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85411



Distr.
LIMITED
ID/WG.171/8
1 April 1974

ORIGINAL: ENGLISH

United Nations Industrial Development Organization

International Consultation on
Agro-Industrial Development

Belgrade, Yugoslavia, 13-18 May, 1974

AGRO-INDUSTRY AND THE CO-OPERATIVE SYSTEM (WITH
PARTICULAR REFERENCE TO THE CO-OPERATIVE AT BAČKA TOPOLA) ^{1/}

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AGRO-INDUSTRY AND CO-OPERATIVE SYSTEM

Upon studying agricultural production, it may be observed that product specialization involving a very limited range of products to be marketed is practised not only on certain farms, but also in large regions. Furthermore, there is a trend towards adopting a more comprehensive approach incorporating production of the basic raw materials through processing to the sale of the final products.

The formation of large enterprises, such as agro-industrial combines, with the vertical integration of production, processing and sales is the direct outcome of the attempt to ensure stability of production, sales and raw material supplies, of the desire to establish direct relations between producers and consumers, and of the functional endeavour to accommodate a maximum number of production and processing phases in one and the same enterprise, thus promoting the economic development of the area. A complementary development is the establishment of co-operatives.

The co-operative system at the initial development stage
observed with particular reference to the development
of the co-operative at Bačka Topola

During the war agriculture suffered greatly and during the first ten years of the post-war period agricultural production lagged seriously behind consumption, further to which financial resources were not available for rapid agricultural development. With the numerous market restrictions then in force, conditions did not favour the development of farmers' co-operatives. Only when economic development as a whole was rapid, were conditions created which were conducive to rapid agricultural development: demand increased, production developed and through imports modern means of production became available, substantial funds for agricultural investments were provided, and an increasing number of professionally trained staff and proven new methods were put into practice. This enabled the co-operatives to develop and expand their activities from mere purchasing and selling activities through a broad variety of activities to co-operatives organizing the production, processing and sale of their own products i.e. productive organizations of an agro-industrial character.

The farmers' co-operative at Bačka Topola has taken advantage of given economic possibilities. After the first few years of general activities which were characteristic for the entire co-operative system in Yugoslavia, it gradually started to operate as a specialized co-operative with emphasis on industrial production.

In the beginning, the co-operative at Bačka Topola organized various forms of co-operation^{1/} with farmers, mainly in crop farming, but also in the field of pig and cattle breeding. These were almost the sole production activities, accompanied by the purchase of agricultural products and supplying farmers with means of production. As can be seen, the process was not vertical co-ordination.

The development of co-operation, however, exerted a decisive influence upon the orientation of the farmers who changed from predominantly subsistence producers to fully market-oriented producers specialized in the production of particular commodities.

Co-operation as a method of developing peasant's production began in 1955 and since then the farmer co-operator has been subject to transformation not only of ideas, but also of work methods and production as a whole. The production structure has undergone noticeable changes. Better agro-techniques have been applied in crop farming, using modern tools and other means of production. Fertilizers, pesticides, herbicides and selected seeds have been introduced and used on a large scale. Together with the application of the above-mentioned means of production, professional staff have been engaged in the daily follow-up to technological progress.

In swine breeding, breeds and strains have been changed and appropriate methods of stockbreeding and feeding have been adopted. By introducing performance testing (herd book), the farmers' co-operative at Bačka Topola has become a centre for pig breeding based on the imported nucleus herd of white swines. From 1955 to 1962, 1540 white first-class breeding gilts were bred and distributed to farmers by the co-operative.

^{1/} In Yugoslavia, collaboration between farmers and co-operatives or agro-industrial combines in the production of individual products, which is based on contracts signed by both parties, is called kooperacija - co-operation, in the sense of collaboration.

An average of 16,000 porkers were purchased annually from the farmers, representing a total weight of around 1,700 metric tons. The whole process of production was organized through co-operation between the co-operative and the associated farmers.

