozes and sovkhozes are to be used for herd replenishment and as a rule for the insemination of the breed planned for the given zone or unrelated breeding bulls from the "Gorki Leninskiye" Station and their descendants.

On breedings farms raising high-class bullocks for kolkhoz and sovkhoz farms, the breeding bulls are to be used

in individual mating. The Administration for the Science, Propaganda, and Introduction of Advanced Experience of the Agriculture Ministry RSFSR (Russian Socialist Federative Soviet Republic) and the Agriculture Ministry Ukrainian SSR must organize experiments at the experimental farms of scientific research institutes for the comparative evaluation of breed quality with respect to the butterfat content of milk of descendant obtained in natural mating and artificial insemination of cows. In the fourth quarter of 1962 and the first quarter of 1963 it is intended to carry out zonal instructive conference of enterprise and farm specialists using "Gorki Leninskiye" bulls and their descendants, as well as animal office workers on the problem of proper use of livestock.

Henceforth, the pedigreeing of Jersey breeds originating at "Gorki Leninskiye" is to be conducted according to the standards worked out at this Farm.

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