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PREFACE

The international concern in respect with Hungarian food economy which could be observed in course of the past few years encourages us to further intensify the presence of our results achieved and our problems emerged in the informative - special literatore. So - among other considerations - we accepted the idea to publish the present volume of papers offering thereby a selection of domestic publications recently printed - mostly in diverse Reviews. Publication of these papers in full extent is justified not only by directly scientific aspects and by those regarding the content but also by the fact that relatively few or only occasional publications are dealing with the interpretation of studies about Hungarian food economy in languages spoken all over the world. These sources[+] are serviceable rather for the satisfaction of professional information demands of general concern but they cannot undertake the demonstration of certain part domains, special subjects or the comprehensive spectrum of publications. We should like to remark here that the Series of the Bulletin of our Institute published since 1962 endeavours to eliminate this shortage of informations which can be observed in the domestic publishing of special literature and journals, to fill this "blank spot" with its volumes edited in English and Russian languages which - in compliance with the editorial principles applied so far - presented thematic /papers on agricultural economics, proceedings of conferences held at home or abroad/ and summarizing /recapitulative collections of publications made in course of one or two years/ copies.[++] The articles and papers come from the work of authors being the members of our Institute but we think that they represent from several aspects the topical problem groups of Hungarian food economy and also that tradition which is remarked by the three decades long activity of this Institute, by the continuity of research work in agricultural economics.

Budapest, January of 1984.

The Editor

[+] See: Hungarian Agricultural Review /Budapest, AGROINFORM, reference journal/, incidental publications like Agricultural production systems in Hungary /Budapest, AGROINFORM, 1983/, etc., Acta Oeconomica, periodical of the Hungarian Academy of Sciences /Budapest, Akadémiai Kiadó/, Statistical pocket book of Hungary /Budapest, Statisztikai Kiadó/.

[++] See the Appendix.

THE PROSPECTS OF LABOUR DEMAND AND OF SMALL PRODUCTION IN AGRICULTURE[+]

by

Mrs Magda NÉMETI

A brief survey upon development until now

The number of people employed in agriculture decreased by about 200 thousand heads in course of the past decade. The gross output of agricultural produce per one labourer almost doubled in course of the same time. The extent and rate of the outlow of labour significantly changed in course of the same decade. At the beginning of this period annually 30-35 thousand and later on 8-9 thousand labourers left agriculture. After 1976 manpower in agriculture stagnated and then from 1980 on its increase at a moderate rate can be observed. It seems that the issue of manpower from agriculture in large number ceases to be prevalent.

The structure of people employed in agriculture and that of their worktime accomplished radically transformed. In 1970 about half of all worktime performed in the large-scale sector of agriculture was spent for crop production and animal husbandry. For 1980 the same ratio reduced to the one third. The main trend of the structural changes is indicated by the redoubling of the share of non-fundamental activities /which represented 18,5 percent in 1980/ and by the significant increase of activities in the auxiliary branches, in maintenance and repair which accompany the industrialization of agricultural production and the share of which represented 24-25 percent in 1980.

The proportional changes of the diverse groups of activities indicate but approximately the new tendencies. More detailed investigations, however, demonstrate already the major trends of shifting. Worktime performed in crop production decreased to one third of the same in 1970 while in animal husbandry reduction was of 16 percent. The total quantity of worktime spent in the two main branches did not reach even the half in 1980 of the same in 1970. The number of working hours performed in the large-scale sector was by 26 percent less in 1980 than has been in 1970. At any case these data refer to the fact that in course of

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[+]Közgazdasági Szemle Nr. 10. Vol. XXXX, 1983.

of the past decade the productivity of labour considerably improved in agriculture.

This process went through so that each 1 percent reduction of the worktime input was accompanied by 1,5 percent increase of the use of fixed assets and 1,3 percent augmentation of material inputs. Practically the mechanization of hard physical labour processes was finished and the complete technological system changed in several branches.

The quantity of live-labour needed per unit produce in the production of grains which occupy about one third of the arable acreage in field crop growing was reduced almost to the half. The technical standard and the productivity per unit acreage of grain growing can be qualified as very good also if compared to the international standard. All these were based upon the establishment of relatively favourable biological, technical, material and economic conditions for production. Similar trend may be outlined from the practice of recent years also for the production of sugarbeet, sunflower and expectably for potatoes too.

