

THE BEEF AND VEAL INDUSTRY ITS INTENSIFICATION IN THE EUROPEAN ECONOMIC COMMUNITY AND SOUTH AFRICA'S EXPORT POSSIBILITIES

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In 1980, the European Economic Community of Nine, with a probable consumption of some 7,5 million metric tons, will be that area with the second highest consumption of beef and veal (two-thirds of the total consumption of the United States). By then, these two important geographic areas of the world, with a population representing only one-tenth of the world's total, will be consuming four-tenths of the world's beef and veal production (Table 1). This is one of the two aspects of the problem dominating the world's beef and veal trade. The other is best represented by the fact that while in 1972 we had a major shortage in "feeder calves", it looks as if in 1974 there will be a lot of them available in Europe and the U.S.A. Moreover, European refrigeration facilities are said to be over-full. This is an oversimplification of this unpredictable international technico-commercial problem which, during the next decade, can be said to be the agricultural equivalent of what petrol is to industry.

There has been no other single aspect of agricultural production on which more contradictory opinions have been expressed since the Second World War – both locally and abroad – be it from an economic, political, technico-commercial or purely scientific point of view. There is no

single product for which predictions for the next decade are more difficult to make – both on an international and national level – particularly when attempting to move away from the traditional "tonnage" predictions and attempting to make a more sophisticated analysis by introducing the four principal parameters, namely:

1. Offer and demand per quality class (which introduces *de facto* the essence of the generally misinterpreted and misused terms of "average export quality" versus "average local quality").
2. Distribution of slaughtering ages and weights, availability of dam stocks and national methods of selection applied.
3. Availability and type of pastures – be they extensive or intensive, and the price per kg live-weight paid to the producer/kg of feed grain locally available.
4. The price ratio of one litre of milk paid to the producer/the price of one kg of liveweight paid to the producer.

Table 1

*World beef production and consumption**

	Average 1964/66		1970			1980 Predictions	
	Total production 1 000 tons	Per capita consumption kg	Total production 1 000 tons	Total consumption 1 000 tons	Per capita consumption kg	Total production 1 000 tons	Total consumption 1 000 tons
World total of which:	33 000	9,7	39 970	39 720	10,7	51 711	53 364
E.E.C.	4 736	22,1	5,434	6 054	24,0	6 561	7 600
Other West European countries	1 099	11,5	1 416	1 483	14,3	1 638	2 121
North America	9 730	46,7	11 244	11 894	51,6	14 093	15 291
Oceania	1 238	60,2	1 450	960	67,8	1 941	1 214
Africa	1 399	5,3	1 605	1 517	5,4	2 411	2 266
Latin America	5 626	19,5	7 000	5 990	21,1	9 805	7 940
Eastern Europe	4 620	13,9	6 587	6 570	18,9	8 312	8 987
Near & Far East	1 831	1,8	2 085	2 139	1,9	3 085	3 333
Socialist Asia	2 007	2,3	2 323	2 246	2,5	2 884	3 317

* O.E.C.D. Statistics and previsions

One could naturally introduce a multitude of other economic, genetic and environmental parameters – as is the current scientific custom. Parameters that will differ from one micro- or macro-geographic region to another, from one grading system and marketing condition to another, and even from one economist, scientist or market specialist to another (sometimes found as close to one another as two adjoining offices in the same building). This can only have the effect of complicating an index which should be kept as simple as possible to enable the evaluation of future developments of marketing and consumption of beef and veal.

The development prospects of the enlarged European economic community

Together with the United States and Japan, the E.E.C. will remain for some time to come the major im-

porter of cattle and beef in the world (Tables 2 and 3) and for us South Africans, the best market of high-quality cuts and hind-quarters, as well as deboned "factory meat". To assess the importance of this statement, one must first attempt to evaluate the relative importance of this agricultural commodity as a single vertical element of a complex economy currently dominated by what is presently called the "Common Agricultural Policy of the European Economic Community" (Table 4). One must also undertake a horizontal comparison of the relative importance of the different regions of the European continent, as "producers" and "consumers" of meat and other agricultural products.

