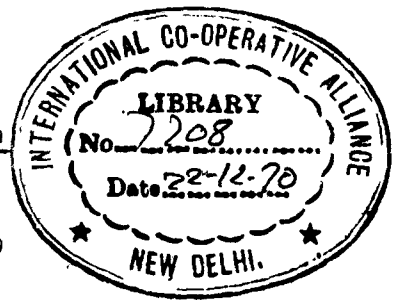
INTERNATIONAL CO-OPERATIVE ALLIANCE

AGRICULTURAL COMMITTEE



Conference on Co-operative Trade in Animal Feeding Stuffs

Paris, 8th to 10th September, 1969

"Inter-Relationship between Stage of Production of Animal Feeding Stuffs and Economic Development of Various Countries" by Eng. Agr. Mr. J. Archambaud, Secretary General, Syndicat National des Coopératives de Production et d'Alimentation Animales, (SYNCOPAC), Paris, France.

During these two days, leading speakers have described various aspects touching on the production and consumption of animal feeding stuffs in their countries and have also given us details showing the increased rate of production of compound feeding stuffs, as these represent the most highly developed form of feeding animals. They subsequently made clear the importance of international exchanges which provide certain countries with the opportunities of obtaining the raw materials needed to embark on this feature of modern technology.

Since the aim of this colloquy is to study and evaluate the nature and development of these exchanges, and equally to attempt to estimate trends, it has seemed useful to define in what manner and to what extent these exchanges and modern methods have helped and may help in the future towards the development of economic activity in general and towards satisfying man's most elementary need: food.

These problems are the subject of the agenda, and for several years now the problems of hunger have been a major preoccupation of world leaders. The FAO and the OECD have undertaken very important studies to which we are indebted in many fields.

Generally speaking, raising of living standards is accompanied by an increase in the rate of consumption of protein of animal origin. This trend can be seen as resulting in an increase of the rate of consumption of animal products. Parallel with this and to satisfy the increased demand for milk, meat and eggs, there is increasing expansion of industrial stock rearing which means an ever-increasing use of concentrate feed, often in the form of compound feeding stuffs. It may therefore be assumed that the expansion of compound feed throughout the world follows the raising of living standards and that it may assist the raising of living standards in developing countries. It is this hypothesis which we have attempted to verify.

Demand for Animal Products

Numerous studies have been carried out on this subject and all of them agree. The first surveys carried out by the FAO in 1946 showed that lack of protein is a characteristic feature of under-development and is without doubt a world food problem. It has been estimated that the daily protein requirement per man is 70 grammes. The source of

such protein may be animal or vegetable, but it is desirable, even vital, that a substantial proportion should be of animal origin. This is a physiological, as well as a psychological need. It is possible to classify the world's different areas on the basis of protein consumption, and we see that the most highly developed areas are those which consume the highest percentage of animal protein. In a very remarkable publication, the OECD, when studying the agricultural projections for 1975 and 1985, gave the current levels of consumption for 23 countries of beef, port, poultry, eggs, liquid milk, butter and cheese, and also gave their projected figures for 1975-1985. It is now studying cereals and sugar in the same context, and is also looking into the problem of processing cereals for animal products.

We have therefore up to date data, as precise as these can be, on the development of consumption. It is clear that this rises up to a certain income level, but that the elasticity coefficient is low; this means that in high income countries, consumption will increase as the population increases, whereas possibilities are far greater in those countries where consumption is low. And these are also the countries where population will increase the most rapidly.

Transformation of Stock Farming

It is a commonplace to say that stock farming is changing very quickly from an individual basis to one of organised production now so often referred to as factory farming. This is evolving in very different ways in different countries, and depends also on the animals involved, as well as the agricultural policies followed by each State.

Generally speaking, the process of improvement in stock rearing is as follows:-

1. Creation of an elite of animals with a high rate of productivity; it is possible nowadays to obtain a roasting chicken of more than 1 kilo weight in six weeks, a pig weighing 100 kilos in six months, and selection made of cows producing 6,000 litres of milk in 300 days. Cross-breeding will allow still better performances and the use of artificial insemination will lead to still greater numbers of the best animals.

2. Improvements to pens and batteries will make for better hygiene and will simplify methods of feeding and removal of waste products.

3. These performances can only be obtained with intensive and balanced feed.

The most spectacular results have been noted in the production of poultry. Factory farming has enabled a substantial reduction in prices and the setting up of cold storage chambers has meant that chicken has become an everyday item of consumption. One kilo of chicken may be obtained with only three kilos of feed, sometimes even less, of which two-thirds is grain, and this technique is now being used in all countries. Fully developed in the United States, it will spread throughout the world and in the majority of cases it is the compound feed industry which has been the driving force. It can now be said that each country has expanded its own factory farming aspect to cope with its own demand and international trade is very small.

- the production of eggs has now, after a certain period of delay, embarked on the same road;

- pig production is more diversified; where some countries are engaged in factory farming, in others there is still an important degree of traditional methods of production; in the first case, cereals are the basis of feed, and in the second, the pig still consumes forage crops such as tubers in particular.

- it is undoubtedly beef production which has remained the most closely tied to forage crops, even though nowadays specialised productions are being used in certain countries. In France more than 4m. calves are being reared on milk feed. In the United States, the greater part of beef production comes from special "feedlots"; in this technique, cereals in pellet form plus ensilage make up the basis of the feed.

Some Characteristic Trends in Certain Countries as Reflected by their Agricultural Policies

In any examination of the general outlines of the development of consumption rates of animal products, as well as stock farming and rearing methods, it will be clear that a different situation exists in each country, this being determined by natural factors, the state of economic development and agricultural policies.

Several examples may be used to illustrate these complex situations.

In the case of beef and milk production, for instance, the OECD publication setting out agricultural projections for 1975-1985 classes countries in three categories:-

1. Those countries which are large-scale users of cereals due to the high percentage of cattle fattened on them (North America and certain countries in Southern Europe);

2. Those countries which at the moment do not use a large quantity of cereals for beef raising, but who may be expected to do so in the future (the Scandinavian countries, Britain, and certain countries in Southern Europe, such as Spain, Turkey and Yugoslavia); an increased use of cereal fodder is also probable in cases where production per cow increases considerably;

3. Countries such as Eire, Australia and New Zealand, where beef cattle production is based on grasslands and which therefore use little cereal.

It is obvious that in the first case, for example, there is a close link between economic level and animal production, since this sufficiently high level determines the requirements and ensures outlets for the animal products in question. As for policy governing cereal production, this may be said to be linked equally to the production of milk and meat since the cost of grain and the quantities produced have a direct effect on the cost of the animal products and on feed methods. It may well result in the country concerned being a net exporter of milk and meat.

In the second of the cases above, an insufficiency of resources will lead, if it is decided to increase milk and meat production (to cope with increasing demand or dispose of through export), to making better use of resources by an increasing use of concentrates, and thus of cereals per animal or per kilo of meat or milk produced. There is then a modification to agricultural policy according to whether there shall be an increase of cereal production, or whether imports will have to be made of the necessary cereals.

In the third of the cases mentioned, vegetable resources (natural factors) determin the orientation of animal production and stock methods.

It may be stated also that most countries have based egg and poultry production on satisfying their own needs. Very often, there is a sudden increase in demand for products of animal origin. Because of the rapid multiplication of animals, and an almost perfect knowledge of production techniques, the development of poultry products is the sole method of meeting such demand by a system of mass produciton which entails a spectacular increase in the use of compound feed.

A similar phenomenon may be seen in certain countries in respect of pig production, for equally similar reasons.

Once demand has been met, even if only partially, and needs satisfied, we note that there are phenonema of compensation and competition between various animal products. Despite food habits, any improvements in produciton costs and thus of the retail prices of the products, will bring about a change in distribution patterns. Thus, cheaper chicken will replace beef where the price of the latter is tending upwards. This will explain diminution of consumption rates of certain products, compensated by increase in certain others, or more rapid increase in some cases compared to others where the total of consumption is rising at the same time as the standard of living.

Here is an example of modification in consumption pattern:

UNITED STATES:

(Eggs: Unit
Meat: Lbs.)

CONSUMPTION PER HEAD PER YEAR

	Eggs	Chickens	Turkeys	Beef and Veal	Pigs	Sheep
1950	389	8.6	4.1	71.4	69.2	4.0
1955	371	13.8	5.0	91.4	66.8	4.6
1960	334	23.5	6.1	91.1	64.9	4.8
1965	314	29.3	7.5	104.5	58.5	3.7
1968	318	32.4	8.0	112.4	65.4	3.7

AFMA Feed Industries Show --

Modifications to economic policies and especially agricultural policies, may lead those countries which have expanded their production and satisfied their own requirements to become exporters of animal products, i.e. products which have been prepared in relation to the vegetable products necessary to such products of an animal nature, even though they have had to import concentrates (cereals, oilcakes, etc.) to ensure such production.

Other countries become exporters even though their own requirements are not fully covered so that they may thereby obtain the necessary financial resources to achieve a more balanced economy.

This position may be due to natural factors (large-scale fodder production: New Zealand, Argentina, Eire, for example), or to deliberate agricultural and economic policy where internal demand is covered (i.e. Holland) or is not covered (Yugoslavia, and the Eastern block countries).

The part played by cereals in a rational system of animal feeding and thus in rational production results in a very marked influence of their prices on the cost prices of animal products.

A policy of high cereal prices entails either a high price of animal products, thus limiting consumption, or dislike by stock raisers for this type of production where prices are arbitrarily fixed at a level which makes speculation scarcely profitable. Conversely, low cereal prices entail expansion of animal products and intensive farming techniques (U.S.A. for example).

Compound Feed Industry

This industry has adapted itself in each country to the governing factors of its particular economy. Apart from being an important processing industry per se, it has also played an important role as a service industry through dissemination of rational rearing methods and production techniques which it helps to achieve, apart from the assistance it has often rendered to research or in finding outlets for the resulting products.

In North America, the U.S.A. are far in the lead in world production with a total of 53,100 million tons (in 1967), with a rate of increase of 27 per cent between 1957 and 1967. It satisfies the country's needs in respect of chickenmeat and eggs, it assists very considerably in meeting pigmeat demand and plays an important role in beef production; the dimension of the industry of stock rearing has led to the creation of vast "factories" in the south and east of the country. In the Middle West, it supplies the extra required in ensilage in corn and grain (wet and dry).

Japan is now the second of the world's producers and there is nothing we can add to the report presented by Mr. Tanaka.

The United Kingdom, with 10m. tons is one of the original producers of compound feeds. Its insular position and lack of forage of different types led it to import large quantities of concentrates; in order to ensure their maximum utility, the U.K. undertook large-scale research and development after the end of the second world war into methods of rational feeding, and this led to a rapid development of the compound feed industry in the country.

The EEC, with 21m. tons, and a rate of increase of 135 per cent in 10 years, does not present a homogeneous picture. Holland, which has a highly developed and important stock rearing industry, and is a net exporter of animal products, has a high production rate whose scale of increase is now slowing down. The total production of compound feed there reached 6.4m. tons in 1968, of which 2.8m. tons was pigfeed or 43 per cent of the total, whereas this proportion for the whole of the EEC is only 33 per cent. It should be noted, however, that a very large proportion of raw materials (cereals and oilcakes) has to be imported.

Belgium and Luxembourg (BLEU) produced 3,240,000 tons of compound feed in 1968, of which 46 per cent was pigfeed, which corresponds to a substantial increase in pigmeat. The Federal Republic of Germany managed to cover a large percentage of its deficit in poultry and eggs, thanks to the production of 3.3m. tons of compound feed for poultry (or 41 per cent) out of a total production of 7.7m. tons. For the EEC as a whole the percentage of compound feed for poultry in relation to the total is only 37 per cent.

In Italy, the production of compound feed has been rising fast since 1961; since that date, it has risen from 970,000 tons to 2.8m. tons (index of 288 as against 165 for EEC as a whole), with the fastest rates being shown in poultry and calf feeds.

In France during the past few years there has been a spectacular expansion in the production of calf feed, reaching 450,000 tons in 1968 out of a total of 5.5m. tons of compound feed, which figure itself was slightly lower in comparison with 1967 (5,850,000 tons). There has also been an increase in the percentage of feed for pigs due to evolution in types of rearing, whereas there was a slight drop in the production of poultry feed and in its placing in the total production figures for compound feed. This seems to be due to the market situation for eggs and chicken which more or less cover requirements in the country.

All the Mediterranean countries have had spectacular expansion of production between the years 1957 and 1957. In Spain, the percentage rise has been 1080 per cent, in Greece 750 per cent, and in Portugal 875 per cent. All these countries have undertaken an expansion programme of tourism and have had to produce a vast quantity of poultry meat and eggs in order to meet new demands. It will surprise no one to see that these industries have been developed in Spain along the eastern seaboard.

Israel produces 730,000 tons, which is a large figure when one considers the number of inhabitants of that country.

Yugoslavia, with a total of 2m. tons, has been able to export animal products.

While statistics are more difficult to obtain, it seems clear that the countries of the Eastern block are undertaking large-scale plans for production. In 1967, Czechoslovakia drew up plans for the construction of 116 plants with a production rate of 4m. tons by 1970. In Bulgaria, Hungary and Poland there are large-scale outputs destined for factory-farms whose economic systems encourage this type of development. It seems that only difficulties of finding access to world markets of raw materials is now hindering expansion.

It may be maintained that the pattern of development observed in the industrialised countries will be adopted by developing countries, but it would be presumptuous to state categorically that this will be so.. We may note nevertheless that there have been many attempts to embark on large-scale animal production, despite difficult natural conditions prevailing. But we may say that the compound feed industry will be able to render great services in increasing the quantities of animal protein available. The main problem to be tackled will be that of raw materials. In some of these countries, we observe that they are obliged to sell concentrates, which they are unable to use internally, and must import them.

CONCLUSION

The object of this colloquy was to study improvements in the exchanges of animal feeds in future years by putting at their disposal the co-operative organisations of various different countries. We have seen how complex these problems are. The development of consumption and production patterns is very difficult to estimate, especially the latter, but one fact emerges in some clarity, which is that it is practically impossible to solve these problems on a national scale, within the narrow confines of each State. Where there may be a number of States able to balance their rates of animal production against their resources in fodder and concentrates, the rest of them have no such possibility. International exchanges are evolving in one of two senses- either towards exchanges of finished products (meat, milk and eggs) or towards exchanges of experts from the FAO and the OECD have worked out to what extent the availabilities of OECD, Australia and New Zealand may help towards covering the deficits of other countries

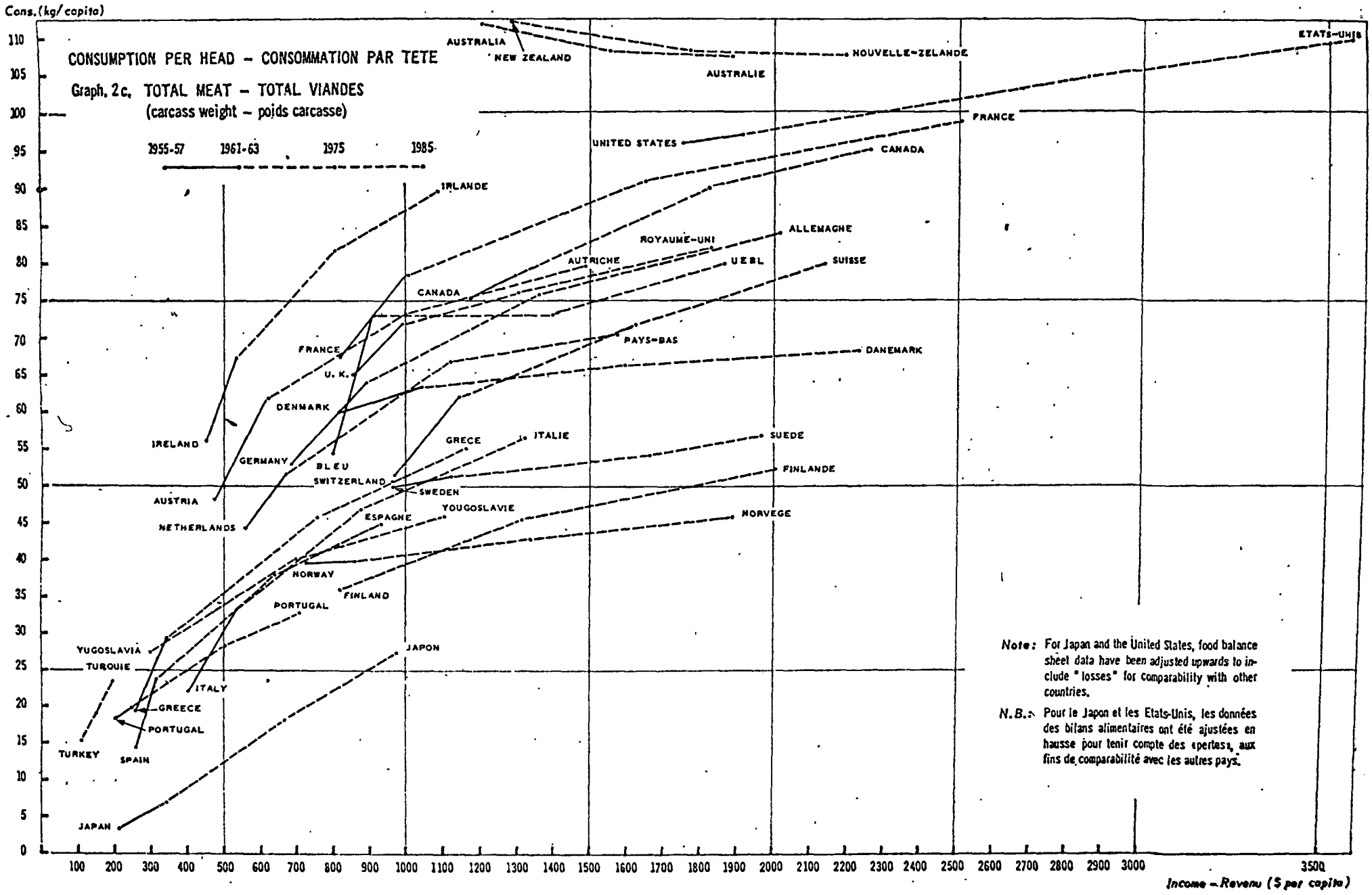
To answer these questions it is obvious that numerous studies will be needed. Provisionally, we may conclude that the emergence of the compound feed industry appears to be linked to the period which Rostov has qualified as that of take-off and which denotes a country progressively leaving behind it the state of stagnation which was the common world situation up to the end of the 18th century, and enter an economic phase. We do not pretend to have discovered one of the motivators of development, but merely the green light for it to begin.