The situation is radically different in respect with horticultural products. The spectacular improvement of labour productivity can be observed in these branches only there were the product /tomato, green pea e.g./ is harvested for industrial processing. In the case of produce devoted to consumption in fresh labour input can but hardly be reduced and modernization is less possible. In the case of apple and grapes even further reduction of the labour inputs can be achieved by means of mechanizing labour processes of fixed character /soil cultivation, plant protection/ but the quantity of labour demanded by the harvest will not decrease significantly.

A considerable part of vegetables, grapes and fruits comes from small-scale production. But one can hardly take into account that small-scale production will be able to replace the large-scale resources for a long term and thereby the large-scale enterprises may longer delay the development of these cultures. The decrease of labour inputs in the crop production branches which took place in the period between 1970-1980 was in part the consequence of the fact that some of the labour demanding horticultural activities "marched out" from the large-scale enterprises.

Labour inputs diminished in large-scale animal husbandry both in total and specified for unit produce. Total labour input of large-scale animal husbandry amounted to 365 million hours in 1970 and reduced by only 5-6 million hours for 1975. Significant saving of the working hours was achieved in the large-scale agricultural enterprises after 1975.

Working hours used in animal husbandry surpassed but slightly the 300 million hours. In course of the same period the gross production output of animal husbandry in the large-scale agricultural enterprises increased /at 1976 year's price/ by 35-37 percent. The almost general gaining ground of industrial poultry keeping and the partial industrialization of pig and cattle breeding took place in this development period of animal husbandry in the large-scale agricultural enterprises. It is not by mere chance that the specific labour productivity indexes improved so spectacularly.

The results achieved so far justified that people working in agriculture successfully correspond to the requirements of the epoch. We may say that they revolutionarized almost in a riksless way the large-scale technology of grain production and of the animal consuming forage /pigs and poultry/ the organizational framework whereof was established by the production systems on the one hand and by the basis farms on the other.

The fact that the number of people working in the large-scale agricultural enterprises who dispose of academic qualification redoubled in course of the recent decade also refers to the improved level of special knowledge and professional training. The worktime input of people who manage the activity of the enterprises is very considerable: it represented approximately 16-17 percent of the total worktime inputs in the sphere of large-scale enterprises in 1980.

About 82-84 percent of people working in the large-scale agricultural enterprises are physical workers. Such a high share cannot be observed in any other branch of the national economy! The significant turn in the augmenting of their professional knowledges took place also in the past decade. The ratio of the skilled workers almost redoubled from the beginning of the 1970-es /16-18 percent/ until the present days: in the average of the state farms it reached at 38 percent while in the same of the cooperative farms at 33 percent. /Within the group of youth younger than thirty years of age this ratio will in course of time surpass 40 percent./

The labour demand of agricultural production, the development trends of labour productivity

General tendencies

The development of labour expectable for the turn of the millennium is forecasted by diverse prognostics unanimously so that - in respect with national economy as a whole - the number of active earners will not

significantly alter when compared to the same in 1980 /5,073.6 thousand people/. Those who reckon with a vigorous reduction of labour take by 200 thousand people less and those who forecast an increase of labour take by 100 thousand people more active earners into account than they have been in 1980. By taking any of these alternatives into consideration one point becomes at each case distinct: in course of the forthcoming period labour will be in shortage as well for agriculture as for the whole national economy.

Also the conclusion can unambigously drawn - based first of all upon the previous period - that the rate of labour issue from agriculture will as well slow down or stagnate as the recall of labour at a significant extent will do the same.

Along with the further reduction of weekly worktime labour demand will in certain relations increase. Worktime reduction may use up labour which can be freed by means of restricted technical development and even labour shortage may occur in certain activities.

Compared to the previous period the tendency and extent of technical development will change. The function of technical development in releasing labour will decelerate. /The replacement of people performing hard physical labour is already in greater part implemented./ The technical development and automatization of those labour processes which were not at all or only at a lower standard mechanized so far will become excessively expensive. The indication thereof manifested itself already in the past decade. /The costs of releasing one worker developed around 50 thousand Ft in 1970, around 90 thousand Ft in 1975 and around 140 thousand Ft in 1980./ In respect with the use of technical means techniques aiming at energy saving and at the utilization of by-products come into prominence. The role of reconstruction becomes of primary importance. The scantiness of resources presses us to the same.