By selection and performance testing as well as by changing the breed of cattle, cattle productivity, in particular milk production, has been raised. The previous figure of 3,000 litres of milk per lactation period has long since been surpassed to reach today's figure of 4,000 litres of milk per cow. However, in more recent times, market demands have made a shift towards beef production necessary and milk production has become secondary.

In the last nine years, average annual cattle deliveries have been 1,780 head, representing a total weight of 819,000 kg. Here, as in pig breeding, production was organized on a co-operative basis. It should be emphasized that in 1972 3,240 head of fattened cattle were delivered, the average weight being 412 kg. per head.

The construction of the feed mixing plant "Protein"

Organized livestock breeding with new breeding and feeding methods had to be accompanied by an organized supply of mixed feed. For this purpose, a feed mixing plant was constructed, which subsequently developed a wide assortment of mixed feeds with various combined mixtures for particular types and categories of livestock, according to the production aims of the co-operative and the needs of those co-operating. The increased livestock production necessitated the expansion of the feed mixing plant which is currently operated as a separate production unit in the co-operative. At present, this factory produces twelve different premixes and twenty-eight kinds of complete mixtures or super-mixtures for different types and categories of livestock and poultry.

During the factory's first year of operation in 1964, total output amounted to 12,900 metric tons and in 1972, production increased to 32,460 tons of mixed feed.

The relationship between the co-operative, the co-operating farmers

producing raw materials for the feed mixing plant and the livestock and poultry breeders gradually became wider and deeper, and in the course of time production has been organized more and more along the lines of a vertically integrated agro-industrial complex. This method of co-ordinating the whole process is clearly demonstrated in the poultry farming sector which the co-operative at Bačka Topola started in 1957.

Organized production of poultry

At the beginning of the 50's, the co-operative was engaged in the organization of livestock production. Poultry was neglected and nothing was done to organize its production. Poultry-breeding was developed solely to meet household requirements for meat, eggs and feathers. Certain surpluses appeared on the market as fattened goods: mainly fattened geese, ducks and some turkeys, as well as a small quantity of eggs. The co-operative purchased and distributed these products to certain abattoirs which processed the products in keeping with the needs of the home and foreign market. Under such circumstances, there was neither a steady demand for poultry products nor did prices become favourable; consequently, poultry breeding could not develop.

The organized production of poultry began with the establishment of the first co-operative hatching centre, the output of which was around 10,000 eggs in a cycle. At the beginning the hatching (incubator) centre had a relatively small influence on the development of poultry breeding. It operated on the principle of providing a hatching service for eggs obtained from individual farmers. The results were not reliable because the eggs came from uncontrolled flocks, sometimes infected by contagious diseases. The experience gained in the first year led to a better organization of work. In 1958, the new Hampshire pure bred hens and cocks were imported. The imported poultry was placed with selected producers who worked for the co-operative on a contract basis. Through its professional service, the co-operative ensured that the requisite technology was applied, and continual health protection was ensured through veterinarians. The contract guaranteed the purchase of hatching eggs and culled hens from farmers. Thus, at the time a certain number of producers accepted the modern principles of production, and together with the co-operative, they laid the foundations of the organized poultry production. The necessary quantity of

healthy one-day chicks was thus ensured. Local poultry with low production possibilities were replaced by the New Hampshire strain whose production possibilities reach the figure of some 150 eggs per annum, when kept semi-extensively. The co-operative set up poultry sections comprising all the producers who were concerned with further promotion of poultry production. Seminars were held in order to familiarize the producers with new technologies, and acquaint them with the achievements in modern poultry breeding.

In this way, a flock of 10,000 layers was set up, which were distributed amongst fifty to sixty co-operators. Good hatching eggs were thus produced in the first five months of the year the period during which the incubator operated. In that period, the output was 700,000 hatching eggs, of which 50 per cent were hatched in the co-operative's own incubator and the rest sold to neighbouring incubator centres. In 1959, the incubator centre had an output of 500,000 one-day chicks per annum. During the same year, production of eggs for consumption as well as of broilers was initiated.

