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THE FUNCTION AND IMPORTANCE OF INTEGRATED AGRICULTURAL ORGANIZATIONS IN THE DEVELOPMENT OF AGRICULTURE AND FOOD INDUSTRIES

Submitted by the Government of Yugoslavia

1. Agriculture and food industries occupy an important place in the economic structure of Yugoslavia. Nearly a half of the country's population is employed in and dependent upon agriculture. Agriculture (27 per cent) and food industries (2.2 per cent) accounted for 29 per cent of the total income of the economy in 1965[1)]. The share of agricultural and food products in the country's exports reaches up to 35 per cent. Consequently agriculture has an important influence on the development and stability of the economy as a whole, on the expansion and stability of the material base of the standard of living, and its is a significant contribution to the trade balance of the country. Its advancement and intensification is a postulate for the further development of food industries and it creates an enlarged market and fresh room for expansion of the country's chemical industry, mechanical engineering and other industries.

After the last war Yugoslav agriculture was characterised by stagnation and a low output until 1956. The stagnation was engendered by the then necessary economic-political orientation towards rapid industrialisation and by the concentration of the available investment funds mostly in that direction. The results of the overall economic development recorded through 1956 created the possibilities and conditions for allocating a larger share of the social accumulation for investments in agriculture. Parallel with the increasing investments it came to a gradual

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improvement of the operational conditions in this sphere, which enabled a quickened agricultural development after 1956.

Over the last ten years farm output has marked a considerable growth. The two-year average volume of agricultural production for 1965-66 was about 42 per cent higher than the two-year average for 1956-57. During the last ten years farm output has increased at the average rate of 4 per cent annually, which is considered as a major rate of agricultural growth by world standards. The construction of new food factories and the reconstruction of existing ones had commenced before, and the last ten years saw this activity assume an intensifying pace which was to lead to a 12.7 per cent annual average increase in the output of food industries for the ten-year period - a rate exceeding the overall rate of growth of industrial output in the country. This development of food industries had a powerful effect on the intensification of agricultural production.

A rapid production increase has been a feature of socialized farms in particular. During the ten years 1957-66 their volume of production rose by 3.5 times, averaging an annual increase of 14.5 per cent. The cultivable land of socialised farms increased from 777,000 hectares in 1956 to 1,413,000 hectares in 1965. The cultivable land of these farms represents 13.7 per cent of the total (8,840,000 hectares of cultivable lands being owned by individual farmers). The output of socialised agricultural farms equals about 20 per cent of the total volume of agricultural production and about 44 per cent of the production for the market. Production increase per unit area has formed the most realistic way and method of output increase on socialised farms.

2. The intensification of agricultural production on large farms, on the one hand, and the existence of modern food factories, on the other, had created the conditions and economic need for a fuller and more sustained technological-economic and organisational linking of these working organisations. Guided by their economic interests, the working organisations in agriculture and food

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industries proceeded to integrate, forming agricultural-industrial and industrial-agricultural combinations. The greatest number of the existing integrated organisations originated between 1961 and 1963 through the merger of agricultural and industrial enterprises, while others were called into being through the gradual construction of food factories within the complex of large agricultural enterprises.

The Growth of Agricultural Organisations

3. These integrations between agriculture and food industries were preceded by a process of horizontal integration in agriculture itself through the merger of smaller-scale agricultural organisations to form larger ones. This process went parallel with the intensification of agricultural production, and the growth of socialized farms by this method was also encouraged by their working collectives. Their basic motive in combining their means of production and establishing major enterprises was their economic interestedness to create the conditions for a higher and rationalised production and, by extension, to obtain more means for extended reproduction and personal incomes.

The breakthrough of modern production means and methods was rapid on socialised farms. In 1956 they were still relying on beasts of draught to a considerable extent. In 1966 reliance on draught animals is practically non-existent and the level of mechanisation of the farms ranges between 1.1 and 1.2 horse-power per hectare. Their consumption of mineral fertilisers per hectare increased from 202 kilograms in 1956 to 842 kilograms in 1965. Relative to industry in general and to the rest of the country's economy, agricultural enterprises are well equipped. The tabulation below gives the amount of fixed assets per employed person in 1965.

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Table 1

The Amount of Fixed Assets per Employed Person in 1965, Including Land

(Present value in 000 new dinars)

The economy	22.5
Manufacturing industries	22.8
Socialized agricultural farms	23.2

The efficient use of modern techniques demanded more scope and concentration and specialization of production. In view of the growing action of economic laws in our economic system, the working collectives in agricultural enterprises are prompted to adapt the size of the latter to the requirements of new techniques and technology. Hence a dynamic process of decrease in the number of agricultural enterprises and of increase of their holdings.