In view of the world shortage of beef and veal, as well as of calves for rearing and fattening (in fact, the price of eight-day-old calves has doubled in 5 years), the European Community will in the future do its utmost, not only to maintain its existing calf-producing potential, but to increase it without increasing the output of milk and dairy products.

Table 2
Trade in beef and veal in some European countries ('000 metric tons)

Country	Exports		Imports	
	1966–68 Average	1972	1966–68 Average	1972
<i>E.E.C.</i>				
France	112 700	123 100	35 100	153 400
Germany Fed. Rep. of	16 400	46 000	143 900	257 900
Italy	—	0 800	283 700	334 100
Netherlands	70 100	114 700	42 000	77 500
Belgium – Luxemburg	19 100	29 000	26 800	33 300
United Kingdom	5 100	52 900	274 700	277 800
Denmark	96 600	69 900	0 800	1 000
Ireland	111 700	128 900	—	0 200
<i>Other West European countries</i>				
Austria	4 000	6 200	3 400	12 000
Finland	0 700	6 000	3 200	1 300
Norway	0 700	0 200	3 500	5 800
Sweden	21 400	10 000	7 000	7 600
Switzerland	—	0 200	25 600	35 300
Greece	—	—	37 600	40 900
Spain	—	0 400	101 200	78 400
Portugal	—	—	19 100	31 900
<i>Eastern Europe</i>				
Yugoslavia	79 300	52 000	—	2 800
Bulgaria	7 200	—	8 600	—
Czechoslovakia	11 500	—	42 700	—
Hungary	23 700	—	9 300	—
Poland	22 200	18 100	10 800	7 900

Table 3
Trade in live animals in some European countries

Country	Exports		Imports	
	1966-68 Average	1972	1966-68 Average	1972
<i>E.E.C.</i>				
France	251 700	959 200	15 900	48 000
Germany, Fed. Rep. of	273 700	697 800 ^{a)}	242 000	188 800
Italy	—	0 300	1 384 400	2 614 200
Netherlands	62 100	98 700 ^{b)}	65 900	136 100 ^{b)}
Belgium - Luxemburg	102 500	107 800	113 500	227 300
United Kingdom	204 000	191 900	612 000	493 900
Denmark	143 300	38 300	—	0 300
Ireland	640 700	597 100	122 200	99 800
<i>Other West European countries</i>				
Austria	138 500	158 600	—	0 600
Switzerland	6 700	13 300	14 600	17 000
Greece	—	—	19 900	43 410
Spain	—	0 800	10 500	23 700
<i>Eastern Europe</i>				
Yugoslavia	111 600	171 000	—	0 700
Bulgaria	74 900	—	1 200	—
German Democratic Republic	73 800	—	0 300	—
Hungary	176 000	219 000	0 300	—
Poland	113 500	307 300	0 300	0 100
Rumania	69 000	—	0 700	—

a) Mainly calves

b) Excluding trade with Belgium-Luxemburg

Due to current weakness in production structures, neither the producer price policy nor the favourable terms offered for the importation of calves would in themselves have achieved this result. Direct incentives at producer level were, therefore, necessary, and the recent decisions taken in Brussels - despite certain apparent differences between the member states - was clearly directed towards this aim. However, the measures adopted by the E.E.C. will most probably not alleviate a major shortage in the Community. As a consequence of production continuing to follow a cycle, an annual deficit varying between 500 000 and over 1 000 000 metric tons, according to the year, may be expected between the present date and 1980-1985. One can, therefore, reasonably assume that for at least another 10 to 15 years, it will be possible to consider the interest of non member countries in exporting to the Community, especially as the greater part of this deficit, particularly with regard to meat for processing and animals for fattening, could be covered by imports totally or partially exempt from levies.