The prevailing regulators play always a distinguished role in the expectable economic environment. They assume their task correctly if they establish a system of interest relations where producers and consumers are equally compelled to utilize reasonably both the means of production and labour.

Crop production

The structure of arable crop production will not significantly change even in course of the forthcoming 20 years. Cereals will maintain their dominating role with their two thirds share. Although compared to cereals the acreage of other crops /sugar beet, potato, sunflower, rape,

oil flax, soya, peas, tobacco and fibre crops/ which cover 10-12 percent of the arable land is small nevertheless these are the branches which cause much trouble in respect with the satisfaction of quantitative and qualitative labour demand. Future troubles will derive partly from the technical underdevelopment of certain activities and partly from the shortage of technological means.

Another important particularity of arable farming is represented by land use. It is very difficult to stop the reduction of land /arable land decreased by 6,1 percent between 1970 and 1980/. Consequently the only way for the augmenting of production output is the improvement of the yields. This is a general requirement in each activity. We may reckon with surplus product only at an extent at which we can increase the outputs per unit acreage.

Under the aspect of both production and realization the greatest chance for the increase of produce output is offered by the cereals. Notwithstanding the ideas of János ILLÉS set forth about the prospective development of crop production and animal husbandry in his paper "Conditions of our long term social-economic development"[+] are thought-provoking. In my opinion it discerns well the real movement which beside the increase of yields puts also livestock breeding into prominence as a result of interest for the multiplication of the produce output of the enterprises, of the stress of growth.

There are realistic opportunities offered for the improvement of supply level /up-to-date varieties of high productive capacity, nutriment supply better adapted to the yields, combines of higher performance, ecc./. In addition to the increasing domestic demand the extension of production is justified also by the requirements of foreign markets which promise to be long lasting.

If - by means of the regulators - a lasting interest of the producers can be established in grain production then we may realistically reckon with an annual cereal output of 18-20 million tons for the turn of the millennium. Since the increase of acreage is impossible therefore the production of 18-20 tons can only be achieved if we produce wheat yields of 6,8-7,1 tons and corn yields of 8,0-8,3 tons per hectare. As a result of the more up-to-date framework of farming significant labour saving is probable. The use of live-labour will be reduced to the minimum.

Among the other crops in the production of sugarbeet, potato and sun flower can be expected a technological change of such a penetrating force which may improve labour productivity of these activities at an acceler-

[+]Közgazdasági Szemle, Nr. 12. 1982.

ated rate. But since in comparison with the cereals the acreage of these crops is small /and its significant growth cannot be expected/ therefore they do not considerably alter the labour demand of arable crop production. This is all the more true for the other crop production activities.

In summary we may draw the conclusion that the biological, technical and organizational development of crop production activities promises labour saving first of all in the production of cereals.

Horticultural products: fruits and grapes

Within the domestic consumption of horticultural products beside a slow quantitative increase the augmenting of demand for products suitable for the satisfaction of higher requirements raised by the consumers can be expected. In respect with these products the prevalence of technologies of complex mechanization will only be of the same extent as the consumption of processed products will increase.

Considerable reduction of labour demand in large-scale vegetable production can be expected at planting in, at sowing and at the harvest. In case of certain vegetable sorts, however, - if we endeavour for a higher quality - the harvest should presumably be based upon manual labour still for a long time.

The exportation of fresh and canned horticultural products into the socialist countries may be of increasing importance. This can be unambigously confirmed by demand although the rentability of the exports raises still certain question marks. The greater part of our products which can successfully be realized at markets abroad require much live labour and may be produced by means of technologies which can be mechanized at a smaller extent.

Concerning the development of labour use in the horticultural branch the relatively greatest changes can be expected at pruning and in the harvest. Based upon the technical-technological development the broad outlines whereof can be scheduled already at present we may draw the conclusion that the conditions of production will further differentiate. Up-to-date new varieties of high productive capacity, diverse new cultivation methods and plantations well adapted to the oecological conditions will get a role in dependence with the extent of new plantations being introduced. Production technologies of the fruits harvested manually or with machines will be distinguished more markedly from each other. The mechanization of fruit harvesting progresses - as a result of the qualitative requirements which prevail in consumption - practically in the case of drupe and crusty fruits.

Along with the development of mechanization in large-scale viniculture /pneumatic pruning machines, plant protection carried out by helicopters, prevalence of mechanized harvest/ also the significantly reduced use of live labour can be expected.