The production of eggs for consumption was contracted to the mutual satisfaction of both parties, the co-operative and co-operators. The co-operators are given one-day chicks as an advance, on the condition that after these chicks had been bred to layers, they had to sell to the co-operative the agreed number of eggs for consumption at agreed prices.

To ensure a long laying period as well as to extend the hatching season, first attempts were made to organize broiler production. At the time, however, there was not appropriate market for broilers and the strains used were insufficient: the results were not favourable.

The hatching centre was developed rapidly upon the introduction of poultry hybrids for the combined production of meat and eggs. In this period, production was directed towards the production of eggs to meet the hatching centre's needs and towards the production of meat, i.e. broilers. The organization thereof included not only Bačka Topola, but also the neighbouring villages. The demand for one-day chicks for the purpose of producing meat steadily grew, and hatching has expanded accordingly. In 1964, the capacity was 1,500,000 one-day chicks, in 1967 2,500,000, and in 1970 more than 5,000,000. With the steadily growing demand for poultry products and the further expansion of regional

production, the organization of large poultry farms was necessary.

Development of large poultry farms

In order to ensure the needs and undisturbed operation of the hatching centre and encouraged by the results achieved in collaboration with its co-operators, the co-operative set up its poultry farm for the initial accommodation of 1,500 layers. During further construction, the farm was expanded to accommodate 60,000 layers (heavy breeds). Apart from the co-operative farm which is continually expanding, the poultry producer himself has also changed. Small producers with 200 layers have disappeared or have been transformed into producers with so-called micro-farms with 2-2,500 layers, where production is carried out under conditions, standards and responsibilities similar to those on the large co-operative farm. The total capacity of the micro-farms is over 45,000 layers, heavy breeds such as "Hibro" or hybrid layers such as "Hiseks".

This method of developing poultry farms ensures not only a sufficient production of eggs for the co-operative's own incubator centre, but also a certain number of eggs are sold to other incubator centres. Further development plans provide for the close genetic control of the above mentioned hybrids with careful selection of generations and strains to meet the needs of both the co-operative and other poultry farms.

Meat Production and Processing

Organized production through the incubator centre and the development of poultry farms, both at the co-operative and on associate farms, with marked orientation towards the keeping of hybrid layers (heavy breeds) and the expansion of the market for broilers' meat, all this has led to a change of plans for further poultry production. The co-operative, under given circumstances, directs itself towards the production of poultry meat and tends towards the further vertical integration of the production cycle. The production of eggs for incubation, sale of one-day chicks for the production of broilers, and the sale of mixed feed from the feed mixing plant, partly or fully, depend on the production of broilers by individual producers. In order to stabilize and expand this production, the co-operative encourages the erection of poultry houses

by individual producers, granting them loans, expanding the contracted production under terms which determine the rights and responsibilities of both partners, and building the slaughterhouse.

The co-operative has organized production on a long-term basis by granting loans to individual producers for investment into poultry production. Repayment terms are generous - a minimum of five years. A model hen-house has been designed with a surface area of 400 square metres. In order to qualify for a loan, the producer is obliged to accept the proposed model and to maintain production at least for as long as he enjoys credit facilities.

The co-operative provides the co-operators with one-day chicks and the required quantity of mixed feed, computed at the rate of 2.5 kilograms of mixture per kilogram of broiler weight gained. 56-day old chickens must normally weigh 1.5 to 1.6 kg. when sold to the co-operative. Under this arrangement, the associate farmer provides the poultry-house, fuel, equipment and labour. The purchase price is calculated according to the current market conditions, and is beneficial to both the co-operative and co-operator. Basically, the product price is based on actual cost plus an accumulated extra for the associate farmer, this composite price being the purchase price paid by the co-operative.