Table 2

The Number of Agricultural Enterprises and the Average Size of Their Holdings

Year	Number of enterprises (excluding the farms of Agricultural Co-operatives)	Average size of holdings (in hectares of cultivable area)
1958	713	585
1965	292	2,671

The holdings of the largest integrated agricultural-industrial organizations reach over 20,000 hectares.

4. The rapid development of production on socialized farms is owed, inter alia, to concentration and specialization by virtue of the integration of agricultural enterprises. The merging and combining of means and technical personnel has assisted specialization in production and the attainment of great results whether in

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the volume of output or in productivity and profitableness. The advantages of large-scale organizations over small-scale ones have been confirmed by the achievements which have attended this evolution. Specialization has led not only to a reduction of the number of produce in primary production, but also to the creation of larger plots or blocks of plots, to a major concentration of livestock production, to decreases in the number of various servicing departments and personnel and so on. The results indicate that the conditions provided for specialization and an efficient adoption of the industrialized system of production in agriculture have been proportionate to the extent of concentration of means and capacities.

The Motives of the Integration of Agriculture and Food Industries

5. Specialized and mass production of a determined number of goods by large agricultural enterprises has also called for more security and continuity in the matter of marketing, which was to be ensured by a permanent and fuller economic-technological and organizational linking with the biggest users of the goods - the food industries. The processing and finalizing of farm produce can be organized far more rationally when it is synchronized, in space and time, with their own production. The resultant savings in materials, transport costs, etc. make for considerably superior production and financial results. In such conditions food manufacturers are able, by virtue of their material resources, organizational experience and expert personnel, to assume a more active role in the production of raw materials. It is upon these objective conditions that the establishment of durable and solid integration relationships rests. The processing enterprises find their accounts in that production of increased quantities of high-quality raw materials and their delivery to the food factories by the shortest route and at the right time enables them to utilize their plant capacity to better advantage, which of course is the basic economic postulate for rationalized operation and superior economic results. Their resultant financial strengthening makes it possible

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for food industries to allocate more means for the further and quickened advancement of their production within such an integration relationship. On the other hand, an agricultural organisation, assisted by the resources of a processing organization and by its experience, is able to mark far higher yields by virtue of an intensive, industrialized production adapted to market requirements and, ipso facto, to obtain commensurately higher returns on its work.

However, the benefits deriving to the partners do not end with a more efficient use of their assets, incomparably superior though the economic effects are made by integration. The setting up of joint development programmes affords possibilities for superior distribution and synchronization of capacities and reduces transportation costs and losses in quality during transit, enabling a superior utilization of raw materials. Furthermore, by pooling the transport facilities and making joint use of the available storage space difficulties are avoided at the peak of the harvesting season.

As a result of the new techniques and technology there is a constant need for improving the qualifications of those engaged in their application. This holds both for know-how and for experience in the operation of new means of production. Communities of integrated enterprises are in a better position to organize a permanent perfecting of the qualifications of the personnel working in production. In such a community the working collectives are able to exchange experiences more quickly and successfully, to test new means and methodologies, to carry out the necessary studies and pursue a fuller co-operation with scientific institutions.

6. Not all the groupings of food industries are equally interested in integration with agriculture, given that the degree of dependence on agricultural raw materials varies between food factories. Some food factories do not depend at all on domestic raw materials (for example, chocolate manufacture, the raw material for which has to be imported) or else the dependence is of a

secondary nature (as in the case of industries devoted to the processing of semi-finished products or residual raw materials obtained from other food industries, like brewing and malting products, margarine, concentrated soups, pastes). All such groupings - including paste, chocolate, candy, biscuits, concentrated soups, margarine and vegetable fat, spirit, yeast, vinegar, alcoholic and non-alcoholic beverages industries - account for about 16 per cent of the output of the country's food industries. Hence, about 84 per cent of the output of food manufactures directly depends on agricultural production, but again the extent of this dependence varies between food factories and, consequently, so does their need for closer co-operation with agriculture. Interest for the establishment of permanent co-operation based on integration varies according to the items forming the subject of production.

Mostly sugar refineries and industrial (export) abattoirs have continued the nuclei of integration. The industry of edible oil did not independently provide major centres of attraction for the establishment of major agricultural-industrial combinations, yet, thanks to their being located in areas with developed food industries and large agricultural enterprises, certain oil factories proved exceptionally well fitted for inclusion in integrated agricultural-industrial organisations (as witness those at Zrenjanin, Osijek, Vrbas). The same is true of breweries, starch factories and flour mills, with variations depending on their specifics and actual need for technical-technological integration with agriculture.