In drawing up this report we were able to measure the gap which exists between out approach to the problem and a true economic study. We were able to assess the information gaps which exist and which may be filled in and we feel sure that the exchange possibilities which may be brought about by our common co-operative ideals could be a very important factor for the expansion of animal production throughout the world.

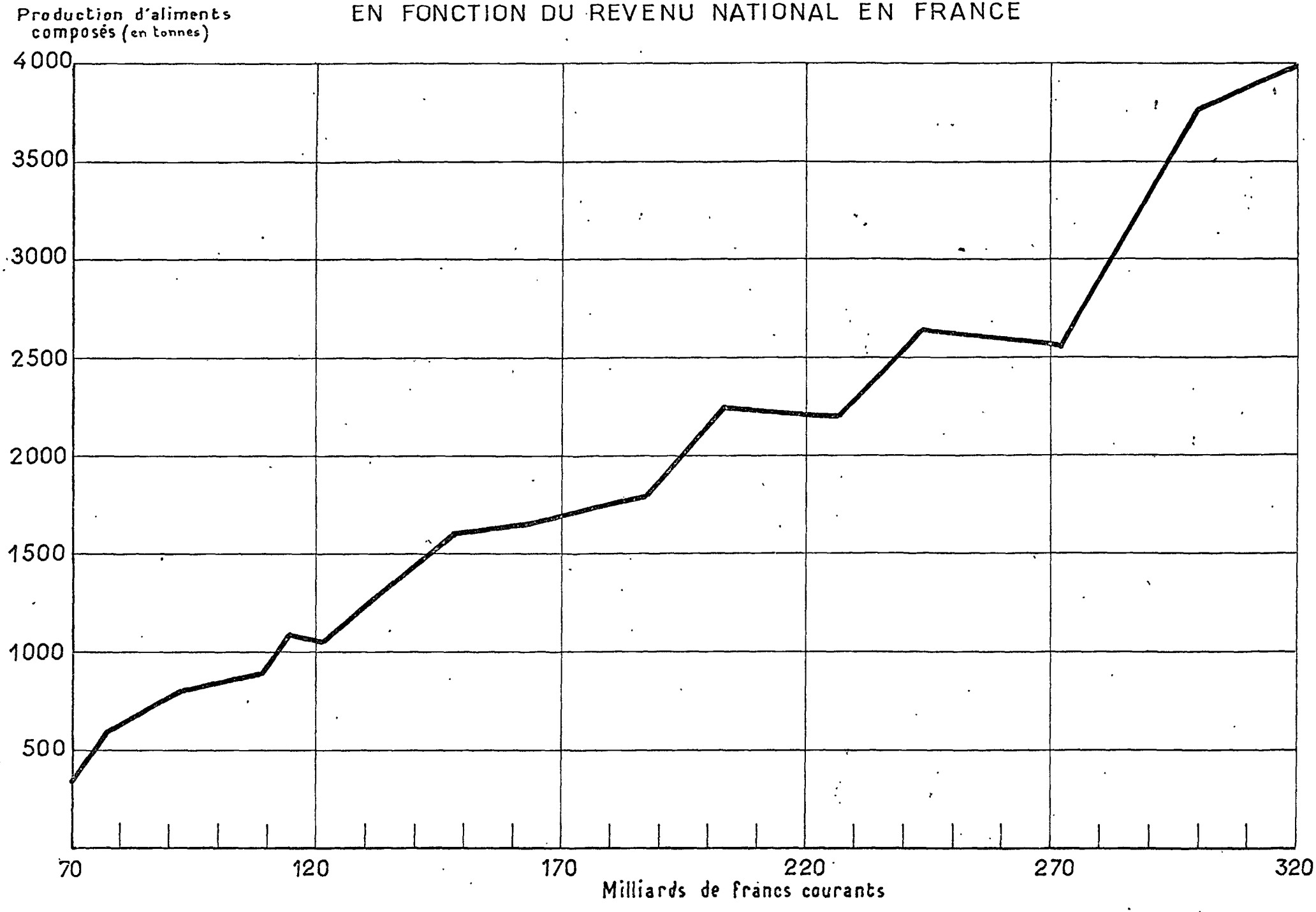
EVOLUTION DE LA PRODUCTION D'ALIMENTS COMPOSES I957 - I967

(en milliers de tonnes nitriques)

	I957		I967		Accroissement 57/67
- Etats-Unis	4I.600		53.I00		+ 27,6 %
- C.E.E.	9.050		25.970		+ I87 %
dont :					
Allemagne		2.3I0		7.720	+ 234 %
Belgique Lux.		I.I80		3.I20	+ I64 %
France		I.640		5.840	+ 256 %
Italie		430		2.500	+ 480 %
Pays-Bas		3.500		6.390	+ 82 %
- Royaume-Uni	6.450		9.900		+ 53 %
- Canada	2.500		5.270		+ II0 %
- Japon	9I0		7.220		+ 727 %
- Israël	460		730		+ 57 %
- Argentine	400		I.200		+ 200 %
- Mexique	3I0		I.090		+ 248 %
- Espagne	I50		3.000		+I 880 %
- Portugal	40		400		+ 875 %
- Grèce	20		I70		+ 750 %

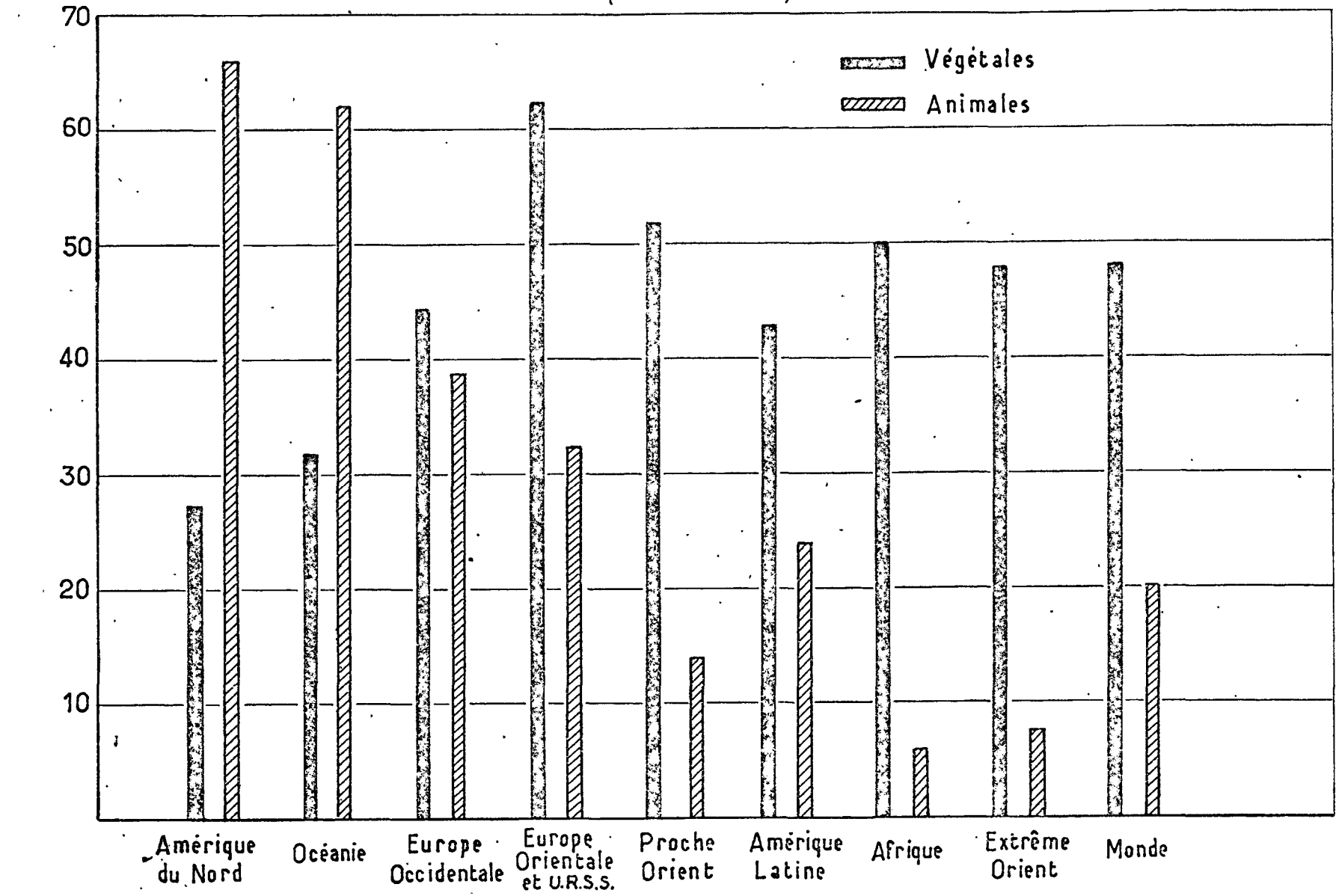

Cons. (kg/capita)
CONSUMPTION PER HEAD – CONSOMMATION PAR TETE
Graph. 2c. TOTAL MEAT – TOTAL VIANDES
(carcass weight – poids carcasse)
1955-57
1961-63
1975
1985
AUSTRALIA
NEW ZEALAND
NOUVELLE-ZELANDE
AUSTRALIE
ETATS-UNIS
UNITED STATES
FRANCE
CANADA
IRLANDE
ROYAUME-UNI
ALLEMAGNE
AUTRICHE
UEBL
SUISSE
CANADA
FRANCE
U. K.
PAYS-BAS
DANEMARK
DENMARK
IRELAND
GERMANY
BLEU
GRECE
ITALIE
SUEDE
SWITZERLAND
FINLANDE
SWEDEN
AUSTRIA
ESPAGNE
YOUGOSLAVIE
NETHERLANDS
NORVEGE
NORWAY
FINLAND
PORTUGAL
YUGOSLAVIA
JAPON
TURQUIE
ITALY
GREECE
PORTUGAL
TURKEY
SPAIN
JAPAN
Note: For Japan and the United States, food balance sheet data have been adjusted upwards to include "losses" for comparability with other countries.
N.B.: Pour le Japon et les Etats-Unis, les données des bilans alimentaires ont été ajustées en hausse pour tenir compte des «pertes», aux fins de comparabilité avec les autres pays.
Income – Revenu ($ per capita)

EN FONCTION DU REVENU NATIONAL EN FRANCE



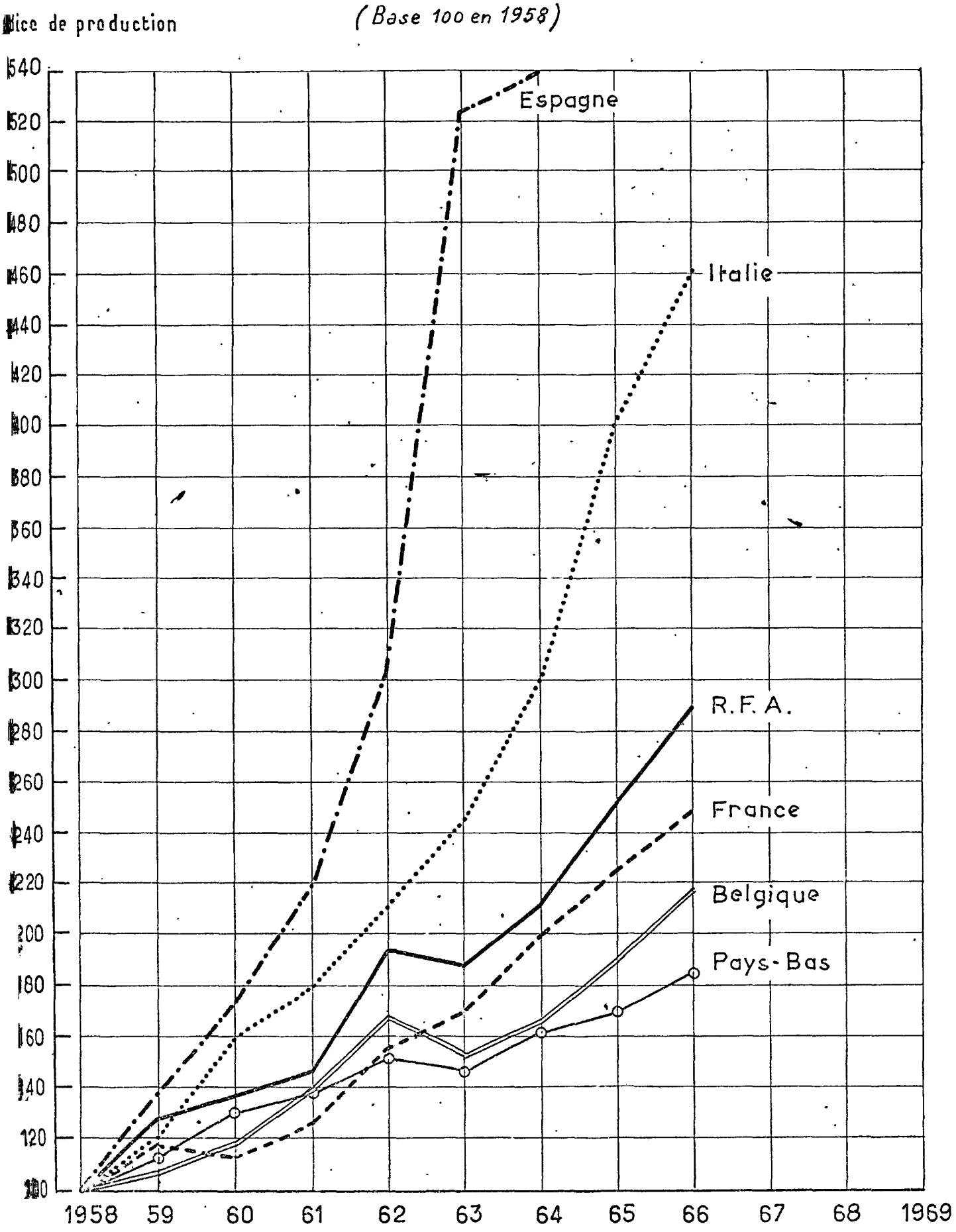
QUANTITÉS DE PROTÉINES VÉGÉTALES ET ANIMALES CONSOMMÉES PAR RÉGION ET PAR HABITANT

(Source F.A.O)



ÉVOLUTION DE LA PRODUCTION D'ALIMENTS COMPOSÉS DANS LA C.E.E. ET L'ESPAGNE

(Base 100 en 1958)



GRAPHIQUE ET SCHEMA

EXTRAITS DU RAPPORT PRESENTE PAR M. J. TREMOLIERES SUR LES

" SYMBOLES ET MOTIVATIONS ALIMENTAIRES "