To understand the relationships established between the co-operative and the co-operator, a cost breakdown is shown below relating to the production of broilers:

I	Cost incurred by the co-operative	Per cent
1.	One-day chicks with 5 per cent mortality rate	17
2.	Feed mixtures (2.5 kg. for 1 kg. gain in live weight)	64
3.	Health protection	<u>2</u>
	Total:	83
II	Costs incurred by the co-operator	
1.	Electricity, fuel, litter, disinfection and maintenance of buildings and equipment	5
2.	Depreciation on buildings and equipment	<u>2</u>
	Total.	7

III Co-operator's revenue (labour and profit)	<u>10</u>
Co-operator's selling price - Co-operative's purchase price	100

In the process of vertical integration, a new factor is a poultry abattoir. The abattoir, together with the production in co-operation with individual producers, co-operative farms, incubator centre and feed mixing plant, constitutes an organic inseparable whole.

The abattoir was built as the production of raw materials developed, and there was a demand for slaughterhouse by-products. The annual output of the abattoir was 2.5 million kg. of meat. Through technological improvements, output was increased to 3 million kg. To permit increased production and better supply of the market, reconstruction and further expansion of the abattoir's capacity is in progress. At the same time, it is planned to process the poultry meat to the final product stage which represents a new step in the further integration of the cycle from production, through processing to the consumer. These new planned products will be: sausages and canned poultry meat which are assured a market.

Sales Organization

Effective marketing represents the final stage of vertical integration. At the beginning of its operations, the slaughterhouse sold its products wholesale to firms which had their own retail networks or the organizations which simply resold goods to their business partners. This was not beneficial for the co-operative, production tended to accumulate and on some occasions sales were not effected.

In order to provide the consumer with rapid supplies of quality poultry or preserved foods to the mutual benefit, both of producer and consumer, the co-operative had to enter the market through retail sales. The organization of specialized stores and penetrations into supermarkets is a new step in the integration process and contact with the final consumer is established.

The range of goods in the specialized stores should offer the consumer a better selection and quality as well as increased revenue for the co-operative and co-operators.

Changes in the population structure as a result of
agro-industrial production

Together with the development of technology in agricultural production, considerable changes have occurred in the structure of population. This process commenced at the time the rearing of white swines was introduced, and accelerated when the intensive development of poultry production began.

At the beginning of the development period there was a large number of agricultural households, both in Bačka Topola and the vicinity. These households were engaged in crop farming, some livestock raising and relatively small poultry production. Under such conditions, market surpluses were mainly crop farming products: wheat and partly maize. Livestock was raised only to satisfy immediate needs with a relatively small surplus for the predominantly seasonal market.

Apart from the agricultural households, a certain number of non-agricultural households were engaged in livestock raising as a supplementary activity. There was almost no surplus for the market emanating from these households.

Following organizational improvements and appropriate professional guidance, and as a result of the general economic development, gradual changes have occurred in the farm and population structures. The number of agricultural households has increased as farms split, which means that most farms became smaller in area; consequently production was intensified in order to secure the household's income. In the end, this resulted in a far larger quantity of goods produced. Changes also occurred in non-agricultural households: to supplement their income, many non-agriculturists became part-time livestock breeders. They mastered the technology and were able to produce a considerable surplus product for the market, the new technology of poultry production being mastered relatively fast. A considerable number of these people today have hen-houses of more than 400 square metres, where the production process is

carried out according to modern technology.

Mention should also be made of those households whose members are aged and not capable of heavy agricultural or other work, but can work with poultry where modern mechanization offers considerable facilities and the physical effort is relatively small.

The farmers' co-operative at Ruška Topola, including all sectors of the population, has succeeded in promoting poultry production to a high level and is known on this account not only in the immediate surroundings, but also throughout our country. Thanks to the organization of this production, it was possible for a large number of households, which lacked capital for agricultural production, to produce poultry in a modern way.