It is not by accident that sugar refineries have more often than not appeared as centres of integration. With their important fixed assets, large income, expert personnel, sugar refineries represent valuable economic establishments for their area. But their potentialities can be properly utilised solely by way of an adequate supply of sugar beets. On the other hand, by virtue of its biological properties, sugar beet is not suited for transportation over longer distances, for the same reason freight

comes out too high, and, besides, it sugar beet be stored for longer periods. In fine, sufar beets have to be processes soon after harvesting. The typically seasonal character of this production dictates highly intensive and rational operations over a period of about 100 days so that a sugar refinery may achieve economic results comparable with those other industries record in twelve months. This is realisable provided that during the processing season a sugar refinery has adequate supplies of fresh, high-grade sugar beets Such supplies cannot be brought from distant points. Consequently the sugar industry must have adequate and conveniently situated sources of sugar beet supplies to be able to make rational use of its assets or else it makes great financial losses.

Something similar is found in the case of abattoirs. Here, too, modern and very costly plants are involved. And cattle does not lend itself to long transportation, either; nor can it be stocked for a longer period to await processing.

Such a raw material situation in the case of sugar refineries and abattoirs demands the greatest concentration of the production of raw materials near the processing plants. Such is the prime condition of profitable production (a high rate of utilisation of plant capacity, maximum utilisation of raw materials, lower transport costs, and a transportation adjusted to the dynamics of processing and other considerations).

Also by reason of the biological properties, fresh fruit and vegetables will not endure longer transportation and cannot be conserved for long. In addition, owing to their inferior value per unit weight, these products pose even worse problems in the mater of freight. Until recently the absence of major processing plants and of an adequately concentrated production of raw materials has precluded larger integrations of fruit and vegetable processing factories with agricultural-industrial organisations. Only some such factories form part of these organisations. At the same time, though, the factories represent the largest and best equipped establishments of this type.

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The existence of a large processing plant in a particular region does not in itself provide possibilities for creating an integration centre unless there is the necessary potential to organize a large-scale, specialized and modern agricultural production in the area. Therefore, in those areas where large processing plants are surrounded by a dispersed individual agricultural production it is sought to create the conditions for an integrated co-operation similar to that with large agricultural enterprises by means of co-operation with individual farmers.

The Forms of Integrated Agricultural Organizations

7. The process of creating integrated agricultural organizations has developed in accordance with the conditions and possibilities and on the basis of the economic interestedness of the working collectives to set up integrated working communities. Consequently there is no uniformity whether in the pattern of the activities pursued by a combination enterprise of this kind or in the system of its internal relationships, and the purpose of this survey is to illustrate the existing variety in this sphere rather than to circumscribe the practicable forms of integration.

In a general way, one can distinguish the following three types of these integrated organizations - going by the pattern of their activities, economics, internal relationships and status in relation to the market respectively to other economic organizations.

a) Integrated industrial-agricultural organisations. These have a relatively developed food manufacture, often involving multiple-stage, processing, and a farming activity productive of the bulk of the necessary raw materials. The finished products for the market mostly represent manufactures, and to a lesser extent farm produce. Organizations of this type are mainly found in those parts of the country which have an intensive agriculture (the grain growing flatlands) and in the vicinity of large consumer centres.

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b) Integrated agricultural-industrial organizations. Here food manufacture is less developed and has a rather primary character (advanced stages of processing taking place outside of the organizations), while agriculture forms the basic activity and its produce are marketed for the most part. Realization between the departments is developed, yet there is less cohesion than in the case of the industrial-agricultural combinations. However, agricultural-industrial combinations are more widespread everywhere in the country.

c) Integrated agricultural organizations. In this instance manufacturing, if any, appears rather as a supplementary activity inherited from the former socialized farms. Agricultural produce constitute the basic output for the market, while internal exchange proceeds in the form of a more or less balanced production of crops and livestock. These organizations, which, actually, represent a prevalently horizontal integration in agriculture, are widespread in all parts of the country, and they tend to develop into agricultural-industrial combinations by way of integration with factories or by constructing their own processing plants.

The Capacity of the Combinations

8. Integrated agricultural organizations account for a large proportion of the capacity of the socialized sector of agriculture and food industries. The importance of their potential does not occur in their size alone, however, but also in that they represent the most intensive part of Yugoslav agriculture and food industries.

It being impossible to classify them here in detail by type and size, only the basic data on their capacity are given below.

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a) Industrial Capacity

Table 3

Capacity of Integrated Agricultural Organizations for Industrial Processing of Farm Produce, by Principal Industries

Industries	Number of factories			Capacity		
	Total	Integrated	%	Total	Integrated	%
Sugar refineries	13	11	84.6	2,760	2,410	87.3
Abattoirs and meat packers	44	16	36.3	336,442	204,607	60.8
				38,395	26,126	68.0
				13,935	13,135	94.3
Oil factories	14	9	64.3	330,060	238,280	70.3
Fruit and vegetable manufacture	40	6	15.0	110,000	40,000	36.3

Note. The capacity of the industries is expressed in the following units: - Sugar refineries in thousands of tons of sugar beets processable per 100-day season; abattoirs and meat packers - first line in tons of fresh meat per annum, second line in tons of canned meat per annum, third line in tons of bacon per annum; oil factories in tons of sunflower seeds per 280 working days; fruit and vegetable manufacture in tons of finished products.