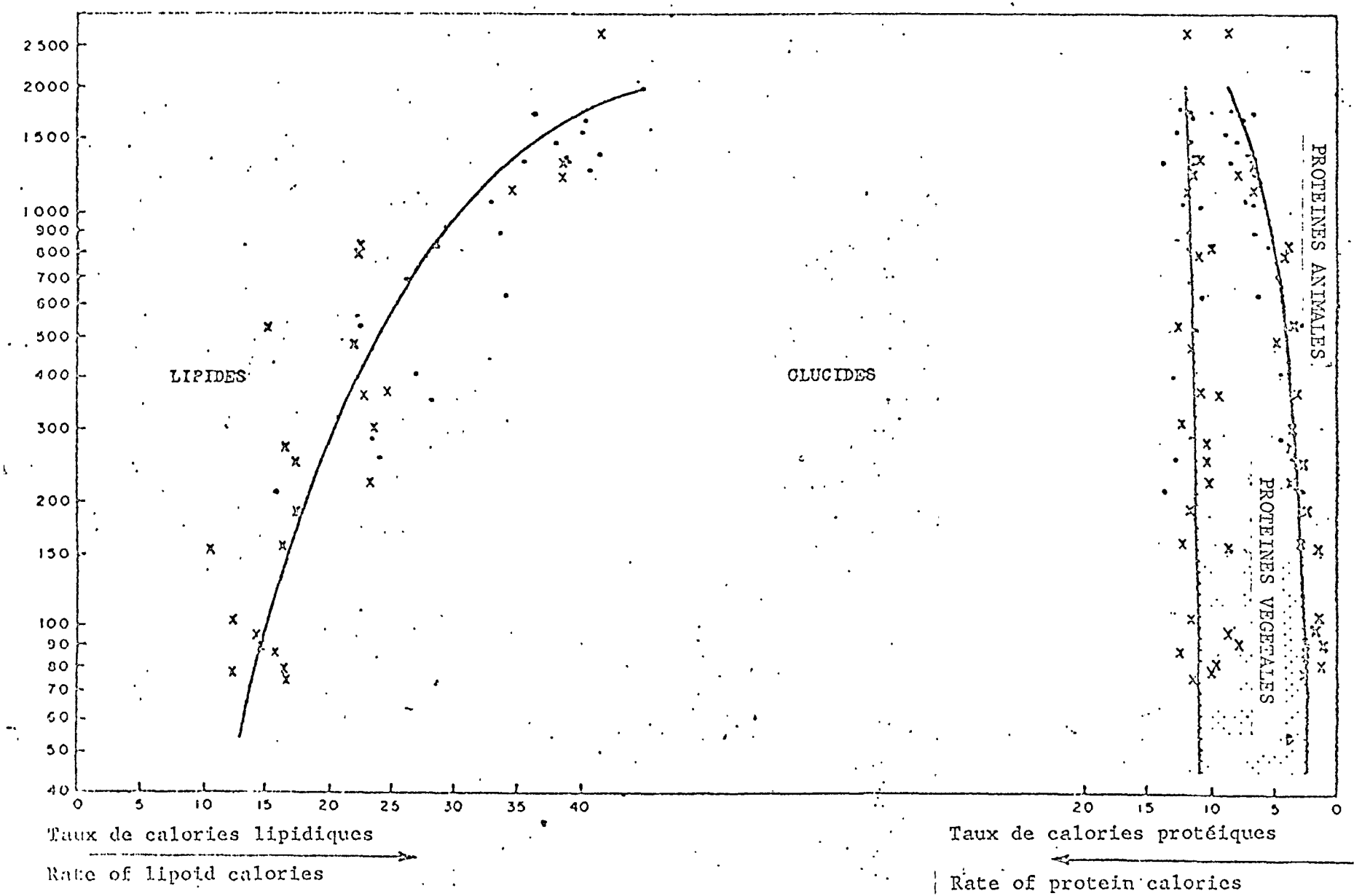
A L'OCCASION DU COLLOQUE INTERNATIONAL CENECA EN FEVRIER 1969

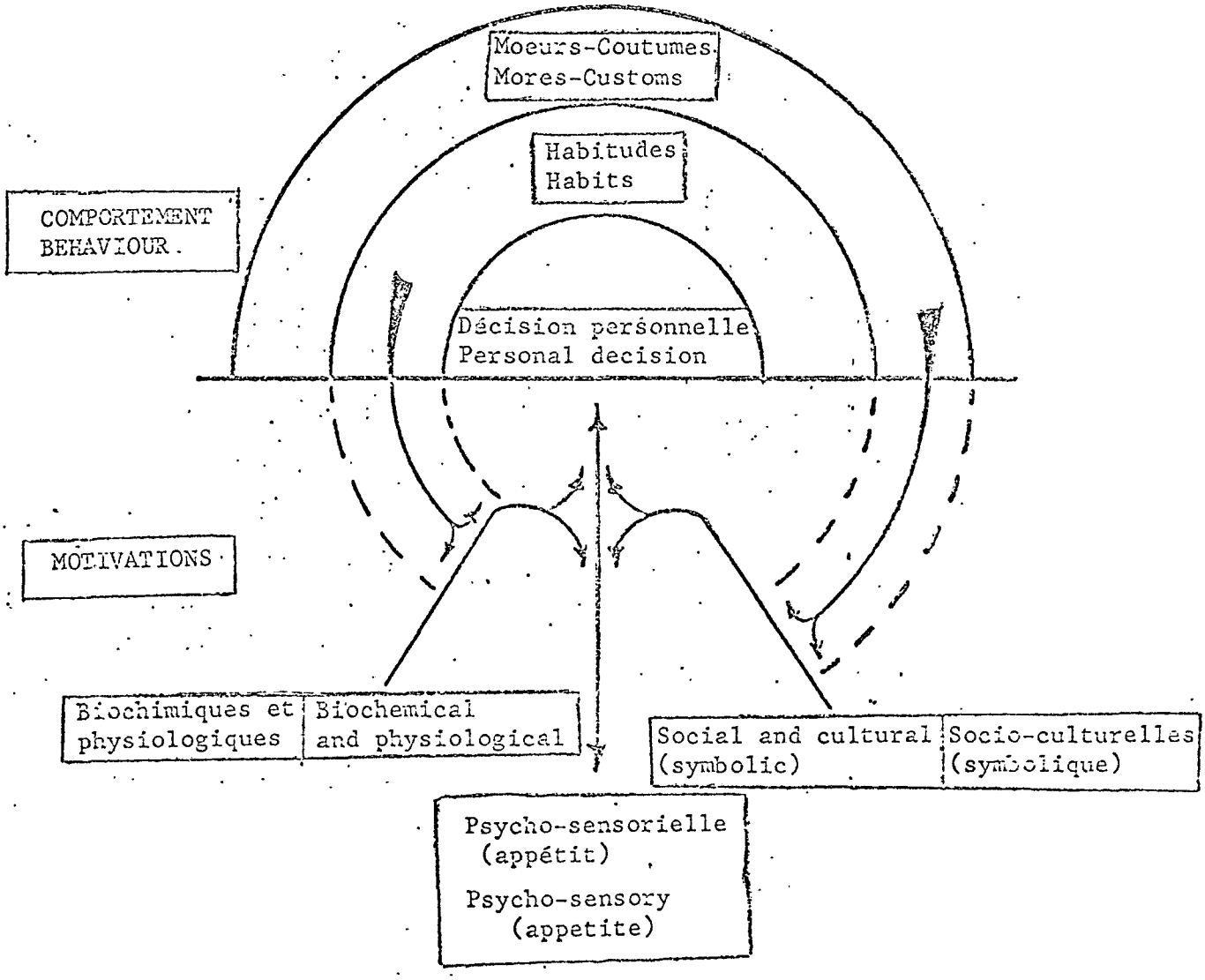
-oOo-

Graphique - Taux de calories lipidiques, glucidiques et protéiques en fonction du revenu par habitant en 1962
Graph - Rate of lipoid, glucide and protein calories in relation to per capita income in 1962.

Revenu par habitant/par an en dollars (échelle logarithmique)
Annual per capita income in $ (logarithmic scale)

(x) Moyennes sous-régionales/sub-regional averag
(.) Moyennes nationales (pays développés)
national averages (developed countries)




Moeurs-Coutumes
Mores-Customs
Habitudes
Habits
COMPORTEMENT
BEHAVIOUR
Décision personnelle
Personal decision
MOTIVATIONS
Biochimiques et physiologiques
Biochemical and physiological
Social and cultural (symbolic)
Socio-culturelles (symbolique)
Psycho-sensorielle (appétit)
Psycho-sensory (appetite)

SCHEMA du COMPORTEMENT ALIMENTAIRE de L' HOMME.

1) La décision est finalement déclenchée par une motivation psycho-sensorielle, intégrant le type de sensation de soi (coenesthésie) produit par l'état biochimique et physiologique et la façon dont on imagine et juge la situation (symboliquement).

2) Les décisions nouvelles sont intégrées dans des habitudes influant en retour sur l'état physiologique.

3) Les habitudes sont intégrées dans des moeurs et coutumes influant à leur tour, sur les motivations symbolisées.

Le tout réalise un système dynamique en perpétuelle évolution.

BIBLIOGRAPHIE

MONOGRAPHIES POUR LES DIVERS PAYS EUROPEENS

I OUVRAGES

F.A.O.	Agricultural trade in Europe - Recent development (1967)
F.A.O.	L'alimentation des volailles dans les pays tropicaux et subtropicaux.
F.A.O.	Alimentation et agriculture 1947-1950
F.A.O.	L'alimentation mondiale
F.A.O.	Les protéines et le problème alimentaire mondial
F.A.O.	Alimentation des animaux 1957
F.A.O.	Animal feedstuffs - Regulations governing their manufacture and sales in European countries prepared by Ricard.
F.A.O.	Besoins in proteines (1965)
French	Les bovins en Europe
F.A.O.	Définition et évaluation des niveaux de vie du point de vue international (1962)
John Fridlhjof	Développons la consommation de protéines (1963)
F.A.O.	L'économie mondiale et la viande (1965)
F.A.O.	Human proteines requirement and their fulfilment in practice
F.A.O.	Problèmes d'alimentation animale en Europe (1956)
Perpillou	Les produits et l'élevage type de production et commercialisatio (1966)
Perpillou	L'élevage et l'exploitation des bovins (1954)
Williams	Economies of the livestock meat industry (1964)
F.A.O.	Recueils et enquêtes sur la consommation alimentaire
O.N.U.	Action internationale pour écarter une menace de crises de protéines.
C.N.C.E.	Le marché du bétail et de la viande en Allemagne fédérale.
O.C.D.E.	Le marché de la viande bovine et ses facteurs.
C.E.E.	Les éléments de base de l'organisation commune des marchés dans le secteur de la viande porcine.
O.C.D.E.	Les méthodes de prévision des productions de viande de porc utilisées dans les pays membres de l'O.C.D.E.
Wolkowitsch Maurice	L'élevage dans le monde (1966)
O.N.U.	Une agriculture de plus en plus capitalisée.
O.C.D.E.	Projections agricoles pour 1975 et 1985. Europe, Japon, Océanie, Amérique du Nord. Production et consommation des principaux produits alimentaires (1968)

BIBLIOGRAPHIE (suite)

III PERIODIQUES

- La situation mondiale de l'Alimentation et de l'Agriculture (1967). Notes et Etudes documentaires.

- Reports of discussion groups et the international conference of agricultural economists - Sydney - août 1967

- International journal of agrarian affairs - juin 1963

- Caffarelli - Survol des problèmes actuels de l'agriculture.
  Association des cadres de direction. Industrie Mars 1965

- Manoukian - Du nouveau dans l'agriculture capitaliste.
  Recherche Internationale - janvier-février 1964

- Johnson B.F. - Agricultural development and economic transformation.
  Exemple du Japon.
  Food Research Institut Studant n° 62

- Breimyer - The three economis of agriculture : production des matières premières
  utilisation du fourrage
  distribution des produits
  Farm Econ. août 1962

- Elevage et produits de l'élevage - volailles et produits laitiers.
  Cahiers français - août-septembre 1962

- Oliveira - Aspects statistiques de l'étude des rapports input/output en matière de production agricole et d'élevage.

- Blanchet - Perspective sur le marché mondial de la viande.
  Revue française de l'agriculture - août 1967

- L'élevage et la viande dans le monde
  Cahier français - juin-juillet 1962

- Maule - Les progrès récents de l'élevage du bétail dans les climats chauds
  Import 1961

- Broussolle - Essais sur les courbes de croissance
  Economie Rurale - septembre 1958

- Aperçu sur le problème de l'élevage - Notes, etude, document 28 septembre 1957

- Temple Cattle and livestock producing - Mediterranea - décembre 1967

- Mac Bride - New foods for the lean years
  Contemporary Review - janvier 1969

- Zenoff - The latest weapon in the fight against malnutrition.
  Columbia st. World Business. Novembre décembre 1968

- Boinville - World malnutrition and the role of animal feeds
  Progress London 1968

- Blondille - les agricultures dans le combat contre la faim
  Chambre d'Agriculture - 1er janvier 1967

CENTRALA ROLNICZA SPÓŁDZIELNI
»Samopomoc Chłopska«
CENTRAL AGRICULTURAL UNION
OF »Peasant Self-Aid« CO-OPERATIVES
WARSZAWA, UL. KOPERNIKA 30 TELEFON. 26-39-69, 26-10-81
TELEGRAMS: CENTROLNA TELEX No: 81-229 81-439

Role of Co-operative Movement in Producing and Supplying Agriculture with Feeding-Stuffs in Poland

Fodder stock is a basic factor limiting the size and structure of livestock production. One cannot effectively change the level and structure of livestock production without first assuring the necessary changes in the availability of fodder. The fodder stocks are constantly increasing. For example, over the decade between 1955/56 and 1965/66 this stock increased more than 36 per cent, with stocks of feeding-stuffs growing by 44 per cent.

Due to these uneven growth rates the share of feeding-stuffs in the total fodder stock increased from 25 per cent in the years 1955-57 to ca 30 per cent in the years 1963-65.

A consequence of the agricultural structure in Poland is the shortage, on most private farms, feeding-stuffs from own production. The market, therefore, has a large number of customers for feeding-stuffs. In order to ensure a steady growth of animal husbandry, the farmers have to purchase sufficient quantities of all necessary feeding-stuffs.

The share of feeding-stuffs purchased on the market in the total consumption of fodder is increasing, as shown in the table below:

Specification	economic years 1961/62 thous.tons	%	1966/67 thous.tons	%
Total consumption of feeding-stuffs by agriculture	10.712	100,0	10.500	100,0
of which:				
a/ from own sources	9.223	86,1	7.500	71,4
b/ from market purchases	1.489	13,9	3.000	28,0

Besides the relatively quick growth in the sales of feeding-stuffs, there has also been a basic change in the assortment of fodder with which the agriculture is being supplied. Traditional fodder, such as bran, cereals and meal is gradually eliminated from trade and supplanted by feeding-stuffs, enriched with vegetable and animal protein as well as various mineral ingredients, with vitamin and antibiotic addatives. The rate of growth for the sales of feeding-stuffs is much higher than the rate of growth for total sales of fodder, as indicated below:

Year	total fodder sales		of which sales of feeding-stuffs	
	thous.tons	1961-100	thous.tons	1961-100
1961	1.659	100	570	100
1967	2.740	165	2.488	437

A more than fivefold increase in the sales of feeding-stuffs over the years 1961-1967 in certain ways changed the character and role of feeding-stuffs in the commodity balance of agriculture. The assortment of feeding-stuffs purchase by agriculture on the market changed in the following manner:

Specification	1961		1967	
	thous.tons	%	thous.tons	%
Total sales	1.655,8	100,0	2.740,0	100,0
of which:				
1. feeding-stuffs	569,1	34,1	2.488,6	90,0
2. bran	487,4	29,4	136,1	4,9
3. meal	420,3	25,4	20,0	0,7
4. cereals	95,5	5,8	89,0	3,2
5. oil cake	83,5	5,0	6,3	0,3

The growing share of feeding-stuffs in the total consumption of feeding-stuffs contributed significantly to improving the quality of fodder as far as protein contents. While in 1961 the average protein contents of 1 kilogram of fodder came to ca 90 grams, by 1967 through the increased sales of feeding-stuffs the average protein contents of 1 kilogram of fodder used in agriculture increased to 97 grams.

Increasing share of feeding-stuffs in total fodder consumed is an indicative feature of modern animal feeding. After all, it means a larger concentration of nutrients in the fodder, especially a larger concentration of protein, which means a high productivity of livestock.

Production of feeding-stuffs

Growth of fodder industry in Poland is completely in accord with the tendencies prevailing in the world. This relatively new branch of industry experienced the same trends in most European and non-European countries.

The first Polish plants feeding-stuffs were organized in 1948 by the Central Agricultural Union of "Peasant Self-Aid" Co-operatives. For the next few years CAU acted both as the producer and the distributor of feeding-stuffs. In 1951 the productive enterprises were transferred to the Ministry of Purchases. After a number of reorganizations the Bacutil Feed Industry Amalgamation was established in 1958. It was the sole Polish producer of feeding-stuffs until 1961.

As acceleration in the rate of growth of both production and consumption of feeding-stuffs took place after CAU put into operation feeding-stuffs mixing plants. This is shown by the following data:

Year	Production thous.tons total	of which CAU	CAU share %%
1955	309	-	-
1961	564	45	7,9
1963	1.120	353	31,5
1965	2.203	1.427	64,0
1968	3.000	1.950	65,0

Plan for 1969 envisages total Polish production of feeding-stuffs amounting to 3.400 thous. tons, of which 2.300 thous. tons is to be produced by the CAU plants and 1.300 thous. tons by other, non-coop plants.

In organizing the feeding-stuffs mixing plants the supply and marketing co-operatives were forced to solve numerous organizational, technical and personnel problems by themselves.

The Farm Equipment Plant of the Voivodship Union of Rural-Co-operatives in Łódź started production of feeding-stuffs assemblies. De-dusting installations and pneumatic beaters for cleaning sacks also had been put into production.