Within the horticultural branches the importance of small-scale production will not diminish even for the turn of millennium. The small-scale farms play a fundamental role in the production of commodities demanding much labour and in the supply of the population with fresh products but in addition they represent also an important raw material basis of canning industry and this sector becomes more and more able to satisfy the qualitative demands of the export. The introduction of labour releasing devices is inevitably needed also in the production of the small-scale farms and labour demand can be reduced thereby also in this sphere. As a result, however, of the nature of production we may reckon with the reduction of per unit labour demand only at a smaller extent since processes further increasing the value of the produce require here greater attention and in several cases also surplus labour. So production of the small scale farms will be based also in the future upon live labour capacity at a decisive extent.

Horticulture belongs to the branches of high labour demand and this situation will not significantly alter in the future. The decisive part of labour utilization is related with the harvest. Consequently as a result of progress in the mechanization of the harvest and of the further increase of yields the productivity of labour expectable for the turn of millennium in the horticultural branch will considerably surpass the present standard. This way the productivity of live labour may increase to the 2,5-3 fold in tomato growing, to 4-5 fold in cucumber production, to 3-4 fold in that of green paprika, to 2,5 fold in the production of melon within large-scale vegetable growing but also in fruit production we may reckon with an average increase of labour productivity at the 3-5 fold for 2000 while in grapes by 7-8 times less live labour could be spent for unit produce in the large-scale farms than was at the beginning of the 1970-es.

Animal husbandry

Labour demand within the diverse branches of animal husbandry will be influenced in course of the period extending to 2000 by the biological technical and labour organization changes which will take place in these branches. It is probable that in no one of the livestock breeding branches will occur any new biological, technical, raising technological

and labour organization tendency which would radically alter the path of commodity production, the increase rate of output or the structure of inputs. Consequently the occurrence of no new tendencies entirely different from those prevailing so far can be expected within the sphere of labour demand and labour productivity. Labour demand and the professional structure of labour demanded will probably be somewhat different from the former because of the effect of several constituents.

In each branch of animal husbandry the essential interrelationship is true that the quantity of labour demanded develops at the same direction as the scale of production and the scope of livestock does. This is particularly true for the phases of breeding and propagation, since certain human activities, certain interventions into the production process cannot be accelerated or eliminated by means of technical development /artificial insemination, the measurement of being pregnant with young, zygote transplantation, veterinary treatment and that of care, vaccination, farrow of youngs, driving to milking, etc./ in these phases of production. The above labour inputs are devoted to improve the chances of producing and maintaining the output. Consequently the per worker number of livestock will be increased but at a very slow rate in the respective phases of production.

The reduction of labour demand and the improvement of productivity are more vigorous in the phases of issuing the final product. Considering, however, labour demand until 2000 as a whole we may say that it will be determined by the scale of production /number of livestock/ and by the structure of the commodity produced.

Based upon the predictions concerning the diverse branches of animal husbandry the conclusion can be drawn that labour demand as a whole will somewhat increase in comparison with 1980. A reduction of the labourers by about 5-8 thousand heads[+] can be expected only in cattle breeding. In sheep farming, on the contrary, more labourers would be needed by 20-50 percent, by 35 percent in pork production /from the present 17-20 thousand to 26-27 thousand/, by 10-20 percent in poultry breeding /from approximately 14-16 thousand to 17-20 thousand/ in order to accomplish - in accordance with the expectable demand of market and with the means available for development - the quantitative and qualitative tasks of production.

[+]Within the development alternative of smaller scope also the decrease of cow stock is envisaged while in that of greater scope a more significant increase of cattle stock can be expected in beef cattle husbandry.

A particular problem of forecasting labour demand is to assess the expectable sectoral changes of production. When quantificating, namely, labour demand only that of the large-scale enterprises can be predicted with an approximative exactness.

The above quoted calculations concerning the labour demand of the large-scale enterprises forecasted for 2000 in the diverse branches start out of the expectation that still 100 thousand cows will be in the small-scale farms even in 2000. The extent of small-scale production in sheep farming will but slightly greater than is at present. In pork production small-scale activities will by and large maintain their present scope but even in the case of reckoning with a gradually decreasing output this will amount to 500 thousand tons annually. Within poultry breeding for meat the sector of small-scale producers - even in the case of a higher rate of economic development - would maintain its share of 25-30 percent. And in the case of a slower rate of growth it could remain approximately at the present scope.