The four tabulated industries represent, in scope and equipment, the most important groups in the whole complex of food industries. They also constitute the dominant manufacturing branches of these integrated organisations.

It is seen from these figures that the combinations incorporate the largest factories, which are also most highly ration-

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alized from the viewpoint of capacity and modern techniques and technology.

b) Agricultural Capacity

That these integrated organizations constitute the preponderant and most progressive part of the socialized sector of agriculture is shown by their aggregate land holdings and other assets.

Table 4

Total Agricultural Capacity of Integrated Agricultural Organizations

Cultivable land		Conditioned head of cattle		Mechanized equip.	
Hectares	% of the social sector	Number	% of the social sector	Total H.P.	H.P. per 100 hectares of cultivable land
508,958	37.8	231,367	45.6	460,823	110.0

Remembering the industrial plants that also form part of the integrated agricultural organizations, it is evident that the latter boast an important potential for the development of Yugoslav agriculture and food industries as a whole.

II. THE OUTPUT OF INTEGRATED AGRICULTURAL ORGANIZATIONS

9. The advantages of augmenting the socialised farms and of their integration with food industries became manifest in the first years already of this fairly recent process of development of integrated agricultural organizations. It was demonstrated, and substantiated by the production results to date, that the mutual in-

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tegration of agricultural production units and their integration with food industries to form integrated agricultural organizations was being creative of new and larger integrated complexes not only in form, but in substance. In the initial phase of integration the merging and concentration of lands about processing industries does lead to the creation of an aggregate of production assets. But on top of that, the economic effects of integration are soon compounded not only by that concentration is productive of economically and technically superior plots and complexes of land and by its enabling a fuller utilization of the processing plants, but also by that the circulation of produce from the fields to the factory is no longer subject to any interruptions by reason of purchase and sale operations. The farmer and the stock breeder are now keenly interested in the quality of the finished products. At the same time, the manufacturer is not unconcerned about the methods of primary production so that he may get the best and most economical raw materials. Thus the nature of the continuing and unified production process leads, through the reciprocal material interest in the integrated economic organization, to the creation of adequate and qualitatively new mutual relations. Parallelly, though, new problems arise, too, both in the sphere of self-management and internal economic relationships and in that of actual production, especially in connection with harvesting, with the storage of produce and with processing. Large holdings and the quest to use them to the best advantage call for equalitatively new and most up-to-date technical, technological, transport and other solutions. Their having to cope, during a short season, with high yields from large holdings, reaching up to 10,000 hectares of the same crop, had forced agriculturists to go in for ever-bigger, technically-improved harvesting, drying and transport equipment, conventional methods which rely on human labour or on low-capacity machines no longer entering.

On the other hand, the concentration of an amplified and better-quality production of raw materials also raises the

optimum limit of the processing capacity and calls for appropriate innovations in the technical-technological pattern of processing. Which brings us to the need, too, for adequate investments and automatically dictates a more productive and profitable output and more efficient operation. Because of all that arises a whole series of problems, from the production of raw materials, through their processing, to the realization of the finished products, which require new and more modern solutions in the sphere of trading as well.

The process of dealing with each of these problems constantly highlights the increasingly evident contrast between the advantages of large-scale and modern production relative to a dispersed and undeveloped one. Simultaneously, the results of these advantages provide the incentive for the development of the country's economy as a whole.

Agricultural production

10. In the five-year period 1961-65 the dynamic development of socialized agricultural farms, especially of integrated agricultural organizations, contributed considerably to the overall production increase in agriculture. The following shows the annual average rate of growth for the period.