Trying to achieve inexpensive and simple type of equipment for the mixing plants, the Mechanical Works of the Voivodship Union of Rural Co-operatives in Poznań also started producing mixing assemblies. Their product, known as the M-1, was inexpensive and small, so that it could be installed in one storied structures.

The short time which it took to design and produce the M-1 assembly enabled the supply and marketing co-operatives to organize 170 new feeding-stuffs mixing plants in the years 1963-1965.

At present there are 314 fodder producing and feeding-stuffs mixing plants in Poland, which are operated by:

State Feed Industry Amalgamation - Bacutil	27 plants
Central Agricultural Union of "Peasant Self-Aid" Co-operatives	261 plants
State Cereals and Milling Industry Amalgamation - PZZ	2 plants
Voivodship Amalgamations of /State operated/ local industry	24 plants

The co-operative mixing plants put into operation over the years 1961-1965 are quite varied as far as the technological equipment and technology of production. One group is made up of plants with uniform technical equipment, producing feeding-stuffs in a single phase, i.e. from a complete set of components. The second, and more numerous group is made up of second phase mixing plants, producing feeding-stuffs from concentrates produced by major industry.

Taking into account the need to increase feeding-stuffs production in the current Five Year Plan covering the years 1966-1970 a large scale programme of modernizing the co-operative fodder industry has been drawn up and is currently being implemented.

In 1967 CAU embarked on an imaginative programme to modernize and technically reconstruct the feeding-stuffs mixing plants, with the aim to:

1. increase the storage capacity of every mixing plant through the construction of new warehouses or silo batteries for the storage of raw-materials for processing;
2. build modernized, up-to-date plants;
3. equip all feeding-stuffs mixing plants with machinery and technical equipment, and particularly with assemblies for mixing measured dozes of fodder based on weigher portioning of components;

4. improve quality control of the components and finished feeding-stuffs through the installation of plant laboratories;
5. secure well trained personnel, particularly managers, technology engineers, warehouse managers and production foremen.

With the view of implementing this programme, the Farm Equipment Plant of the Voivodship Union of Rural Co-operatives in Łódź has already started regular production of a new, improved mixing assembly. This assmebly will replace all the hitherto used simple ones before 1970, permitting the CAU mixing plants to modernize the technology of production and change all plants to the single-phase process.

The former local mixing plants are being adapted to new uses through the installation of feed grinders, doze-measuring installations, automatic scales, siloses for storing bulk materials, de-dusting equipment and various social and sanitary installations.

Much effort is also being expended on assuring the proper quality of produced feeding-stuffs. Fodder laboratories are being organized.

In addition to all this, new technological, technical and quality control personnel is being trained. Yearly courses for managers of the mixing plants are being organized with the aid of the Central Technical Organization. Participants in these courses have the opportunity to increase their knowledge of the subject through correspondence training, and taking part in consultations and seminars organized by agricultural colleges. The CAU training centres also organize courses for managers, technilogical engineers, foremen and laboratory technicians. Practical training centres were also put into operation, to help in the practical training of newly-hired employees.

Complete implementation of this programme will give the co-operative plants the capacity to produce all the basic types of feeding-stuffs in an economic manner, at the same time guarantecing the proper technology and quality of production. By 1970 the productive capacity of co-operative mixing plants will amount to 2.600 thous. tons annually. The raw materials basis for the production is partly of local origin, and in some part has to be imported. In 1968 the available raw materials amounted to more than 3 million tons, and were used mostly for the production of mixtures and concentrates.

Assortment of feeding-stuffs

With the growth of fodder industry, the variety of types offered is also inoreasing. The feeding-stuffs are produced after recipes worked out by specialists and tested in practice. These recipes specify the share and proportion of each ingredient in the feeding-stuffs, adapting these to the nutritional requirements of animals for which it is being prepared. The plants produce fodder in the pulverized and granulated forms.

All feeding-stuffs can ben classified in three groups, depending on the protein contents:

- protein concentrates, containing on the average between 30 and 40 per cent of protein. Normally, these contain only high-protein ingredients, such as animal meal and post-extraction meal /ground grains/ with the highest protein contents. These also contain various stimulants, such as vitamins and antibiotics in quantities a number of times higher than those required for strictly nutritional purposes;

- medium-protein power feeding-stuffs, containing on the average

between 14 and 20 per cent of protein. They are normally made up of mediumprotein power ingredients, such as bran and meals, with an admixture of high-protein fodder, mineral ingredients and vitamins in quantities sufficient to make up for eventual shortages of these ingredients in the basic fodder;

- complete feeding-stuffs, used primarily for poultry and pigs, fed without resort to any other type of fodder.

The protein contents in these feeding-stuffs depends on their application, namely:

a/ for meat chicken - ca 20 per cent

b/ for hens eggs specialized in egg production - 14-16 per cent

c/ for hogs meat under 50 kilos - 12-17 per cent

d/ for hogs meat 50-75 kilos - 11,5 - 15 per cent

e/ for hogs meat over 75 kilos - 10-12 per cent protein.

There is also a special group of various preparates and concentrates of vitamins, antibiotics and mixed vitamin-antibiotic. These are used as addatives to farm-prepared fodder or feeding-stuffs. There are also mineral mixtures with various types and proportions of components, divided into two basic groups: those containing micro-elements and those without them.

The annual production of feeding-stuffs for cattle at present amount to 850 thous.tons. Most important in these are mixtures for grouwn cattle /540 thous.tons/ and for calves /240 thous.tons/.

In 1969 Polish fodder industry is starting the production of mixtures for sheep and lambs. Plans call for an annual production of 10 thous. tons of these feeding-stuffs.

Feeding-stuffs for pigs are the largest single item in the total production of Polish fodder industry. Plans for 1969 envisage production of nearly 2.100 thous.tons of such feeding-

stuffs, of which 1.200 thous.tons for meat-lard hogs, 240 thous. tons for bacon hogs and another 240 thous. tons for breeding hogs.

The production of poultry feeding-stuffs in increasing rapidl and will amount to almost 450 thous.tons in 1969, of which 70 per cent for hens specialized in egg production and chicken and 30 per cent for broiler-type meat chicken.

Over the next few years the production of feeding-stuffs for poultry will increase both in size and in scope. Plans for 1969, for example, envisage starting production of feeding-stuffs for broiler-type turkeys.

The present production programme of Polish feeding-stuffs industry includes more than 30 different feeding-stuffs and fodder addatives, of which 7 are for cattle, 8 for pigs and 5 for poultry. For other types of animals there are 4 types of feeding-stuffs: 2 for laboratory animals and 2 for carnivorous fur animals. The rest of the range is made up of protein concentrates and mineral feeding-stuffs as well as special preparations.

Every type of feeding-stuffs in adapted to the type of animal, its productivity or age.

The mixing plants of the supply and marketing co-operatives produce those types of feeding-stuffs, which are most widely used in the feeding of farm animals, i.e. feeding-stuffs B and B-1 for grown cattle, C for calves, T, L and Bekon for pigs, feeding-stuffs D for poultry as well as mineral mixtures "MM" Mikro B.

In discussing the size of production for each type of feeding-stuffs, it may be interesting to note its structure characteristic for the Polish fodder industry.

Despite certain common features in all countries as far as the directions of development for the fodder industries, the

assortment of feeding-stuffs produced differs from country to country. These differences appear primarily as the effect of the basic raw materials availability and directions of intensifying livestock production. In Poland, unlike in other countries with a developed fodder industry, the basic type of mixtures are those for pigs, which constitute ca 50 per cent of total production. Approximately 80 per cent of those feeding-stuffs are produced by CAU. The second group, around 30 per cent of the total consists of feeding-stuffs for cattle, also produced in 80 per cent by CAU. Feeding-stuffs for poultry are only in the third place, while in most West European countries and the USA these are the basic type for the fodder industry.

The breakdown by type of feeding-stuffs production in Poland and in selected EEC countries is presented below:

	Percentage share in total production of mixtures					
	for cattle		for hogs		for poultry	
	1961	1966	1961	1966	1961	1966
Poland	30,7	31,1	53,7	54,3	14,3	13,8
West Germany	24,0	24,3	29,0	28,8	45,0	44,8
France	22,0	21,4	28,5	28,8	45,0	45,2
the Netherlands	22,0	21,7	38,0	38,2	38,0	37,2

The local base of raw materials and production which is still insufficient to meet the total demand contributed to the fact that Poland produces mainly feeding-stuffs which suplement farm-prepared feeding-stuffs, primarily potatoes, of which ca 50% of total annual production is used for livestock feeding purposes. That is why in contrast to most West European countries, the supplementary feeding-stuffs produced in Poland have a relatively high concentration of protein in each feeding unit - on the average they contain ca 165 grams in one kilo of the feeding-stuffs.

Fodder trade

The supply and marketing co-operatives represented by CAU are not only one of the main producer of feeding-stuffs, but are also the sales organization supplying agriculture with feeding-stuffs and feed addatives.

The organization of fodder trade and commodity turnover are closely connected with the structure of agriculture, with the system of supplying agriculture with feeding-stuffs and the organization of industry producing fodder for agriculture. On one hand there are millions of customers purchasing fodder for their farms, on the other hand there are a few hundred fodder producérs and suppliers. In order to coordinate the actions of suppliers and customers a trading organization has been formed, in which the predominant role is played by rural co-operatives.

These co-operative associated in CAU supply agriculture with feeding-stuffs and other fodder /cereals and their derivatives, post-extraction meal, etc./

At present CAU distributes more than 2.8 million tons of feeding-stuffs, including more than 90 per cent feeding-stuffs in the future CAU is expected to remain the leading supplier of feeding-stuffs to agriculture, with the exception of fodder needed in feeding of hog industry.

The largest group of customers consists of private and co-operative farmers as well as farmers without land occupying themselves solely with slaughter animals. This group purchases ca 60 - 65 per cent of the total quantity of fodder sold.

In recent years the second place as a customer for feeding-stuffs was taken by state farms. These purchase

approximately 25 per cent of the total sold.

The third group of customers is made up of state enterprises which do not operate farms, but occupy themselves with animal production; these are the feeding-up stations.

CAU acts as the organizer of fodder supplies for such organizations. Its functions in this respect consists of:

- tying the customers with suppliers by contracts;
- supervising fodder deliveries by industry to its customers;
- seeing to the financial side of transaction between suppliers and customers.

The CAU activities connected with market sales - both those were CAU is directly concerned, and those where it appears only indirectly through the associated co-operatives and unions of co-operatives, concentrate on the following questions:

- the organization of supplying agriculture with feeding-stuffs and mineral feed addatives;
- the organization of marketing industrial fodder produced in enterprises operated by various bodies;
- the organization of training for employees engaged in fodder trade.

The relations and system of tie-ups between producers of feeding-stuffs coming under the fodder amalgamation and their customers are regulated by a special agreement.

Independently of the general agreement which sets out the principles of organization, commodity turnover and tie-ups between the suppliers and customers of feeding-stuffs as well as the role and tasks of CAU in this respect, there are detailed regulations setting out the principles and terms of deliveries of fodder for certain groups of customers. CAU signed such bilateral agreements with:

- the Ministry of Agriculture - its General Inspectorate of State Farms on supplying State Farms with feeding-stuffs;
- the Central Union of Milk Co-operatives on fodder deliveries to milk suppliers;
- the Egg and Poultry Industry Amalgamation on supplying fodder to enterprises of this Amalgamation and to suppliers of eggs and poultry tied with the sale of this fodder;
- the Poultry Amalgamation on supplying fodder to enterprises of this Amalgamation and industrial scale producers of eggs and poultry.

All efforts connected with coordinating and organizing the supply of fodder for agriculture concentrate in CAU. It conducts research on:

- the demand for fodder in each Voivodship in relation to the market quota and the demand for fodder by state-operated organizations in relation to the non-market quota;
- the deliveries of fodder from industry;
- sales and stocks of fodder in the sales network.

On the basis of this research CAU draws up a collective demand sheet for fodder, and after it is approved by the authorities concerned, it determines and presents allotments for particular institutions and Voivodships.

The Voivodship Unions of Rural Co-operatives tie particular customers with particular producers of fodder. They also present the distribution schedules, place orders, clear the financial side of transit fodder deliveries /producer - customer/, direct of consignments special feeding-stuffs, such as feeding-stuffs for piglets, vitamin-antibiotic concentrates, mineral feeding-stuffs, to the wholesale distribution warehouses of the District Unions of Rural Co-operatives, from where they go

directly to the retailed network of the rural co-operatives. The feeding-stuffs for the state farms and other state enterprises is in principle sent directly to the customers as a transit delivery.

A somewhat different procedure, even though still counted as trade, is followed by CAU in connection with supplying the fodder industry with post-extraction meal of imported oil seeds and the exportation of grass meal. A specialised CAU enterprise works in this respect with the ROLIMPEX Foreign Trade Enterprise, which imports post-extractio meals of arachids, cotton, sesame, palm and soya seeds.

These meals, as a high-protein ingredient of feeding-stuffs are taken by CAU enterprises for sending to all plants in Poland which produce mixtures and concentrates.

In 1968 the import of meals, mostly from India and the USA, came to more than 280 thousand tons. Polcoop, another CAU enterprise, itself specialised in foreign trade, has for a number of years exported grass meal of meadows, and more specialised, of papilonaceous plants, especially alfalfa. The export growth is shown below:

year	export in tons
1963	2 900
1967	18 300
1968 /plan/	20 000

Polcoop exports grass meal primarily to Italy, W.Germany, Greece, Austria. Smaller quantities are also exported to Swedon, Finland and Switzerland.

Instructive advertising

The supply and marketing co-operatives organize universal services for agriculture in the fields of trade, purchases and advanced payment contracts of agricultural products. It also participates in popularizing agricultural knowledge and education. In the field of supplying agriculture with feeding-stuffs these activities can be described as follows:

- the organization of fodder deliveries for agriculture and market sales;
- the keeping of sufficient stocks in the sales network of every fodder type, assuring the continuity of supply to interested groups of fodder customers;
- advertising among animal breeders and fodder buyers how to rationally apply feeding-stuffs and new types of mixtures in feeding farm animals;
- working together with the agricultural advice services of the People's Councils on proper feeding methods.

In carrying out the market sales of fodder the co-operatives pay attention to their rational use in animal husbandry. The organizational forms of this propaganda are varied, including press announcements, posters and advertising leaflets, radio and television discussions, fairs and expositions, advertising and instruction films.

Show of proper feeding of hogs using feeding-stuffs are also organized with the help of co-operative specialists.

In order to make the mineral fodder addatives more popular among farmers CAU in conjunction with other institutions interested in the development of animal husbandry, and particularly with the Ministry of Agriculture, carries out a wide instructive advertising action, as shown by:

- a common action programme of the supply and marketing co-operatives and the People's Councils;
- the organization of popular fodder competitions;
- wide co-operation with agricultural circles and chapters of the Rural Youth Organization as far as the popularisation and application of modern animal feeding methods.

The huge, popular feeding competition was organized by CAU in 1968 under the slogan that "Mineral addatives improve the results of animal breeding and husbandry". Participants in the competition included farmers - customers for fodder, animal husbandry experts, agronomists, veterinarians, employees of co-operatives and unions active in the countryside, employees of branch associations and activists in agricultural circles.

There were also other competitions - for sellers, managers and warehouse managers employed by the supply and marketing co-operatives there was one run under the slogan "I have achieved high sales of fodder addatives through proper exposition", and for farmers in certain parts of the country another competition called "we use feeding-stuffs for hogs". Rural co-operatives also engage in propaganda of industrial fodder through group agricultural training, through the "Modern Housewife" centres and Farmer's Clubs as well as through meetings with farmers at rural meetings.

Much credit in the propaganda work must also be given to members of rural committees and supervisory councils, who through the application of modern feeding methods on their own farms and friendly neighbourly advice on the rational application of these aids in animal husbandry contribute to popularirising them in the Polish country-side.

All forms of popularisation and advertising work connected with co-operative sales of fodder are of an informational and instructional character, providing advice on nutrition.

Gradually the range of these activities increases, and their forms become more varied.

The supply and marketing co-operatives assign considerable financial resources to this end. CAU helps the associated co-operatives and unions in carrying out these activities through publishing instruction booklets, through the financing of press, radio and television announcements and advertising, and through the founding prizes for participants in feeding competitions.