By virtue of the firm relationship between the co-operator and the co-operative, the co-operators provide raw materials, whereas the industrial plants of the co-operative carry out the processing and sale. The management of the co-operative, in co-operation with the co-operators, carry out financial and other common activities. The liaison between the co-operative and co-operators is permanent, and is maintained through direct activities of mutual economic benefit such as meetings on the analysis of technology, new methods of work and the exchange in experience, joint professional tours to up-grade knowledge, and by other co-operative information activities.

Equally important is the co-operators' participation in the management of the co-operative. There are specialized boards for particular branches of production through which the co-operators participate in the management and drafting of plans and contribute to particular decisions. Before certain measures are taken and programmes and plans adopted, these boards discuss the proposed steps and programmes, making their suggestions or necessary decisions. The boards determine the volume and price of certain services, and adopt actual steps for the implementation of the various measures and programmes.

According to the annual output achieved in co-operation with the co-operative, the co-operators may be classified in the following groups.

<u>Value of annual output</u> dinars	<u>Number of co-operators</u>
over 100,000	130
50 - 100,000	260
10 - 50,000	440
up to 10,000	880

In the period 1964-1973, production was as follows:

Year	Number of co-operations	Number of broilers produced per co-operator	Total number of broilers produced in co-operation
1964	50	1,600	80,000
1965	50	2,000	100,000
1966	62	8,064	500,000
1967	100	8,000	800,000
1968	120	10,000	1,200,000
1969	150	10,666	1,600,000
1970	160	11,875	1,900,000
1971	200	11,500	2,300,000
1972	200	12,500	2,500,000
1973	250	12,500	3,100,000

As shown above, the number of individual producers increased in the period under consideration. The number of broilers produced per producer (2,500 in one cycle) shows that the available manpower resources of the individual producers are still not being used to the full extent and further work should be done in this regard.

The development of the co-operative in the period from 1964-1973, as well as the contribution through poultry production to this development are shown in the table below:

Year	Turnover Total poultry index		Share of poultry in total turnover %	Added value Total poultry index		Share of poultry in total added value %
1964	100	100	10.5	100	100	11.4
1965	112	134	12.6	93	120	14.7

Year	Turnover Total poultry index	Share of poultry in total turnover %	Added value Total poultry index	Share of poultry in total added value %		
1966	128	166	13.7	127	171	15.3
1967	176	327	20.6	154	361	26.7
1968	201	347	19.1	187	339	20.7
1969	223	543	25.5	232	403	22.6
1970	205	590	30.2	239	583	27.9
1971	244	758	32.8	255	758	33.9
1972	256	701	28.9	293	514	28.9
1973	218	714	43.5	192	576	32.5

The table demonstrates the growth of the total revenue and the added value of the co-operative's activities, in which poultry production represents an appreciable proportion. A multiple increase of the total output results from the organization of work and vertical integration of the co-operative's production process.