Table 4

Average Rates of Growth of Agricultural Production During 1961-65, by Major Branches and Activities

	Total agriculture (socialized and individual)	Socialized agricultural farms
Agricultural production[2]	1.9	10.3
Crop farming	3.0	7.7
- Cereals	3.4	5.9
- Industrial crops	10.5	17.5
- Vegetables	0.1	0.6
Stock breeding	2.5	9.0
- Bovine animals	1.2	5.7
- Pigs	4.9	9.6

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The yields per hectare for the biggest crops were these:

Table 5

Average Yields per Hectare of Wheat, Maize, Sugar Beets, and Sunflower Seeds in 1961, 1965 and 1966[3]

Products	Yields, quintals per hectare								
	1961			1965			1966		
	Total agriculture	Socialized agric. farms	Integrated agric. organizations	Total agriculture	Socialized agric. farms	Integrated agric. organizations	Total agriculture	Socialized agr. farms	Integrated agr. organizations
Wheat	16.1	30.5	32.0	10.5	32.5	34.1	25.3	38.1	39.7
Maize	18.1	34.8	38.3	23.1	44.9	49.2	31.1	57.2	62.3
Sugar beets	215.0	248.0	286.0	329.0	379.0	398.0	279.0	439.0	457.0
Sunflower seeds	13.7	16.7	17.8	16.7	19.0	20.1	19.3	20.3	20.8

Note: Preliminary figures are given for 1966.

Table 5 presents the average yields. However, in 1966 a major number of integrated organizations recorded wheat yields exceeding 50 quintals per hectare, maize yields exceeding 70 (andeven 80) quintals per hectare and sugar beet yields exceeding 550 quintals per hectare, and that for crops covering from 2,000 to 6,500 hectares. The yields marked on socialized farms, particularly those of integrated agricultural organizations, vie with the top achievements of West European countries with a highly developed agriculture. The adoption of mechanized equipment and modern technology has boosted productivity, yet the last still falls short of that registered in countries with a highly developed agriculture.

Table 6

Number of Work Hours Employed on Socialized Agricultural Farms to Obtain One Quintal of Products[4]

	1960	1965	1966
Wheat	2.56	2.04	1.36
Maize	7.72	4.64	-
Sugar beets	1.87	1.40	-

In the social sector of agricultural production good results were marked in 1961-65 also in connection with the production of livestock (Table 4). The following gives the movement of this production by the more important items.

Table 7

Production of Meat and Milk per Head of Stock

	1961	1965
Beef and veal production, kilos per cow, per year	221	260
Pork production, kilos per sow, per year	762	1,420
Milk production, litres per cow, per year	2,064	3,051

As for productivity in livestock production, the following rates were registered:

Table 8

Number of Work Hours Employed on Socialized Agricultural Farms per Unit Weight of Livestock Products

	1961	1965
Milk, hours per hectolitre	6.6	5.6
Veal, hours per quintal	34.8	21.7
Pork, hours per quintal	10.1	6.6

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These productivity figures refer to the social sector of agricultural production as a whole. However, it is a fact that, thanks to their technical equipment and superior organization of work, the integrated agricultural enterprises have been more successful in raising their productivity. Thus, in a number of such organizations in 1965 they employed the following amount of working time to turn out certain products: wheat 1.20 hours, maize under 3 hours, sugar beet about 1 hour, milk and pork about 4 hours, veal about 15 hours - all per quintal.

The Output of Food Industries

11. By virtue of the precedence given to industrialization in the country's post-war economic policy, Yugoslav food industries marked a more dynamic development even before 1956, which was the point when the strengthening and quickened development of socialized agricultural farms only began. During the 1952-57 period the output of food industries had been growing at the rate of 17.6 per cent, followed by 9.2 per cent for the next five-year period, 1957-61.

The following tabulation presents the evolution of this output since 1961.

Table 9

Output of Food Industries, Including Those Forming Part of Integrated Agricultural Organizations

(Index numbers. Base 1961=100)

	1961	1965	1966	Annual average growth 1961-65
Total food industries	100	142	155	7.3
a) Sugar	100	143	221	7.4
b) Fresh and processed meat	100	148	126	8.2
c) Edible oil	100	155	168	9.2
d) Fruit and vegetable manufactures	100	150	180	8.4
Total a) to d)	100	148	168	8.2

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The dynamism of the increase for the four industries as specified was somewhat more marked than the rate of growth of food industries' total output. The fact that the greater number of the plants of the four industries forms part of integrated agricultural organizations is certain to have positively influenced the development of food industries as a whole.

The following shows the movement of the output by items (groups of items):

Table 10

Output of the More Important Products (Groups of Products) of Food Industries

(In metric tons)

	1957	1961	1965	1966	Index 1966/1957
Sugar	235,260	230.352	336,838	519,500	221
Vegetable fats	43,079	87,521	137,136	141,523	329
Canned meat	14,548	34,808	58,767	44,539	306
Bacon and sausage	12,524	26,925	40,854	44,860	358
Fresh meat	114,508	225,950	409,830	354,612	310
Fruit manufactures	18,324	37,381	57,733	51,849	283
Vegetable manufactures	1o,643	23,741	34,700	63,491	597
Total					291[5)]

12. During the ten-year period 1957-66 the volume of production of the four groupings as specified nearly tripled (Index 291), while the overall output of food industries rose by less than 2.5 times (Index 242). In 1966 the stated groupings accounted for 44.9 per cent of the total output of food industries. Sugar refining represents one of the most highly developed technical-economic groupings of the food industries complex. In 1965 sugar production equalled 11.3 per cent of the total output of food industries and in 1966 - 15.7 per cent.