INTERNATIONAL CO-OPERATIVE ALLIANCE

AGRICULTURAL COMMITTEE

Conference on Co-operative Trade in Animal Feeding Stuffs

Paris, 8th to 10th September, 1969

Attached tables for the lecture entitled:

"Requirements and Problems of the West European Cattlefeed Industry"

SPEAKER: DR. ALBRECHT GASCHLER

Raiffeisen-Futterring e.V., Bonn

Survey I

Structural Changes in Agriculture in the EEC Countries

Number of agricultural enterprises of I or more ha. in area

Country	Survey Year		Enterprises in 1,000		Changes ±%
Germany	1960	1966	1.390	1.228	- 11,6
France	1955	1963	2.110	1.805	- 14,4
Italy	1961		2.756		
Netherlands	1959	1966	230	203	- 11,7
Belgium	1959	1966	198	153	- 22,7
Luxembourg	1960	1966	10	8	- 20,0
EEC	1960	1966	6.800	6.160	- 9,4

Labour Force in Agriculture and Forestry

Country	Survey Year		No. employed in 1,00		Changes ±%
Germany	1964	1967	3.084	2.742	- 11,0
France	1964	1967	3.652	3.257	- 10,8
Italy	1964	1967	4.967	4.556	- 8,3
Netherlands	1964	1967	408	366	- 10,3
Belgium	1964	1976	216	209	- 3,2
Luxembourg	1964	1967	19	18	- 5,2
EEC	1964	1967	12.346	11.148	- 9,7

Livestock Position including Units of 500kg liveweight

Country	Survey Year		Units in 1,000		Changes ±%
Germany	1963	1967	15.153	19.198	+ 26,7
France	1963	1967	22.750	23.629	+ 3,8
Italy	1963	1967	11.213	12.158	+ 8,4
Netherlands	1963	1967	3.777	4.399	+ 16,4
Belgium	1963	1967	2.647	2.878	+ 8,7
Luxembourg	1963	1967	155	172	+ 11,0
EEC	1963	1967	55.434	59.434	+ 6,7

Monetary Value in % of total Cattlefeed Production

Country	Vegetable Products		Animal Products	
	1962	1967	1962	1967
Germany	28,1	25,9	71,9	74,1
France	42,3	40,4	57,7	59,6
Italy	66,5	67,2	33,5	32,8
Netherlands	36,0	34,8	64,0	65,2
Belgium	37,1	32,9	62,9	67,1
Luxembourg	14,9	11,8	85,1	88,2
EEC	44,2	42,0	55,8	58,0

Source: Statistical Office of the EG

Survey 2

Mixed Fodder Production in EEC Countries and in United Kingdom

Amounts in 1,000 tons per financial Year

Financial Year	1958/59	1962/63	1967/68	Changes ±% 62/63:58/59	Changes ±% 67/68:62/63
		Beef Cattle and Calves			
Germany	812	1.250	1.903	+ 53,2	+ 52,2
France	403	635	1.179	+ 57,5	+ 85,7
Italy	110	275	800	+ 150,0	+ 191,0
Netherlands	780	1.300	1.678	+ 66,6	+ 29,2
Belgium	338	622	752	+ 84,0	+ 20,9
EEC	2.444	4.082	6.312	+ 67,0	+ 54,6
United Kingdom	1.705	3.240	3.655	+ 90,0	+ 12,8
		Pigs			
Germany	853	1.532	2.265	+ 79,6	+ 47,8
France	540	1.052	1.995	+ 94,8	+ 89,6
Italy	125	300	670	+ 140,0	+ 123,3
Netherlands	1.370	1.770	2.858	+ 29,2	+ 61,5
Belgium	406	767	1.416	+ 88,9	+ 84,6
EEC	3.394	5.421	9.048	+ 59,7	+ 66,9
United Kingdom	1.581	2.171	2.092	+ 37,3	+ 3,6
		Poultry			
Germany	1.215	2.118	3.305	+ 74,3	+ 56,0
France	969	1.636	2.104	+ 68,9	+ 28,6
Italy	250	560	1.330	+ 144,0	+ 137,4
Netherlands	1.250	1.740	1.781	+ 39,2	+ 2,4
Belgium	449	620	892	+ 38,1	+ 43,9
EEC	4.133	6.674	9.204	+ 61,4	+ 37,9
United Kingdom	2.946	3.890	4.139	+ 32,0	+ 6,4
		Mixed Fodder and others			
Germany	2.880	5.016	7.701	+ 74,2	+ 53,5
France	1.956	3.445	5.751	+ 76,1	+ 66,9
Italy	500	1.775	2.800	+ 255,5	+ 57,7
Netherlands	3.500	4.900	6.391	+ 40,0	+ 30,4
Belgium	1.200	2.060	3.081	+ 71,7	+ 49,5
EEC	10.036	16.596	25.724	+ 65,4	+ 55,0
United Kingdom	7.305	9.685	10.074	+ 32,6	+ 4,0

Source: BML-Bonn and ZMP-Bad Godesberg

Survey 3

Sales Potential of Pedigree Stock Production in relation to Foddergrains in the respective Countries

Prices for Pedigree Stock Products and Foddergrains in DM per 100 kg*

Proceeds from sale of 100 kg Fatstock (excl. calves) - liveweight allow purchase of following amounts of grain in kg			
Financial Year	1963/64	1967/68	1967/78:1963/63 ±kg
		Fodder Barley	
Germany	490	607	+ 117
France	738	704	- 34
Italy	763	733	- 30
Netherlands	662	666	+ 4
Belgium	602	625	+ 23
Luxembourg	-	-	-
EEC	634	666	+ 32
United Kingdom	712	783	+ 71
Norway	449	518	+ 69
Sweden	627	595	- 32
Denmark	544	482	- 62
Switzerland	477	596	+ 119
Austria	481	497	+ 16
Portugal	910	1.088	+ 178
EFTA	590	643	+ 53
Finland	-	-	-
Eire	-	434	-
Spain	432	649	+ 217
		Fodder Maize	
Germany	421	546	+ 125
France	627	694	+ 67
Italy	784	803	+ 19
Netherlands	680	642	- 38
Belgium	571	583	+ 12
Luxembourg	-	-	-
EEC	590	646	+ 56
United Kingdom	546	590	+ 44
Norway	429	485	+ 56
Sweden	496	500	- 4
Denmark	547	459	+ 88
Switzerland	462	605	+ 143
Austria	458	488	+ 30
Portugal	1.009	1.289	+ 280
EFTA	548	594	46
Finland	275	-	-
Eire	-	380	-
Spain	389	596	+ 207

Survey 3 - 6: calculated according to FAO average annual prices in DM per 100 kg

* £1 = 9.50 DM

Survey 4

Proceeds of sale of 100 kg Fat Pigs - liveweight allows purchase of following amounts of grain in kg.

Financial Year	1963/64	1967/68	1967/68:1963/64±%
		Fodder Barley	
Germany	588	590	+ 2
France	918	670	- 248
Italy	836	736	- 100
Netherlands	705	579	- 126
Belgium	718	564	- 154
Luxembourg	-	-	-
EEC	742	628	- 114
United Kingdom	820	871	+ 51
Norway	588	621	+ 24
Sweden	721	554	- 167
Denmark	723	661	- 62
Switzerland	690	697	+ 7
Austria	616	609	- 7
Portugal	752	859	+ 107
EFTA	690	682	- 8
Finland	-	-	-
Eire	613	601	- 12
Spain	613	662	+ 49
		Fodder Maize	
Germany	504	531	+ 27
France	780	661	- 199
Italy	859	810	- 49
Netherlands	720	558	- 162
Belgium	681	526	- 155
Luxembourg	-	-	-
EEC	691	609	- 82
United Kingdom	631	653	+ 22
Norway	536	574	+ 38
Sweden	571	400	- 171
Denmark	726	630	- 96
Switzerland	669	707	+ 38
Austria	587	598	+ 11
Portugal	834	1.032	+ 198
EFTA	642	629	- 13
Finland	530	-	-
Eire	503	527	+ 24
Spain	551	607	+ 56

Survey 5

Proceeds of sale of 100 kg Table Poultry - liveweight allows purchase of following amounts of grain in kg

Financial Year	1963/64	1967/68	1967/68:1963/64 ±% kg
		Fodder Barley	
Germany	562	496	- 66
France	939	859	- 80
Italy	1.584	1.363	- 221
Netherlands	542	433	- 109
Belgium	520	470	- 50
Luxembourg	-	-	-
EEC	793	717	- 76
United Kingdom	803	756	- 47
Norway	548	528	- 20
Sweden	682	511	- 171
Denmark	649	582	- 67
Switzerland	625	599	- 26
Austria	829	701	- 128
Portugal	857	891	+ 34
EFTA	703	643	- 60
Finland	-	-	-
Eire	696	535	- 161
Spain	786	728	- 58
		Fodder Maize	
Germany	481	447	- 34
France	798	847	+ 49
Italy	1.625	1.493	- 132
Netherlands	557	417	- 140
Belgium	493	439	- 54
Luxembourg	-	-	-
EEC	738	696	- 42
United Kingdom	618	567	- 51
Norway	524	496	- 28
Sweden	540	371	- 169
Denmark	652	555	- 97
Switzerland	605	607	+ 2
Austria	790	609	- 181
Portugal	950	1.080	+ 130
EFTA	654	593	- 61
Finland	-	-	-
Eire	571	469	- 102
Spain	708	669	- 39

Survey 6

Proceeds of sale of 100 kg hen eggs allows purchase of following amounts of grain in kg

Financial Year	1963/64	1967/68	1967/68:1963/64 ± kg
		Fodder Barley	
Germany	697	765	+ 68
France	729	636	- 93
Italy	1.044	718	- 326
Netherlands	546	550	+ 4
Belgium	514	531	+ 17
Luxembourg	-	-	-
EEC	696	639	- 57
United Kingdom	1.161	1.040	- 121
Norway	784	752	- 32
Sweden	706	600	- 106
Denmark	692	715	- 23
Switzerland	784	776	- 8
Austria	707	658	- 49
Portugal	461	573	+ 112
EFTA	741	703	- 38
Finland	-	-	-
Eire	795	772	- 23
Spain	786	628	- 158
		Fodder Maize	
Germany	599	689	+ 90
France	619	627	+ 8
Italy	1.071	785	- 286
Netherlands	560	531	- 29
Belgium	488	495	+ 7
Luxembourg	-	-	-
EEC	648	619	- 29
United Kingdom	893	780	- 113
Norway	749	705	- 44
Sweden	559	436	- 123
Denmark	695	682	- 13
Switzerland	760	789	+ 29
Austria	674	646	- 28
Portugal	512	695	+ 183
EFTA	689	648	- 41
Finland	574	-	-
Eire	651	677	+ 26
Spain	838	867	+ 29

Survey 7

Home-produced grain in % of total requirements rate in EEC Countries

Financial Year	1960/64 a)	1966/68 b)	1966/68:1960/64 in %
		Wheat	
Germany	78	83	+ 6,4
France	123	134	+ 8,9
Italy	90	97	+ 7,7
Netherlands	44	63	+ 45,4
Belgium/Luxembourg	73	67	- 8,2
EEC	96	104	+ 8,3
		Fodder Barley	
Germany	74	75	+ 1,3
France	136	144	+ 5,8
Italy	29	21	- 2,8
Netherlands	79	93	+ 17,7
Belgium/Luxembourg	72	67	- 6,9
EEC	96	99	+ 3,1
		Oats	
Germany	91	91	± 0
France	98	104	+ 6,1
Italy	78	72	- 7,7
Netherlands	84	120	+ 42,3
Belgium/Luxembourg	92	83	- 9,8
EEC	92	95	+ 3,2
		Maize	
Germany	3	6	+ 100,0
France	103	133	+ 29,1
Italy	57	43	- 24,6
Netherlands	-	-	-
Belgium/Luxembourg	-	-	-
EEC	51	47	- 7,8
		Grain Total	
Germany	77	75	- 2,6
France	119	132	+ 10,9
Italy	73	68	- 6,9
Netherlands	36	36	± 0
Belgium/Luxembourg	55	45	- 18,2
EEC	85	86	+ 1.2

a) Ø 1960/61-1964/65; b) Ø 1966/67-1967/68

Source: Statistical Office of the EG

Survey 8

Home Production of Meat in % of total requirements rate in EEC Countries

Financial Year	1962/63	1966/67	1966/67 : 1962/63 in %
		Beef	
Germany	90	86	- 7,3
France	110	106	- 3,6
Italy	68	60	- 11,7
Netherlands	98	82	- 16,3
Belgium/Luxembourg	94	85	- 9,5
EEC	93	86	- 7,5
		Veal	
Germany	91	93	+ 2,2
France	99	101	+ 2,0
Italy	54	46	- 14,8
Netherlands	200	523	+ 161,5,
Belgium/Luxembourg	100	105	+ 5,0
EEC	96	93	- 3,1
		Porkmeat	
Germany	96	94	- 2,1
France	99	91	- 8,1
Italy	85	84	- 1,2
Netherlands	156	158	+ 0,3
Belgium/Luxembourg	111	113	+ 0,8
EEC	101	98	- 2,9
		Poultrymeat	
Germany	39	49	+ 25,6
France	103	103	± 0
Italy	98	98	± 0
Netherlands	285	330	+ 15,8
Belgium/Luxembourg	109	145	+ 33,0
EEC	90	98	+ 8,8
		Meat Total	
Germany	88	87	- 1,1
France	101	96	- 4,9
Italy	77	73	- 5,2
Netherlands	135	144	+ 6,6
Belgium/Luxembourg	99	99	± 0
EEC	95	92	- 3,3

Source: Statistical Office of the EG

Survey 9

Home Production of Pedigree Stock in % of total demand rate in EEC Countries

Financial Year	1962/63	1966/67	1966/67 : 1962/63 in %
		Eggs	
Germany	72	86	+ 19,4
France	-	-	-
Italy	83	96	+ 15,6
Netherlands	210	137	- 34,7
Belgium/Luxembourg	130	123	- 5,4
EEC	-	-	-
		Cheese	
Germany	77	79	+ 2,6
France	103	110	+ 6,8
Italy	93	92	+ 1,1
Netherlands	208	228	+ 9,6
Belgium/Luxembourg	54	62	- 14,9
EEC	98	101	+ 3,0
		Butter	
Germany	94	101	+ 7,5
France	107	114	+ 6,5
Italy	65	77	+ 18,5
Netherlands	146	210	+ 43,8
Belgium/Luxembourg	99	89	- 10,1
EEC	99	107	+ 8,1
		Skim Milkpowder	
Germany	94	127	+ 35,1
France	145	191	+ 31,8
Italy	100	-	-
Netherlands	57	47	- 17,5
Belgium/Luxembourg	118	143	+ 21,2
EEC	108	-	-

Source : Statistical Office of the EG

Survey 10

Forecast of Production and Demand for Foodstuffs in 1975 in 1,000 tons

Groups of Countries	Production	Demand	+ = increase - = Surplus in 1,000 tons	in % of Production
		All Grains (excl. Rice)		
EEC	68.381	76,466	+ 8.085	+ 11,8
N.E. Europe*	39,250	44,032	+ 4.782	+ 12,2
		Beef and Veal		
EEC	4.374	5.170	+ 796	+ 18,2
N.E. Europe	2.073	2.115	+ 42	+ 2,0
		Pork		
EEC	5.855	5.807	- 48	- 0,8
N.E. Europe	2.927	2.733	- 194	- 6,7
		Poultrymeat		
EEC	1.907	1.990	+ 83	+ 4,3
N.E.Europe	890	855	- 35	- 3,9
		Hen Eggs		
EEC	2.653	2.649	- 4	- 0,2
N.E.Europe	1.4.2	1.428	+ 16	+ 1,1
		Butter		
EEC	3.138	2.849	- 289	- 9,2
N.E. Europe	1.528	1.729	+ 201	+ 13,1
		Dried Skimmilk		
EEC	7.152	6.511	- 641	- 8,9
N.E. Europe	3.508	3.237	- 271	- 7,7

* Countries in Group: Austria, Denmark, Finland, Eire, Norway, Sweden, Switzerland and U.K

Source: Agricultural Forecasts by the OECD, Paris, 1968.

INTERNATIONAL CO-OPERATIVE ALLIANCE

AGRICULTURAL COMMITTEE

Conference on Co-operative Trade in Animal Feeding Stuffs

Paris, 8th to 10th September, 1969

"Requirements and Problems of the West European Mixed Fodder Industry"

by: Dr. Albrecht Gaschler, Raiffeisen-Futterring e.V., Bonn.

In the European agricultural scene, however varied it may be from country to country, there have been since the end of the war certain similar structural changes which have a common root in growing technical developments and which so far show no signs of coming to an end. Among these changes which have contributed significantly to the expansion of the mixed fodder industry, are the following:

- decline in the number of agricultural enterprises operating on a small or medium scale;
- a corresponding decline in the supply of agricultural labour and the growing burden of work in individual enterprises;
- as a result, forced saving of labour by mechanisation, more especially in inside and stable work which provides more work throughout the course of the year than work outside and in the fields;
- increased breeding of pedigree livestock, and corresponding increase in the production of suitable fodder;
- concentration of herds in a restricted number of farms having larger resources and even employing mechanised handling of large herds on a large scale;
- changes in the eating habits of the population, in two opposite directions: less carbohydrate and more protein, with a corresponding fall in the demand for breadgrains and a rise in the demand for eggs and meat;
- and not least, the farmer's attempts to increase his income by increasing his herds, which also implies greater concentration on feeding stuffs.

Some of these structural changes are explained in no. 1 of the Surveys attached. It will be seen that in the comparatively short period of between 5 and 3 years, in the E.E.C. countries the number of agricultural enterprises as well as the labour force have decreased on an average by about 10%. In West Germany between 100,000 and 150,000 people leave the land in this way every year, or, to

put it another way: the annual migration quota would be sufficient to found a new city of some 150,000 inhabitants.