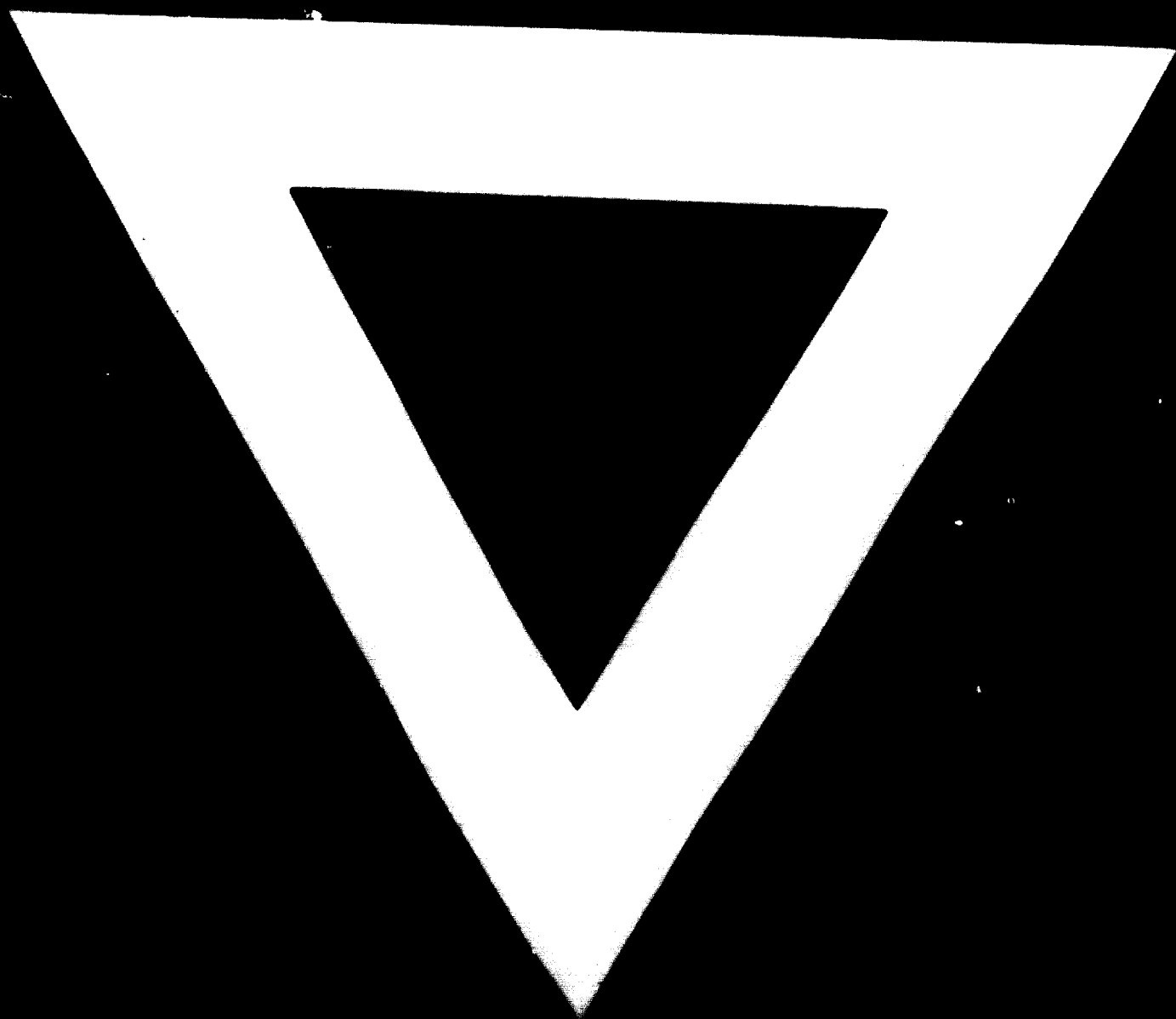
Expansion of Production

The consumption of poultry products grows from year to year. Consequently, poultry production increases continuously and with the construction of the meat processing plant attached to the poultry abattoir, broiler production will have to be expanded. Increasing the capacity of the abattoir also necessitates the expansion of business activities.

The first positive results are to be seen in the co-operation with the Farmers' Co-operative at Cantavir, Livestock and Veterinary Centre at Subotica, Agricultural Combine Lalgrade at Vršac and the Agricultural Combine at Sid.

With the construction of processing plants, a gradual revival of the production of other kinds of poultry can be expected. Apart from broiler meat, the consumers will soon find turkeys and geese on their tables as well as the related products. It should also be mentioned that in order to broaden the assortment, eggs will be produced and processed primarily for the bakery industry.

It is also planned to expand further activities to include other kinds of livestock. But any further expansion of the co-operative's activities will be mostly linked with the integrated framework already established in this region.



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