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Sugar production doubled during the 1953-65 period, yet, in view of the quicker rate of increase of sugar consumption(which rose nearly 5-fold per caput relative to prewar), sugar availabilities are still inadequate and the deficit has to be offset by imports. As a result of an exceptionally high output of sugar beets in 1966, the sugar refineries extended their season to 144 days on average and were able to manufacture about 520,000 tons of sugar - enough to meet domestic demands for the year after a long period of short supply.

Applying modern technology in the production of sugar beets, and using large mechanized machines in the process, the integrated agricultural-industrial organizations, are able to mark very high yields and, consequently, the sugar refineries within their complex enjoy superior raw material supplies.

During 1957-62 they used their plant capacity to the extent of 99.6 per cent, while the refineries outside of the organizations, which refineries then accounted for about 62 per cent of the total, could utilize only 86 per cent of their plant capacity. It is superfluous to stress the disadvantages such a state of affairs must have meant for an industry with a manifestly seasonal character.

By growing highly productive varieties of sugar beets with a higher polarization content of sugar both a high degree of concentration of production was achieved and the radius of the

sugar beet crops around the sugar refineries was reduced, with resultant savings in transport costs. Besides, given such a scheme, a sugar refinery gets fresh sugar beets which have suffered less damage by transport handling, that is, it is able to process a raw material with a higher uilization value. During the 1957-60 period, the average distance sugar beets had to be hauled to a sugar refinery, was between 66 and 70 kilometres; and today, in the case of most sugar refineries, sugar beets have to travel about 35 kilometres. The new built sugar refineries, as well as reconstructed ones, possess modern equipment and apply the latest technology. With the assistance, also, of a growing and increasingly highly trained personnel, the refineries have reached a high percentage of utilization of raw material which is above the European average.

A survey shows that in the 1959-62 period, that is, at the time when less than half of the existing sugar refineries formed part of integrated agricultural organizations, it was such refineries that were having the most economical production. In order to be able to cover all its production costs, a non-integrated sugar refinery had to utilize its plant capacity to the following extent: in 1960 by 68 per cent, in 1961 by 73 per cent and in 1962 by 88 per cent. Which compares with these proportions in the case of an integrated refinery: in 1960 by 51 per cent, in 1961 by 57 per cent and in 1962 by 65 per cent.[7)]

13. In the matter of oil seeds, Yugoslav oil factories mostly process sunflower seeds, this oil constituting about 90%

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the oil factories to start advancing their processing technology as well. The majority of them carried out comprehensive reconstructions, replacing the obsolete plant installations and enlarging their capacity, and two new, medium-capacity, factories were also constructed.

14. In contrast to the sugar and oil industries, the abattoirs, including cured meat and sausage and meat packing, are very largely oriented towards exports. Consequently this industry is more exposed to market influences; at the same time, there are the familiar cyclical trends in the production of raw materials and their unsettling effects. All that has considerably handicapped the establishment of a more solid and permanent integration of this industry with agricultural organizations. None the less, the largest abattoirs, mostly those working for export, form part of integrated agricultural organizations.

It is certain that the export and other abattoirs consisting these combinations have contributed the most to the successful production of canned meat and other processed-meat items. The highly dynamic development of this production is shown in Table 10.

15. A similar situation obtains in the sphere of fruit and vegetable processing, with the difference, compared with the abattoirs, that this processing industry is very undeveloped relative to the majority of the technical-economic groupings of food industries. Only a year or two ago fruit and vegetable manufacture still was, in the main, of a workshop character - technically and organizationally. Among the existing 40 factories only about a dozen represent more up-to-date establishments. Consequently this grouping's has been a weak economic position and a very low (practically non-existent) accumulating power. Only six of the factories form part of integrated organizations, yet they account for 38 per cent of the total capacity of the fruit and vegetable processing industries and represent more highly developed, technically better-equipped and organizationally superior plants. Actually, the very good results marked in fruit and vegetable manufacture over the last two years have been nearly wholly associated with these six

integrated factories. Their success provided a reminder that disregard for the fact that fruit and vegetable production and their processing and trade constitute a unique and indivisible process cannot but lead a factory into an impasse and cause it losses, however big and technically equipped it may be otherwise. In other words, fruit and vegetable factories can find security and development prospects solely in their integration with agriculture, on the one hand, and trading organizations, on the other. A more durable and solid integration of fruit and vegetable processing factories with agriculture at the same time gives rise to the need for a more durable integration with the appropriate traders. There are increasing initiatives on the part of large trading enterprises to establish a more durable business co-operation with fruit and vegetable processing factories, with a view to augmenting their sales on the home and foreign markets.