In order to grasp the essential data we must take a look in the following survey at certain features as revealed in examples from the agricultural and fodder economy.

In almost all countries the practical reaction of the agricultural sector to the increased demand for foodstuffs of animal origin has inevitably been to stockpile the basic requirements of the livestock industry. The small and medium sized undertakings whose main source of income has for long been pedigree stock, have been the first to resort to stockpiling. For this reason, the proportion of the profits attributable to the sale of animal products has risen significantly, whereas that resulting from grain sales declined by the same amount.

This disorientation of production must obviously have its effect on the costs of agricultural enterprises. Consequently, among the outgoings incurred specifically with a view to increasing profits, that for fodder bought in has risen most compared with seedcorn, fertilisers and insecticides. The extent of the increase in the use of mixed fodder over the past ten years is shown clearly in Survey no. 2.

Presumably because feeding stuffs represent the largest cost item in the whole outgoings of an enterprise, they are a favourite target for criticism, and indeed as far as mixed fodder is concerned, this has continued in varying degrees or has even increased in postwar years. The criticism frequently recommends "do-it-yourself" mixing, but in true milkmaid fashion, completely ignores the kernel of the matter. The critics also overlook the fact that the trend towards the use of mixed fodder is very closely bound up with many aspects of development in the pedigree stock raising sector. We will return later on to the much-debated advantages of "do-it-yourself" mixing.

In view of the increasing popularity of mixed feeding stuffs, the appropriate authorities in the various countries considered it necessary to bring the manufacture under stricter control. In almost all West European countries this has resulted in new legislation or semi-legal regulations governing the manufacture and trade in mixed feeding stuffs. Most of these new laws came into effect in the

'fifties' as the production of mixed feeding stuffs in the majority of countries had by then reached or even exceeded the pre-war level.

A certain similarity in the problems meant that the legal provisions introduced by the various nations were also similar as far as the form of declaration for mixed fodder was concerned. With two or three exceptions, there was in all West European countries a closed, or at least a half-open formula; i.e. the ingredients of the mixture must be stated, but not the proportion of each. Among the two or three countries subscribing to the open declaration requiring the percentage content of the mixed fodder to be stated, West Germany must unfortunately be included.

Unfortunately, because the open declaration can offer no proof as to the quality of the mixed fodder. Today, however, the open declaration is as out of date as the chemical analysis which can only give information as to how much natural protein or raw grain a mixed fodder contains. In the meantime, we have arrived at the situation where the standard of cattle feeding today requires not only full protein content, but also optimum amino-acids in the protein constituent of mixed fodder, requirements which would be met with the aid of computers in an up-to-date cattle feed factory.

Accordingly, as a safeguard for the consumer and a measure of control in the cattlefeed trade, the open declaration is to all intents and purposes meaningless, but it is nevertheless a hindrance to the mixed fodder industry in adapting itself to existing market conditions as regards the supply of raw materials. Furthermore, it complicates any progress in the industry, since the producer, who, after costly experiments to develop a remunerative formula or a special new fodder, is obliged by the provisions of the open declaration, if he wishes to manufacture and market the new type fodder, to make known the results of his experiments to the general public to imitate as they wish.

The open declaration can have a detrimental effect on agriculture also, as shown by two current examples. Years ago, before the cow was bred to give milk with a high fat content, cocoanut and palm kernels could be used to raise the percentage of milkfat. Although in modern cattle breeding establishments the addition of cocoanut and palm kernels is regarded as having no effect whatsoever on the milkfat content, and in addition, the market is quite uninterested in butter production, the cattle farmers usually favour brands of fodder having as high a proportion of coco/palmkernel as possible and will pay a higher price for it since the two oilcakes still have for them a value which is completely superseded today.

The other example concerns the rival claims of wheat and maize in mixed feed for poultry. On account of its fine golden colour, poultry farmers prefer the type of feed containing as much maize as possible, although the dyes available and officially permitted today fulfil the same purpose reliably and more cheaply. In view of the existing surplus, increased treatment of wheat would not be looked upon favourably in the long run by government authorities. The fodder manufacturer cannot, however, fall in entirely with such market conditions because the poultry farmer, in spite of the available dyes, expects to find a lot of maize in the formula on the sack label. These two examples show that the open declaration is detrimental rather than protective, and should accordingly be allowed to lapse as being useless in the general interest. The German mixed fodder industry, both private and co-operative, will in any case continue to use it influence in this

direction.

Similar difficulties arose when the draft regulation designed to bring some measure of harmony into the legislation governing fodder content in the E.E.C. came into force in its present form. In the draft the same conditions were laid down concerning the quality marks for both single ingredient and mixed fodder, although there is a fundamental and intrinsic difference between the two:

- whereas the components of single ingredient fodder are mostly by-products or residues from materials processed for human consumption;
- mixed feed consists of ingredients standardised and processed for a special purpose, designed for particular animals, age ranges or feeding systems.

It is hardly to be expected that, in addition to producing quality standard foodstuffs, the foodstuffs industry would also produce standard by-products and/or process residues for cattlefeed. Every time a natural product is processed, such residues as there are undergo certain constant changes which also affect their inherent value. For this reason, it is impossible, normal procedure in the foodstuffs sector notwithstanding, to prescribe definite statutory quantitative and quality requirements for single-ingredient feed and/or food-stuffs residues.

Accordingly, the draft of the so-called E.E.C.-Codex for single-ingredient feed has been rejected by the representatives of the private and co-operative mixed feed industries of the E.E.C. Instead, the Codex should establish a uniform nomenclature for single-ingredient feed and serve as a guide to the trade, but have no legislative function. Ultimately, the purpose of any legal ruling must be to ensure clear and orderly market conditions for the feeding stuffs trade. It must, however, be praticable and manageable and have no restrictive or deleterious effect on trade. Experience must be the guide in achieving harmony in the feeding stuffs legislation in the E.E.C. and in establishing future legal conditions: as little as possible and as much as necessary!

A much more serious problem than that of the Feeding Stuffs Codex is, however, the rise in price of protein feed proposed by the E.E.C. authorities which will cause profits in the whole stock-breeding industry to shrink considerably and thus indirectly disadvantage mixed feed production also. Firstly, however, let us look at the present profit situation in the pedigree stock breeding industry in various countries, as shown in Surveys 3-6 in which the purchasing power of the livestock produced is offset against feed grains. In the case under discussion the sales potential indicates the amount of grain a farmer can buy in against the profit on 100 kg. of livestock. This is a rather rough and ready, but quite useful measure in estimating gross yield which works in the case of one type stock sectors.

The surveys which give the sales potential for the five year period 1963/64 and 1967/68 reveal the following relationships and changes:

- between countries having the lowest and highest profit rate or sales potential level the differential may be as high as 100%, and even higher in individual cases.
- such extremes exist in both the E.E.C. and the E.F.T.A. groups of countries, but have recently weakened slightly between the

E.E.C. member countries.

- for table poultry and eggs the profit differentials are very much more marked and showed much greater fluctuation in the period of comparison than in the case of fatstock and pigs.

- whereas the sales potential of fatstock rose in the period on an average by 10%, for the other three groups of livestock it fell by 10 to 15% according to the country.

- Finally, the fall in the sales potential over the five year period was greater in the E.E.C. countries than in the E.F.T.A. countries.

It cannot be overlooked, however, that the loss of profit in livestock production was on the whole greater than the estimated percentages if one takes into account the rise in miscellaneous costs, and above all wages, in the period under review. In spite of the already weakened profit situation, the E.E.C. Commission is planning to raise the price of vegetable and animal protein feed, regardless of the fact that these are key products in the feeding systems - and thus in the costing - of the whole livestock industry, and more especially in pig and poultry farming. If this plan comes into effect the farming industry will have to expect a further reduction in profits on individual lines; in the case of pigs and poultry of about 8% per 100 kg. in round figures, and 12% on milk and eggs.

This measure is, accordingly, quite contrary to the aim expressed in the same E.E.C. Memorandum, namely, to raise the income of the agricultural population. Inevitably, the exact opposite will happen with the increase in costs, the more so when one considers that agricultural enterprises draw more than half their income from livestock, and that feeding stuffs alone represent two thirds of the production cost in meat and egg production. Rising fodder prices will do nothing to get rid of these fundamental economic factors.

A further problem which is being widely discussed in mixed feed circles is the proposal in the E.E.C. Authority's Memorandum to create large scale concerns in the form of "Produktionseinheiten" (P.E.), or Production Units, which, after a certain transition period, would be combined to form what the Memorandum refers to as modern agricultural enterprises (M.L.U.). In the livestock sector of these large-scale concerns the smallest size of herds in the various categories is specified (40 cows, 150 beef cattle, 450 fat pigs, 10,000 laying hens and 100,000 head of fattened poultry), i.e. there is no upward limit to the size of the herds. These large-scale concerns will consist of combined small and middle-sized farms which will then cease to exist to all intents and purposes as individual entities.

At this point the question arises whether the creation of large-scale concerns receiving financial subsidies will not increase the danger of over-production which might be expected to fall as a result of the rise in the price of protein feed. As a rule, the turnover per animal and unit of space is high in the large-scale enterprise, whereas the average level of production on the small farm is somewhat lower. This relationship between the size of the enterprise and its production is usual in most countries, West Germany included. According to the annual statistical survey, last year, for example, the production of farms with 300 hens and upwards was about 70 eggs per bird, or 25% higher than that of farms with small numbers of birds.

The same happens in the case of milk production, The smaller the farm, as a rule, the less the annual milk production per cow; in West Germany, this is known as the "North-South Fall", as the farms get smaller from the north to the south of the country. Compared with a large concern specialising in a certatin type of animal, the income from work on a middle-sized farm need not be lower if, conjointly with a labour-intensive concern it operates a labour-extensive cattle breeding concern; for example, pigmeat or egg production alongside dairy cattle farming, which would permit productive distribution of labour. Furthermore, such a double line concern would be less crisis-prone than a specialist concern, as it has built-in compensation. With the help of the sales potential from pedigree stock breeding, the other individual branches of the livestock industry can show a very different rate of return over a similar period.

Instead of striving for the smallest size in stock farming as proposed in the E.E.C. Authority's Memorandum, it would be more sensible to fix a maximum ceiling, in order to restrain to some extent the already existing over-production. Poultry production in particular lends itself to increased concentration into the so-called mammoth undertakings in which one hand controls stock of some thousands up to over a million.

Several attempts have already been made in agricultural circles to suggest to the E.E.C. Authority that, in the public interest and that of livestock production, this crisis-prone development should by some legal means be halted. In any case, such legal measures would be required at least to prevent any new super-sized table poultry and egg enterprise from being formed. To introduce such legislation for the protection of stockbreeding enterprises would, of course, no longer call for courage as would the introduction of a tax on protein feed which would practically condemn any ordinary cattle breeding enterprise to unprofitability.

Two other factors bear out the need for a timely limitation of production capacity; firstly, the continuous discreet rise in production potential of cattle, so that capacity is rising in concerns which are otherwise stable. The second factor is that in the E.E.C. the limit of self-supplying is almost reached and in some branches of stockbreeding exceeded. This is the case at present with milk products production, and it can happen any time with table poultry, eggs and pork meat, as can be seen from Surveys 7-9. This tendency is the result of the production period in the five years 1962/63 to 1966/67. The grain situation is less critical as over-production of wheat was offset by an increased demand for maize. This drives home the point that no one ever seems to grasp; the idea that the price of fertilisers should be raised with a view to restricting wheat production, which is, after all, as sensible a solution as raising the cost of protein feed to restrict milk production.

The increase in land under cultivation and the high yield per ha. over the past two years, together with the declining demand for breadgrains has brought about the wheat surplus. As a result, grain has in recent years been increasingly used for fodder at the expense of other unmixed feed, both directly on the farms and in mixed fodder production as well. In mixed feed production especially, the proportion of grain, more particularly wheat which had in recent years fallen considerably, began to rise again strongly, on account of the fall in price due to adulteration subsidies. Since, with the higher grain content, the protein-short components hitherto in use were withdrawn from the mixed feed formula, a great - creased call for high percentage protein products, primarily soya and fishmeal was

to be expected. If this occurred, the already high demand for fishmeal in the E.E.C. area would receive further impetus. Over the last three years, from 1966 up to and including 1968, the demand for fishmeal rose from 0.8 to 1.1 million tons, or about a quarter of the world fishmeal production. At present over 90% of the fishmeal used for feed in the E.E.C. is imported since the home production in all E.E.C. countries has fallen off in recent years. In this connection also, in view of the great dependence of the E.E.C. on the world market for fishmeal, it would not be a very wise move to erect protection barriers as has already been done in respect of grain.

The changes in the livestock sector of agriculture in recent years which have not yet come to an end, are of course reflected in structural changes in mixed feeding stuffs production which is being forced to adapt its supply policy to current market conditions. The factors having the greatest effect on mixed feed production structure are concentration of herds, mechanisation of feeding and stall management and the decreasing amount of labour available.

Accordingly, the trend in the mixed feed industry is towards enterprises of higher capacity, as has been the case in recent years in West Germany. On the other hand, there is no doubt that the small and medium-sized producers will also continue to fulfil regional requirements and have a part to play in the further processing of concentrates emanating from the larger organisations.

The main factor in the trend towards medium and large production capacity is the continuous production chain from meal and/or crushed grain to a compressed product despatched in bulk. To utilise to full capacity the plant required for compression and bulk despatch presupposes a sufficiently large turnover which would only be possible in a wide area having ample market facilities. Moreover, it remains to be seen whether the present trend for pig, and more particularly poultry production enterprises, to be brought nearer the consumer centres will continue, a move which would benefit the mixed feed industry on a large scale, since it is cheaper to transport fodder rather than livestock over a great distance. Other factors contributing to changes in the structure of large concerns are: the ever-growing competition, cost advantages accruing from mass production, modern technical methods. In addition, the large concern is better able to meet the requirements of modern scientific methods of cattle feeding.

In view of the increasing shift from small to large enterprises in the mixed fodder industry, and more especially the fall in day-to-day costs per production unit, it is hard to understand why in certain circles the stock farmers are being recommended to mix their own fodder. By way of proof of the value of this suggestion, the interested parties present the farmers with cost accounts which, on closer scrutiny, prove to be cooked. A comparison of such accounts which were published in German trade journals revealed the most improbable discrepancies, such as, for example, a difference in the cost per 100 kg. of mixed feed of between DM 1.50 and 5.75, or about 400%. The farmer does not usually realise how much he has to pay out in costs and labour, to say nothing of the commercial risks attendant upon mixing for himself, until he has already installed the machinery in his yard and is faced with being both mechanic and businessman.

However, the advantages of direct processing of a farmer's own grain in his own yard should by no means be discounted, especially when the direct feed method gives better results in certain specific regional market conditions than buying in ready prepared factory feed. In such cases, the farmer can save on expensive

mashing and mixing plant if, instead of the costly individual ingredients whose food value is continually deteriorating, he buys in suitable concentrates or supplementary feeding stuffs carrying a guaranteed nutrition standard the price of which has been stable over a long period and which offer a useful source of variety in feed.

It is significant that, in recommending mashing and mixing plant, no mention is made of any possible purchase of concentrates and supplementary feed, as though no such things were to be had. In making use of them, moreover, the farmer runs less risk as to quality and price than he would by buying in various separate components. All that remains for the farmer to do is to crush his grain for which a simple crusher is all that it needed. This method also does away with any mixing labour since experiment has shown that in giving the pure crushed grain as the morning feed and the supplementary feed in the evening, the same feed pattern will be achieved as with corresponding mixtures or single feed.

As has always been the case, many new claims will be made and new products evolved in the mixed fodder industry, among which we may mention:

- new raw materials, mainly of the additives and hormone type;
- wider assortment due to expanding specialisation in stock breeding;
- increasing use of feed with a certain medicinal content, mainly in connection with the continued increase of large-scale enterprises;
- increasing interest in the composition and quality of mixed feeding stuffs designed to raise the yield per animal;
- research and controlled experiments carried out by fodder factories having their own herds;
- extension of services including specialists' advice;
- more and stricter legislation and quality control;
- sharper competition forcing enterprises to rationalise their methods at every stage of the production line from receipt of raw materials through the manufacturing processes and marketing of the finished product.

One problem which lies outside the actual mixed fodder industry but with which the factories are frequently confronted is integration in all its various aspects: establishing own production capacity which, however, results in competition between factories in a particular area; contract production with independent farms; partial financing of initial herds, erection and equipment of stalls, up to the processing and marketing of the end product. In the opinion of those who know the trade, the forms integration will take will proliferate rather than the reverse. Given similar circumstances, cattle farmers would be well advised to take a positive attitude to contract production, since it has given good results in other branches of agriculture. The system was first introduced in areas far from any market, in order to profit by the very much lower grain prices and raise the level of returns. In their capacity as self-help enterprises, the co-operatives would be well able to do this.

In conclusion, a few cautious pointers may be indicated concerning probable developments in fodder consumption, the first and determining factor being the use in the future of food stuffs of animal origin. In recent years future developments in the food trade have again been the subject of market research. A similar basic investigation comprising forecasts for 1975 and 1985 was instituted by the O.E.C.D. and published during the year. The most outstanding facts from this investigation concerning production and consumption of grain and stock farming are given in the last Survey no. 10.