The large-scale production development is confronted with difficulties in the activites in question not only because of the shortage of investment resources but beside this also the employment of skilled workers in animal husbandry by the large-scale agricultural enterprises may cause troubles for the turn of the century. This means that labour can be one of the most important limiting factors of the extension of production in animal breeding of the large-scale socialist agricultural enterprises labour in the future.[+]

This way the future of animal husbandry performed in the household farms and based upon fragmental labour is worth of particular attention. The fluctuation of production in these farms in the case of certain final products may endanger not only domestic supply but also the commodity fund of exports.

The trend of social policy aiming at the further reduction of weekly worktime acts also towards the increase of labour demand. For the turn of millennium all these factors may accumulate at such an extent that their counterbalancing engages at a final end the labour released by the improvement of labour productivity.

The diminishing of environment pollution caused by the industrial plants may also increase labour demand. As a result of stressing by environment production littering and manure handling reenter in certain branches of animal husbandry i.e. in certain phases of it into the extremely simplified technology of breeding.

[+]This is most critical in cattle husbandry.

In course of the forthcoming 15-20 years the productivity index of livestock breeding activities will be improved at a rate slower than has been so far. Technical procedures accompanied by spectacularly great labour saving were put into practice already in the majority of the diverse branches in course of the past period. Thus the main source of the improvement of labour productivity was represented by the increase of output and in animal husbandry this is more difficult and needs more time than in crop growing.

Qualification of labourers

The renewal and modernization of the biological, technical and production organization principles can yield the expected result also in agricultural production only if people working in this economic branch will be able to apply and to further develop if needed the new technological procedures.

In course of the past period radical change was brought in agriculture just by the fact that people disposing of academic qualification joined in large number to production as managers and leaders. The same happened at a much smaller extent and in respect with professional tending by comprehending a smaller sphere among physical labourers and specialized technicians disposing of medium qualification who directly control the activities of the former. Regarding the field of specialization it was technical qualification which became popular.

Significantly less interest or better less real activity is manifested for crop production and animal husbandry in the classical sense although the extent and scale of training did not lag here behind the same of technical professions. Prestige reasons and work site conditions play also a role in this respect. To be an excellent technical expert merits even today higher appreciation than the rank of a good horticulturist or livestock breeder does. Affection to these two latter specialized professions was probably not encouraged by the fact that occasionally the training restricted itself to a very narrow field and the opportunity for applying these knowledges in the practice was also little. In my opinion it would be reasonable to renew also the structure, the tending of professional training and also the ratio of the diverse levels of qualification.

In course of the forthcoming 20 years much care must be taken continuously and in masses for the training of those who take part directly in the processes of production. There is also a demand manifested for specialized technicians disposing of middle qualification. It would be

important that their professional training should embrace the whole economic branch.

To progress toward an excessive specialization would not be reasonable even in the professional training of the skilled workers. It is not the sphere of training where endeavours for specialization should be made at any price! Training should afford comprehensive basic knowledge concerning the diverse branches upon the grounding whereof special exercise and the extension of knowledge can be evolved in the practice by adapting also to the inclination of the respective workers.

Specialized technicians, skilled worker of universal training who would be able to perform independent activities in the spheres of feeding, taking care of the stock, raising and veterinary services are failing e.g. in the livestock breeding farms of the large-scale agricultural enterprises. This is the reason why agricultural engineers, veterinary surgeons of academic qualification must be engaged in settling of almost each part-task. But the same can be stated about the technical running of the large-scale plants. Each skilled worker should dispose of a stock of learning which enables him to prevent certain technical material differencies. The arrangement where the livestock number per one labourer is smaller than the same in traditional production based upon manual labour is very expensive.

Universal mechanician skilled workers will be needed who will be able to continuously operate the water, electric or other technological equipments of either a cattle or a pig or poultry farm.

We are to be prepared for a situation where new spheres of activity will develop. The instrumental testing and control of pregnancy becomes e.g. general in cattle husbandry and in pig breeding.

The demand for artificial insemination occurs parallel with the raising of parental pairs in cages in poultry breeding.

All these novelties will have a sense only in the case if labourers of middle qualification will be able to apply these techniques in mass.

And all the new tendencies and orientations forecast that further movement of labour force can be expected also in agricultural production and the demand for many sidedly trained skilled agricultural and industrial workers will be greater than perceived so far.