16. The successful development of sugar, oil, meat packing and fruit and vegetable industries has been favourably reflected in the country's payments balance in two respects. The increased sugar and oil output has eliminated or mitigated shortages. On the other hand, the export of fresh and processed meat and of fruit and vegetable manufactures shows a dynamic development and is considerably influencing the overall growth of exports of food industries.

The value of exports of food industries, including fresh meat, increased from 35.3 million dollars in 1957 to 178.5 million dollars in 1965, or about five times. Simultaneously exports of fresh and processed meat and processed fruit and vegetables rose from 22.3 million dollars to 153.7 million dollars. In 1957 these products accounted for 8 per cent of the total Yugoslav exports and in 1965 for 17.5 per cent.

The country's exports of fresh and processed meat and of fruit and vegetable manufactures mostly come from industrial plants forming part of integrated agricultural organisations, and the last also account for the greater part of the export trade in maise and other farm produce.

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Joint Development Planning

17. These relatively recent experiences indicate that large integrated agricultural-industrial economic organizations constituted by a series of similar and different departments and plants and their economic units can operate rationally and successfully subject to synchronized short- and long-term planning.

With the merger of lands and other agricultural assets, as well as of industrial processing plants and other production and servicing units (transport and the like), also a qualitatively new position is created which increasingly demands conceptually clear and operationally co-ordinated courses and objects to be pursued in such organizations' economics. In a large and complex organization of this type various contradictions arise as the natural result of the divergent interests of its numerous parts. If their programme is vague conceptually, or if its tasks are not formulated with the necessary precision, it is often sought - in vain - to resolve the contradictions now by circumscribing now by generalising the various problems so as to prove certain facts, which fetters initiatives and retards development. Therefore, the collectives of the economic units and departments of and of an integrated organization as a whole are increasingly turning their attention to joint planning as the paramount consideration. Joint general and individual programmes with a unified development conception are set up on the basis of the available material and financial resources and the given conditions of production (climatic, pedological and other) - having regard, too, to the real market possibilities. Such a processing facilitates the determination and tracing of the directions of specialisation, the methods of raising productivity and the possibilities of the practical application of scientific developments in the sphere of agricultural production and food manufacture, the assessment of the needs for the professional training of the personnel, etc. The system of self-management and the marked jurisdiction it gives to the units constituting an integrated organisation considerably facilitates the selection of the most adequate solutions in pro-

gramming, of solutions safeguarding the common interests of the various sections of an integrated agricultural organization and of the organization as a whole. However, the realistic establishment and execution of the planned tasks is conditioned by a realistic forecast of the intensity and effects of the action of external factors like the market conditions (at home and abroad), especially given an unstable market, then the foreign exchange and foreign trade systems, the possibilities for obtaining credits, the functioning of the banking mechanism, etc. All that requires the technical services of the integrated organizations to be well conversant with the market trends in the country and abroad and to be able to foresee them considerably in advance, then to make a realistic assessment of the economic movements in the country, together with the regulation and instrumentation of the economic system, and so on.

It is noteworthy that recently, with increasing frequency, operational ideas have been forthcoming from technical and administrative executives of these integrated organizations that testify to a more comprehensive familiarity with the economic situation and trends in the country and abroad, which was less often the case before.

The development of home consumption and the rapid expansion of the tourist industry call for better quality and more diversified supplies. The expansion of the export trade also poses fresh demands. However big and economically strong an integrated agricultural organization may be cannot cope with all that singlehanded. As a result, and in view of their needs, too, the integrated agricultural organisations depend on one another in finding solutions for quickened and more successful operations by means of solid mutual business links based on their joint interests. Already today there exist clearly expressed initiatives which have been adopted by over 30 of these organizations, and now it is only a question of finding the most adequate forms of agreement or a "community" through the agency of which the organisations

would deal jointly with all their development problems while retraining their organizational independence and full business and production initiative. This would primarily cover joint development planning, the elaboration of the production specialization and co-operation policy, organized joint action in the sphere of scientific-research work affecting production, in business economics, work organization, market research and so on. Joint coordinated action on the home and foreign markets appears among the principal motives of the scheme. The integrated agricultural organizations are already prepared to combine their resources also towards market development and improvement of their sales network. Irrespective of the kind of real results which the carrying into effect of the scheme may bring initially, it is certain that a new-type self-organized integration lies ahead in agriculture and food industries which will surpass the scope of the present integrations.

ANNEX (Footnotes)

1) The figures appearing in this study represent the original or converted figures from the publications of the Federal Statistical Institute and the Social Auditing Service.
All data given for 1966 should be considered as preliminary.