The Survey gives a picture fundamentally similar to that of the Supply Advisory Council of the E.E.C. area, though forecasting for 1975. For that year an increased yield is to be anticipated for grain and beef only, whereas there will be a surplus of other livestock products, with one or two exceptions. The largest surplus in both groups of countries is in dried skim milk; N.E. Europe has 300,000 tons and the E.E.C. more than double that quantity. There will be a definite need for a butter subsidy in N.E. Europe, while in the E.E.C., according to preliminary calculations, there will again be a considerable surplus of butter. Pork meat, table poultry and eggs tend to overproduction in both groups of countries. This is an additional argument in favour of the need discussed above for livestock production legislation to protect those branches of the livestock industry which are not dependent on the soil.

The forecasts which are merely an indication of possible tendencies, presuppose along with other factors that, within the forecast period, there will be no social or economic upheavals or fundamental political disturbances. If forecasts for food consumption are to serve as a criterion for future developments in the demand for feeding stuffs, then the hypothetical factor of the uncertain harvest, which is in turn dependent upon the weather, must also be taken into account. Seen in this context, the risk with which the farmer is familiar applies equally in the mixed fodder industry.

INTERNATIONAL CO-OPERATIVE ALLIANCE

AGRICULTURAL COMMITTEE

CONFERENCE ON CO-OPERATIVE TRADE IN ANIMAL FEEDING STUFFS

September 8th - 10th, 1969

Paris, France.

LECTURE

"Increasing Farmer Income by the use of Flexible Formulation and Precise on-the-farm Programming of Feed Use" by Mr. Marvin Van Wormer, Director of Feed Research Farm Bureau Cooperative Association, Inc. Columbus, Ohio, U.S.A.

"Flexible feed formulation" is the work nutritionists do when they change formula for economic reasons. Formulas must be changed periodically as the cost and availability of feeding stuffs change. Providing a mixed feed having the lowest possible cost without sacrificing feeding value obviously contributes to the farmers income. It is my purpose here to tell you how this formulation is done by feed manufacturers and try to estimate the ultimate value of this work to our farmers.

Farmers around the world grow much of their own feed. It is important that farmers use these on-the-farm feeding stuffs in ways that will produce maximum income. Governmental agricultural scientific personnel, university specialists and cooperative feed service men all help our farmers choose feeding programs that improve feeding practices. There are many ways to do this, and my remarks about "on-the-farm programming of feed use" by our Cooperative are intended to describe only one of the available alternatives.

A brief description of the work we do in the Feed Division of the Farm Bureau Cooperative Association will help as background for my discussion. We purchase a wide variety of feeding stuffs, blend them into protein, vitamins and mineral concentrates or complete mixed feeds at three plants in Ohio. Most of our ingredients are purchased from our own farmers (as maize) and processors of food products (as soybean meal, fish meal, meat, etc.). A very important characteristic of our ingredient supply — especially as we consider flexible formulation — is that the price of many ingredients change from hour to hour every work day. Since the relative nutritional value of feeding stuffs remains almost constant, change in cost dictates change in use. Thus the need for flexible formulation is apparent.

Feeds manufactured at our three plants are distributed either through local farmer owned mills or direct to the farm. The local mills often grind the farmers grain and mix the ground grain with our concentrates. Some sell grain from their

own storage to the farmer for mixing. Complete mixed feeds, containing grain, are also manufactured at our feed plants and delivered either to the local mill's warehouse for sale or direct to the farm.

One more bit of background information is a description of our Cooperative Feed Research system. Twenty farm cooperatives in Canada and the U.S. have joined together in the support and operation of a feed research programme to study the nutrition and management of dairy cows, beef cattle, swine, rabbits and poultry. Information from our experiments is used in the setting of feed standards, development of management practices and (relative to the subject before us) evaluation of feeding stuffs.

Now we turn to the methods and significance of flexible feed formulation. Methods range from simple to complex, from so-called quick and easy estimations to computer calculations. Quick and easy estimations start with a previously used practical formula. Obvious changes in the relative prices of ingredients are a signal to the nutritionist formulator that it is time to change to formula. He reduces the proportion of more costly ingredients, substituting with less costly ingredients. If the substution significantly disturbs the nutrient values of the mix, further adjustments are made to bring the nutrient values back to the standard. Only a small number of nutrients (protein, energy, major minerals and vitamins) are usually considered in the quick and easy formulation. Formula cost is lowered but is seldom as low as that of computer calculated formulas.

The use of electronic digital computers for feed formulation has been developed so that large and expensive computers can be used on a time-sharing basis with other industries. Costs of computer services are low enough and returns high enough so that regular formula computations are made when only minor changes occur in the prices of ingredients. A very large number of nutrient values (amino acids, pigments, density, texture, pelletability, many vitamins and minerals) and a wide range of feed ingredients are often considered in this type of formulation.

Information developed by this method often leads to significant changes in purchasing and manufacturing practices. Purchasing personnel are provided information about the relative value of ingredients. This enables them to make decisions by giving preference to one ingredient over another in their purchasing function.

Manufacturing plants are provided with information about inventory and sales forecasts that help them to plan their production schedules.

The monetary value of flexible formulation is not easy to measure. It depends upon where one starts. If formula changes are made only once each year in a place where ingredient prices change as they do in the U.S., the value of more frequent changes would be several dollars per ton of feed produced. Computer service people estimate a savings of about one dollar per ton over the usual quick and easy method of formula calculations.

A dairy farmer using a commercial dairy grain ration saves an estimated $4.00 per cow per year in feed cost as a result of the use of the highly developed computer formulations. This is a small savings to the individual farmer, but there are over 500,000 dairy cows in Ohio. An egg production farms saves $75.00

per 1000 birds per year in lower feed costs. There are nearly 10,000,000 laying hends in Ohio. The savings from flexible formulation of feed used on dairy and egg producing farms in Ohio is well over $2,000,000 per year.

Further savings and income result from good advice given to farmers on the use of feeding stuffs on the farm. Dairy farmers utilize their own pasture, hay, grass silage, maize silage and grains (usually maize). The amount and kind of commercail feed used depends upon many production and cost factors. We collect the following information:

Nutritional value of the feeding stuffs
that are on the farm
Daily roughage consumption
Body weight of the cows
Rate of milk production
Fat content of the milk
Price paid for the grain ration
Energy level of the grain ration
Price received for milk

These factors are dialed into a small analog computer. The recommendations as to level of grain ration to be fed are based upon the information read on the computer dials. Dairy farm income is usually improved when the farmer sees on the computer that he can get more income by feeding his cows more high energy grain. This information is right before his eyes when he turns the dials and reads the answer himself. Income in some cases has increased by $18.00 per cow per year.

Egg production feed programming usually arises out of change in protein or energy requirement as a flock of pullets mature, reach peak production and then fall off in production of eggs as they grow older. Here the question is how much protein is required at these various periods of the twelve or fourteen months of the egg production cycle. The following factors are considered in this computation:

Body weight of the hen.
Environmental effects
Rate of growth of the hen
Number and weight of eggs
Energy level of the feed
Amount of feed being consumed
Quality of protein in the feed
Cost paid for feed
Price received for eggs

Information obtained from this computation includes the recommended crude protein content of the feed and income over feed cost.

Egg production income is affected when we are able to lower the cost of feed by decreasing the protein or energy. Feed savings are usually about $25.00 per 1000 birds per year.

Flexible feed formulation and on-the-farm programming of feed use significantly lower the costs of meat, milk and egg production. The use of computers can increase our knowledge about the best possible way to use feeding stuffs on a world-wide basis. This knowledge could help trade in feeding stuffs to come closer to the ideal of providing the most economical feed to the farmers of the world.

ELISABETH GATUMEL
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"HYDRO-CARBON GROWN YEAST"

BEFORE

THE INTERNATIONAL COOPERATIVE ALLIANCE
AGRICULTURAL COMMITTEE

PARIS, FRANCE

SEPTEMBER 8, 9, 10, 1969

CONFERENCE ON COOPERATIVE TRADE

IN

ANIMAL FEEDING STUFFS

PAPER PRESENTED AT THE CONFERENCE ON CO-OPERATIVE MARKETING OF ANIMAL FEED PRODUCTS ARRANGED BY SYNCOPAC 8-9TH SEPTEMBER 1969

INTRODUCTION

In 1959, the research team at BP's Lavera Refinery [illegible] du-Rhône) showed that gas oil could be used for the cultivation [illegible] protein rich microorganisms - in this particular case yeasts - [illegible] on the paraffins contained in this product. Immediately following [illegible] initial discovery, BP undertook a very heavy research programme [illegible] to determine the feasibility of producing a marketable protein [illegible]. Throughout the work, the BP team was assisted with fundamental [illegible] work by the C.N.R.S. Bacterial Chemistry Laboratory in Marseilles.

...

It was soon established that proteins could be produced on a laboratory scale not only from the gas oil fraction as in the case of the original discovery but also from a number of other oil cuts.

In 1963 BP decided that research would be reorganised and directed along two main lines, i.e. with Lavera using gas oil as the raw material and Grangemouth in Scotland using pure normal paraffins.

Pilot plants designed to work on these two processes were built and brought into service, the Lavera plant having a production capacity of up to half a ton per day of protein concentrate. This unit has supplied the product needed for the numerous tests carried out on animals so far and enabled a variety of technological problems to be investigated and resolved.

In November 1967, BP announced its decision to build the first protein plant at Lavera using the gas oil process and with a design capacity of more than 16,000 tpa. In August 1968 it was also decided to build a plant at Grangemouth using the normal paraffin process, with a design capacity of approximately 4,000 tpa. Both these plants should be on stream by the end of 1970.

BP biosynthetic proteins which are now entering the first phase of industrialisation are thus the result of a technological discovery, the many potential applications of which have not yet been fully explored.

THE PRODUCT

Processes

There are two production processes based on the nature of the culture substrate selected ; the two processes are complementary since they enable the range of usable hydrocarbons to be broadened.

The first process, which was developed at Lavera and uses gas oil as the substrate comprises three stages, i.e. :

(i) culture of microorganisms in an aqueous phase enriched with the inorganic constituents needed for growth and in which the gas oil is dispersed ;

(ii) collection of the biomass formed ;

(iii) purification of the microorganisms to remove hydrocarbon residues.

The second process, developed at Grangemouth and in which the substrate used is purified n-paraffins extracted from lighter hydrocarbon fractions, basically comprises the first two stages only owing to the nature of the starting material used ; purification is unnecessary since the paraffins used are of the edible type.

Hence, in both cases the products obtained are the result of the biological growth of microorganisms (yeasts) which are already known and used in food. Thus, the products involved are natural.

The remainder of this presentation is concerned solely with the biomass cultivated on gas oil and which is to be marketed in France as a world "first" in early 1971.

Properties of the Protein Concentrate

The biomass obtained is not an end-of-the-line product, fixed as regards presentation, texture and composition. It may be modified or processed and the production process gives by-products which can themselves be marketed.

The protein concentrate obtained is a creamy-white yeast powder ; it is tasteless and odourless, has a high protein content (66-70 %) and remarkable nutritive value and stability. Its amino-acid balance, excepting the methionine content, is comparable to that of proteins of animal origin with high biological value ; the lysine content is particularly advantageous.

The corollary of the highly efficient purification technique employed is the near-total elimination of lipids (approximately 1 % retained), yielding a perfectly stable product with no problems as to shelf-life.

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Lastly, its bacterial purity is far superior to that of analogous products.

Zootechnic Results

Very extensive toxicological tests have been carried out, particularly in the Netherlands, on tens of thousands of laboratory animals - mainly rats and mice - over several generations. The highest possible safety factor has been sought and studies have been concerned with short-term and long-term acute toxicity, carcinogenic activity, reproduction and fertility, and induced toxicity ; studies of possible toxicity and carcinogenic activity of the gas oil substrate are also being pursued.

At the same time, zootechnic nutrition tests, including tests in industrial application, are also being carried out in France and the Netherlands to determine the nutritive value of this new food product and its economic advantages. These tests relate to species of animals bred in a conventional manner (chickens and laying hens, pork pigs, sows and piglets, turkeys, rabbits, cats and dogs, fish, fur-bearing animals, etc.). The incorporation of 5 to 15 % of BP Protein Concentrate in the feed generally gives satisfactory results, particularly with respect to rate of growth, feed conversion, mortality, carcass weight and quality, and egg production.

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All these tests, which were begun in 1963 and are still continuing, confirm the innocuous nature of the product and the practical advantages of its incorporation in animal feed formulations which are now standard.

In November 1967, an appropriately documented application for authorisation to use the product was filed with the "Service de la Répression des Fraudes et du Contrôle de la Qualité". The Inter-ministerial and Inter-industrial Committee which examined our case gave a favourable ruling on 10th October 1968.

Economic interest of BP Protein Concentrate

Seen against the growing demand for animal feed protein, production of BP Concentrate containing 66-70 % of protein emerges as a new source of high protein-content raw material of great economic interest. The Concentrate is of direct interest both to stockbreeders and balanced feed manufacturers. It is also of advantage to agricultural producers since it enables them to use their own cereals in a rational manner ; the latter, while generally rich in methionine and cystine, are very poor in lysine which is the limiting amino-acid contained in high concentration in the BP Concentrate and making it an excellent supplementary product.

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In addition, the advantages to farmers of this protein concentrate are as follows :

(i) Uniform quality - the composition of the concentrate can be guaranteed with much higher accuracy than in the case of comparable products, which is a factor of great value in computerised formulation of balanced feeds.

(ii) Price which is competitive with those of other protein products.

(iii) Price stability - in contrast to the position with animal cake and meals there are no high-amplitude variations.

(iv) Product stability means indefinite shelf-life.

(v) Ease of handling and blending with cereals owing to suitable particle size.

(vi) Absence of odour and taste - this gustatory inoffensiveness means that it can readily be mixed with cereal flours, which is not the case with fishmeals.

(vii) Flexibility of production independently of climate, thus ensuring regular delivery.

(viii) Having a high-protein content (66-70 % C.P.) product available brings down handling and transport costs (most soya meals, which are currently the most widely used, contain only 44 % C.P.).

(ix) Nutritional value (particularly with respect to rate of growt feed conversion and meat quality) equal to or better than tha of comparable products.

It should be stressed that not only does BP Protein Concentrate fortify cereals (barley, wheat, maize), it also enables larger quantities of the latter to be used ; e.g. in a standard pig or chicken feed, 100 parts of Soya 44 : may be replaced by 60 parts of BP Concentrate plus 40 parts of wheat to give comparable zootechnic results, all other things of course being equal.

Hence the product has a multiciplity of advantages and the market for it is both big and growing strongly, particularly in France and the E.E.C.

FUTURE PROSPECTS

Industrial development of this new process will of course depend on the results of the first stage of production by the 16,000 tpa. plant. If these are in line with our expectations there appears to be no technological obstacle to production of this protein concentrate in any country as desired. Nor is there any obvious reason why these proteins cannot be used in any type of climate since stability and shelf-life tests making every allowance for temperature and humidity variations, have not so far revealed any contra-indication.

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Protein requirements are substantial. In addition to requirements relating to the direct use of high protein-content products by stockbreeders using their own production, which are difficult to define owing to the fragmentary nature of available data, consumption of balanced feeds in France amounted to some 5.5 million tons in 1968 and is expected to reach 7 million tons in 1970, this including more than 2 million tons of high protein-content products. The rate of growth is high, approximately 12 % per annum on average since 1960, and is expected to remain so in future years.

The size of requirements for France is reflected in the case of the Common Market countries and the U.K. (ca. 26 million tons for the E.E.C. and 10 million tons for the U.K. in 1966).

More generally, as concerns world requirements, production of proteins from conventional sources is increasing all too slowly with respect to requirements, which accordingly enhances the value of the emergence of a new means of production for the market.

INTERNATIONAL CO-OPERATIVE ALLIANCE

AGRICULTURAL COMMITTEE

Conference on Co-operative Trade in Animal Feeding Stuffs

Paris, 8th - 10th September, 1969

RECOMMENDATIONS OF "CONFERENCE ON CO-OPERATIVE TRADE IN ANIMAL FEEDING STUFFS"

Co-operative organisations from ten countries (Austria, Bulgaria, Canada, France, Federal Republic of Germany, Iceland, Italy, Japan, Poland and U.S.A.) dealing in animal feeding stuffs met in Paris on the 8th and 9th September of this year and discussed difficulties and promotion of this trade.

The Conference was organised by the Agricultural Committee of the I.C.A., and was attended by the observers of F.A.O., I.F.A.P. and EUROGRAIN.

In the absence of Dr. L. Malfettani, Chairman of the Agricultural Committee, the Conference was opened by Mr. P. Reymond, General Secretary of the Confédération Française de la Coopération Agricole, and Member of the Agricultural Executive of the I.C.A. Mr. Berthonneau, President of the Syndicat National des Coopératives de Production et d'Alimentation Animales, and Mr. Benoist, President of the Union Nationale des Coopératives Agricoles d'Approvisionnement, welcomed the participants on behalf of the French host organisations.

The following reports were presented to the Conference:

"Prospects of International Trade in Animal Feeding Ingredients among Co-operatives", by Mr. T. J. Gorman, President, Farm Bureau Co-operative Association Inc., Columbus, Ohio, U.S.A.

"Fish meal trade", by Eng Agr. Mr. P. Jaubert, Secretary, Fish Meal Exporters' Organisation, Paris, France.

"Hydro-carbon grown yeast" by Miss E. Gatumel, the Biological Division of B.P.

"Increasing Farmers' Income by the Use of Flexible Formula and Precise On-the-Farm Programming of Feed Use", by Mr. M. VanWormer, Director of Research, Farm Bureau Co-operative Association Inc., Columbus, Ohio, U.S.A.

"Requirements and Problems of the West European Mixed Fodder Industry", by Dr. A. Gaschler, Raiffeisen-Futterring e.V., Bonn, Federal Republic of Germany.

"The Role of Co-operative Movement in Production and Distribution of Feeding Stuffs in Poland", paper presented by the Central Agricultural Union of "Peasant Self-Aid" Co-operatives, Warsaw, Poland.

"Position and Trade in Animal Feeding Stuffs in Japan", by Mr. S. Tanaka, Manager, Planning Department, Zenkoren, Tokyo, Japan.

"Inter-Relationship between Stage of Production of Animal Feeding Stuffs and Economic Development in Various Countries", by Eng. Agr. Mr. J. Archambaud, Secretary General, Syndicat National des Coopératives de Production et d'Alimentation Animales, Paris, France.

These reports and the discussion which followed brought forward the following problems:

1. At present in some countries, because of political and technical reasons, there are surpluses of products, mainly grains, which are used for animal feeding stuffs. These are surpluses only to the extent that they cannot be transformed into protein rich products which are required for human consumption.

This processing through animal production should be the major concern of co-operatives which produce compound feeding stuffs. In co-operatives' objectives, grains should be considered as a means of production, whereas meat, eggs and milk should be considered as final products.

Economic competition increases the threat of big grain houses that are on the whole still better equipped to meet the challenges of international trade.

2. Contrary to the trend in carbo-hydrates, there are prospects of a deficit in protein foods and grains with protein content suitable for conversion into final products of higher quality.

This field offers a great challenge and may open new lines of activities for co-operative organisations, subject to the following adjustments:

a) Improvement in the services offered to farmers by the feeding stuffs industry. Here a tendency of movement was noted, based on new techniques, from fixed to flexible formulation in feeding. This may have impact on the pattern of international trade.

b) Better use of the opportunities of more direct inter-continental co-operation of co-operative organisations.

Farmers should get protein through the shortest channels and without intermediaries.

c) Relations and contacts between producers' and consumers' co-operatives should develop in a way that would enable them, as the only genuine representatives of both producers and consumers, to achieve higher gains by taking over the services of marketing and distribution. These gains should increase for the benefit of farmers and consumers also by improving methods of production and the distribution network. The trend should be towards long term arrangements and co-operative vertical integration in general. This subject deserves further study.

d) The production of livestock should be encouraged as a means of increasing the amount of protein available for human consumption and as a means of utilising in the most beneficial way the surplus feed grains available in the world. Animal agriculture producers are the best customers of feed grain and feed stuff producers and the conditions and policies under which they operate should be as beneficial to livestock producers as possible.

e) In certain countries where there are regulations limiting the number of livestock on the farm, these regulations should be eliminated and only sanitary regulations should be maintained.

3. Hand in hand with general adjustments based on trends and structural changes in international trade, more specific action should be taken in the work and organisational structure of co-operative organisations.

a) Co-operatives should become shippers wherever possible, and not remain shippers' suppliers. They have to widen their range of commodities according to consumers' market.

b) Skilled and trained management should be created to meet the challenge of competition with international grain houses. Personnel development policies should be adopted, including systematic training and better pay.

The example of Eurograin was mentioned in this connection as an effort to improve the position and work of co-operatives.

4. The setting-up arrangements to do a real service for participants and farmers producers were also proposed during the Conference:

a) Joint ventures such as leasing of ships, common ownership of mills and terminals for the benefit of co-operators from both sides of the ocean.

b) Amalgamation of U.S. experience in grain futures market with European experience in the shipping and fixing of freight rates in the Baltic Exchange.

c) Consideration of moving away from dealing in FOB prices in order to remove the middleman.

d) Relation between channel of trade and grain quality.

e) Location of representatives at the point of export of grain (Japanese experience).

f) Exchange of ideas and information on nutrition and management of poultry and livestock as well as other technical aspects of feed manufacturing and distribution.

5. Promote an analysis of the strength of the present producers' and consumers' co-operatives dealing in feed grains as to: present volume, present investment, and potential volume for international trade in the future.

6. The Conference noted with pleasure that the representatives of co-operatives participating at the Conference decided unanimously that trade between co-operatives should be developed.

It noted, however, that many obstacles were still in the way of this trade despite the desire of the co-operatives who could offer services or goods and those who would be in a position to purchase them.

These obstacles are of a very varying nature:

a) They are due most often to government restrictions of a technical, monetary or commercial nature; at present, no other action is feasible than to brief governments and to co-operate with specialised international organisations.

b) Certain difficulties are due to the non-availability of information in co-operative organisations in various countries. It would be desirable to spread information and exchange of experience on an international level.

A trade policy of this sort can only be conceived within a concept of international marketing requiring medium and long term studies which would extend studies made by international organisations.

7. The delegates showed interest in the report of the Agricultural Secretary concerning informal discussions with the International Co-operative Bank Co. Ltd., Basel, Switzerland, about how to set up a fund for the promotion of co-operative trade as one of the methods to improve economic relations among co-operatives. Their view was that it merits further consideration.

BZ/RG

September, 1969

INTERNATIONAL CO-OPERATIVE ALLIANCE

AGRICULTURAL COMMITTEE

Conference on Co-operative Trade in Animal Feeding Stuffs

Paris, 8th to 10th September, 1969

S U M M A R Y

"World Market for Fishmeal" by Eng. Agr. Mr. P. Jaubert, Secretary, Fish Meal Exporters Organisation. Paris.

Peru dominates the world market in fishmeal. Out of annual sales of 3.5m. tons, it is responsible for 2m. tons. Various efforts have been made by the producers to try and organise the market.

Prices fluctuate sometimes very considerably, because the users only slowly alter their pattern of demand with regard to availabilities of supply, and these vary rapidly in a quite unpredictable manner.

The wide fluctuations in prices could be considerably reduced if all the users reacted quickly to price alterations, as is the case in the U.S.A.

Conclusions

Despite all the efforts made by the producers to organise the fishmeal market, it is still not possible to ensure stability in prices, as is the case for soya.

Variations in the production pattern, sometimes sudden and unpredictable, the impossibility of curbing demand in time when it can be seen that this will outstrip supply, or to get it going again quickly when supply is plentiful - all these are the principal factors making for instability.

It is possible that in the future a much greater number of users will react in the same way as the Americans. This would help to even out the peaks and lows in prices.

This is still in the hypothetical stage, and it is not the only measure that can be taken to alter the pattern of the market in fishmeal.

P.T.O.

It has been estimated that if the rate of production remains more or less at today's levels, the increase of production of compound foodstuffs throughout the world will force users to decrease the rate of incorporation of starter or breeding elements only, where fishmeal is essential to obtain rations giving maximum efficiency.

There have been many new theories on the influence exercised by new sources of protein on the fishmeal markets.

Lastly, here and there throughout the world, a number of plants are being set up to handle fishmeal products for human consumption. The utilization of fish by-products (FPC, Autolysats, etc etc.) for feeding man is the next stage envisaged by today's fishmeal producers. In their view, this will take some 15 years to achieve.

The hope that fish will at last be the province of, and reserved for, man, will at long last be realized.

INTERNATIONAL CO-OPERATIVE ALLIANCE

AGRICULTURAL COMMITTEE

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Paris, 8th to 10th September, 1969.

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Farm Bureau Co-operative Association, Inc.	Mr. M. Vanwormer (L)

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"PROSPECTS OF INTERNATIONAL TRADE IN ANIMAL FEEDING INGREDIENTS AMONG COOPERATIVES"

BEFORE

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SEPTEMBER 8, 9, 10, 1969

CONFERENCE ON COOPERATIVE TRADE IN ANIMAL FEEDING STUFFS

My appearance here today is in the dual role as the President of a wholesale marketing and supply cooperative and as a farmer who operates an 870 acre grain and livestock farm near Cincinnati, Ohio, U.S.A. This status causes me to be doubly interested in the subject that I have agreed to discuss at this time. Possibly some of my own production will be marketed through the Cooperative I represent and find its way to this part of the world, where we observe that appetites must be served in much the same way as they are at home.

Certainly we are all greatly indebted to Mr. Zlateric and his associates for having arranged for the accomodations that are made available for us here today. The idea for this meeting was conceived three years ago at the ICA conference in Vienna and there has been a substantial exchange of correspondence since that time, pertaining to the many arrangements for the facilities and program that brings us together here today. Furthermore Mr. Zlateric made a trip to our country to promote our mutual interests in Cooperative marketing and in obtaining first-hand information intended to make this conference interesting and informative.

It's always a pleasure to come to Paris. I am sincerely pleased that arrangements could be made to meet here in the city of beauty and hospitality. I am sure it will add immeasurably to the success of our conference.

Perhaps it would be appropriate to review some of the conditions that compel our Farmer Associations to seek out new markets; as well as to find new ways of marketing the products of our soil:

(1) Over sixty million acres of our land is retired from grain production by Government programs designed to limit the potential output to an amount that can be consumed in domestic and export markets, allowing for the maintenance of a reasonable inventory, carried forward.

(2) Farm technology, including a greatly increased use of fertilizers, has brought about fantastic gains in our yields of all grains, per acre cultivated. For example, in our state of Ohio, we produced 42 million bushels of wheat on 1,960,000 acres in the year 1940 as compared to 45 million bushels produced on 1,227,000 acres this last year, 1968. Even more dramatically our corn yields moved from 38.0 bushels per acre in 1940 to 84.0 bushels per acre in 1968.

(3) Exports of wheat are declining as world supplies are reaching large surplus inventories. We must realize, too, that a few countries have substantial increases in their production, even to the point where they are now exporters. And, we can expect still more nations to rapidly become self-sufficient in growing both cereal grains and feed grains as they adopt new technologies, improved seed, harvesting equipment, along with other labor saving devices.

Production controls in the United States will require 12% less planting for 1970 harvesting than was harvested this year; an all time low acreage since records were made available. This action is made necessary by the lack of export outlets, largely served by other surplus wheat countries.

(4) Soya Beans and the derivatives therefrom (meal and oil) are in less demand, as other oil seeds and synthetics come into greater use. It is estimated that the use of Urea has displaced the need for 70 million bushels of soya beans in the manufacture of animal feeds. Similarly our use of U.S. production of soya oil is reduced as a result of the importation of palm oil on a duty free basis from Indonesia and Malaysia. It is estimated that we imported 200 million pounds this year,

almost eight times more than was brought in, only four years earlier. Palm oil production increased 13% last year and an even greater increase is expected this year. Competition for oil markets will increase substantially as such other products become available. Only as an increased population consumes more meat and oils will there be need for additional soybean production, or the many other substitutes that are coming into use.

(5) Now we are reading about the results of a corn breeding technology that has been underway for several years. It is reported that a limited number of farmers have been furnished a new variety of seed corn for experimental use. It is expected to produce a crop containing 50% more protein than any type yet developed. This may bring about a major innovation in farming and in the feeding of livestock. Hogs that were fed the new high protein corn gained weight 50% faster than on normal corn. It will be tried on poultry too. The new corn may bring about a lower cost in pork and poultry production, the benefits of which will accrue to consumers at home and help reduce malnutrition in poverty-stricken lands abroad.

We mention wheat along with feed grains and oil seeds because the surplus supply of wheat makes it competitive in price with corn in recent weeks; and wheat has a feeding nutrient value of about 105% of corn. Acreage planted to corn has decreased over the last three years but increased yields per acre has caused the total production to remain at about the same level. The reduced planting was brought about by incentives offered by Government programs designed to discourage the use of substantial land that could have seeded if the grain was needed for domestic or export use. Inventories of corn that have been carried over from one year to another have been reduced because of a greater use each year than the production has been in a like period of time.

It should be stated here that the complaints about the quality of corn that was exported from the 1966 and 1967 harvests, and which aroused much criticism, was the best we had to offer. Weather conditions in the spring of both years caused late planting, resulting in a short growing season which brought a crop of very high moisture corn from the fields. This also accounts for the light test-weight, poor color and a generally lower nutrient value. Corn harvested in 1968 was a crop of good quality, well matured in the field without damage and did not break up badly in the drying and handling process. Our domestic users of this latest crop experienced very good results in their livestock feeding programs. Similarly, the quality of export corn should have been far more satisfactory during this year, providing no admixture was made with prior years corn.

This brings us to a point where this conference can set up the arrangements to do a real service for the participants represented here today and the farmer producers whose interests we serve. We have felt that the subject of grain quality among other problems, could be discussed and much could be gained by a face to face meeting of this kind. It seems to me that this question could be discussed more freely where representatives of one farmer cooperative is dealing directly with another similar organization. There should develop a new confidence of fair dealing that has not been possible when dealing through brokers, handlers and exporters. The original identity of good quality grain is sometimes diluted with lower grades in the exporting process, and we should be working toward a solution of this problem.

The thought occurs to me that the only foreign buyer of grain who have offices in the United States are those representing the Zenkoren Cooperative from Japan. Maybe we have something to learn from Mr. Tanaka (their manager of the Planning Department of Zenkoren, who appears on the Conference program tomorrow.) as to their experience and reasons for having representatives located at the point of export on grain destined to Japan. Possibly this arrangement would eliminate some misunderstandings that seem to crop up, at times, about the various facets of international grain trade.

Our Farm Bureau Cooperative, along with three other similar Cooperatives own and operate a Terminal Eleyator located at Toledo, Ohio on the Great Lakes waterway system. It has a silo capacity of 3 1/2 million bushels and has a vessel loading capacity of 50,000 bushels per hour. It is known as Mid-States Terminals, Inc., and receives grain directly from the farming area in reasonably close proximity to Toledo. More than 25 million bushels, representing a value of $66 million, has been handled through this elevator in a single year. After having made an extensive tour of the Rotterdam harbor just three years ago, it is obvious that European facilities for handling large vessels are the finest in the world. Could the use of these facilities at origin and at destination not become a means for the physical handling of grains that would implement the purpose that brings us together in this Conference?

If only we could accomplish some direct trades between Cooperatives in our respective nations we would gain experience and trust in the way of providing quality products, credit accomodations and price advantages without the need for intermediate brokers and handlers. This would put us a long way toward providing a much needed constant market outlet for U.S. suppliers of grain, oil seeds and meat or poultry supplies compatible with the supply needs of the importing nation. This is all designed to better serve the farmer members of all cooperatives, whether they be comsumer or producer associations in your country or mine. These are the people that constitute the sole purpose for our existence as a Cooperative.

Then for the longer range considerations we probably need to understand what ultimate goal is being sought by both the buyers and the sellers. Specifically I refer now to the question of where the processing of grains will take place some ten years hence; or to go beyond that, we should be looking to where the feeding stuffs will be converted to livestock and poultry products.

At this point is it not proper that we appraise the role of Governments in the whole structure of the future developments of the considerations we propose here?

Will there develop greater or less restrictions to international trade? What will be the future programs imposed upon producers of agricultural products by our individual Governments? Or is it possible that we will some time learn that Governments can't possibly manage farm production?

There is no doubt but what the economics of this whole process of harvesting grain from the fields until it is converted to meat on the table will decide that question, in time. I believe some choice and prime cuts of meat, amounting to only about a half million dollars in value, have recently been exported from the United States to one or two European countries. We are told the acceptance has been quite good, which means that as more people learn about it, that the demand is sure to increase. This trend will develop more and more with the better earning power now becoming more common in all the world. Where will this meat be produced? Will it be cheaper to ship the meat, or the feed to produce the same product at the point of consumption.

Then we in the U.S.A. become aware that we are not prepared to meet the price competition of other nation's vessels in the movement of freight cargo to Europe. You are experts in that field of knowledge, considering too that you are intimately close to the fixing of freight through the facilities of the Baltic Exchange in London. Or, should we be looking ahead to the ownership and operation of vessels by the cooperative participants in this program? Similarly, we in the United States avail ourselves of an insurance to prevent large losses in market fluctuations by making hedging trades in the Chicago Futures Market. It seems that the use of our combined knowledge along with the facilities that are available to each of us should accrue great benefits to a joint venture such as is proposed here.

My mention of these many facets of negotiating trade between our respective countries is intended, not to give answers, but to provoke thinking, in the hope

we can bring technical people together to activate the concept of direct trading. This of itself would necessitate many confrontations of our Cooperative people in all nations, that surely will lead to a better understanding, resulting in mutual benefits to all participants. Beyond that, we have a responsibility to provide food to all people and it will take the best talents we can get together, working toward the goal of providing the best nutrition possible, at the least cost attainable.