2) According to preliminary data, the total volume of agricultural production in 1966 showed a 16 per cent increase over 1965, while the output of socialized farms was 20 percent higher than in 1965.

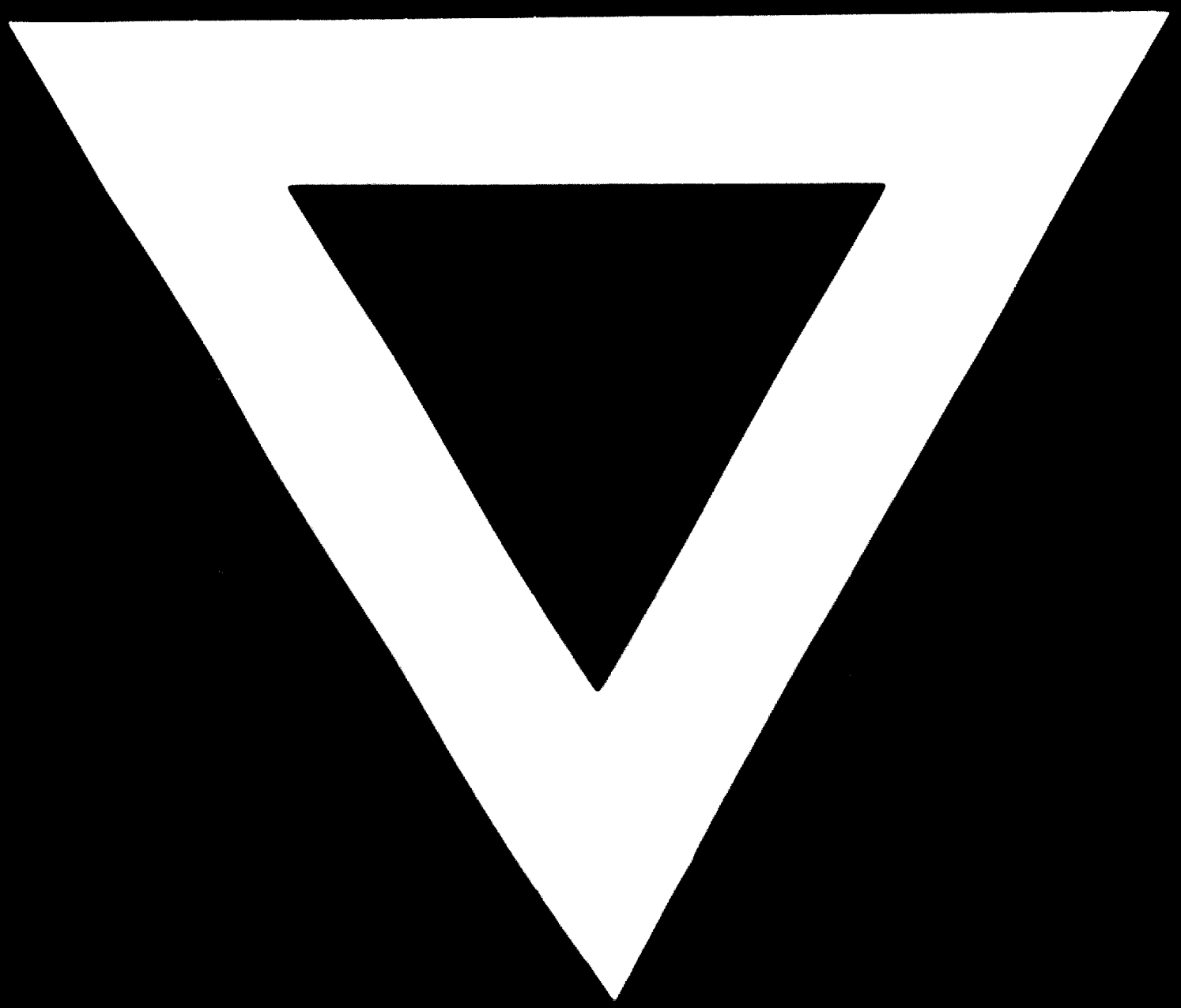
3) According to the publications of the Federal Statistical Office, except in the case of integrated agricultural organizations - whose yield figures are based on information derived from surveys.

4) Source: The Dynamism of Productivity on Socialized Farms, by Dr. Dušan Stanković. - Published by the Community of Scientific-research Institutions of Yugoslavia for Agricultural Economics, Belgrade, 1966.

5) The group index was computed by weighting.

6) From the Paper submitted by Dr. B.Obremski, of Zrenjanin, at the Annual Meeting of the Business Association of Sugar Industries, 1966.

7) Considering that nearly all sugar refineries find themselves integrated with agricultural organizations, similar analyses have not been prepared during the last two or three years.



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