An important consideration is that the Community, for a period extending from December 1972 to September 1973, was obliged to suspend customs duties and levies in whole or in part, depending on the product. On the other hand, the present so-called "E.E.C. beef crisis" can, at least in part, be attributed to the intervention of third parties. It is, in fact, dangerous to overestimate these intra-Community differences of opinion in the long run. It is noteworthy that for example the present French surplus is only due to a rising production of intensively fed young bulls (Table 5) which are too light for the French market. These carcasses are specially produced for the North Italian market, and because of the financial situation in 1973, the exports from France to Italy declined by 15%. The result is that this bull's meat had to fill the French refrigeration units, creating an unanticipated "surplus". The "surplus in feeder calves" experienced in the Federal Republic of Germany and France, can also be attributed to the same reason (Table 6), a decrease of 10-12% in Italian imports.

Table 4

Agricultural statistics of the E.C. (1971)

	E.E.C.	France	Germany	Italy	Nether-lands	Belgium	Luxem-bourg	Denmark	Ireland	United-Kingdom	Greece
A. Population and land use											
- Total area (100 ha)	152 540	54 703	24 703	30 123	3 662	3 051	250	4 307	7 028	24 401	13 194
- Population (millions)	255,2	51,5	61,5	55,0	13,3	9,8	0,3	5,0	2,9	55,9	8,9
- Active agricultural population (millions)	10,80	2,90	2,41	3,70	0,33	0,18	0,16	0,27	0,29	0,72	1,40
- Annual %variation per year	- 4,3	- 3,3	- 3,7	- 5,1	- 3,1	- 4,5	- 3,1	- 3,1	- 3,3	- 3,6	- 3,4
- Population density (no/km ²)	168	94	247	183	394	321	133	115	42	229	68
- Total agricultural area (100 ha)	94 602	32 945	13 504	17 649	2 139	1 586	134	2 940	4 795	18 910	9 070
- Forage areas and grazing (100 ha)	54 223	18 783	6 252	7 984	1 343	842	84	752	4 263	13 920	5 200
B. Farm structure and finances											
- Number of farms (thousands)	5 698	1 421,6	1 0831	2 174,8	164,1	130,4	6,9	138,7	270,5	308,2	1 000,0 ²⁾
- Average farm size (ha)	14,6	21,2	11,7	7,7	13,0	11,6	19,4	21,2	17,7	40,2	4,0 ²⁾
- Percentage of G.A.P.	5,6	6,6	3,7	10,2	6,0	4,4	4,4	7,9	17,0	3,2	17,9 ²⁾
- Part of agricultural products in the imports (%)	-	18,5	22,9	28,1	20,7	16,3		12,1	14,5	24,9	12,0
- Part of agricultural products in the exports (%)	-	19,5	4,4	9,5	31,1	10,7		39,3	49,8	6,6	55,0
C. Animal Industry											
- Cattle population (thousands)	74 170	21 902	13 832	8 669	4 107	2 649	192	2 788	6 441	13 485	988
- Pigs (thousands)	70 017	11 215	20 969	8 980	6 158	3 912	106	8 626	1 309	8 742	380
- Sheep and goats (thousands)	52 125	11 200	893	8 988	584	180	4	62	4 200	26 014	11 750
- Beef and calves meat ('000 T.)	5 822	1 697	1 355	757	341	259	15	231	375	795	88
- Pork ('000 T.)	7 756	1 450	2 373	370	720	530	10	760	525	1 018	66
- Mutton, lamb and goat meat ('000 T.)	537	115	11	31	10	1	-	2	137	230	96
- Poultry meat ('000 T.)	2 771	770	258	631	308	112	1	79	32	580	50
- Cow's full milk ('000 T.)	91 913	27 276	21 856	9 391	8 239	3 745	217	4 630	3 629	12 930	571
- Butter 1)	1 274	398	407	56	100	81		104	59	69	-
- Cheese 3)	2 400	805	503	474	290	41		115	29	143	133
- Ewe's and goat's milk ('000 T.)	3 752	740	899	570	276	280	5	85	40	857	82
D. Consumption (kg/pers.)											
- Meat (all)	74,0	93,7	80,8	53,3	60,7	79,6		62,0	74,0	71,0	51,5
- Of which beef and calf	24,0	30,0	23,8	24,2	21,0	27,3		22,0	28,0	21,0	16,4
- Butter	7,2	9,5	8,6	2,0	2,8	10,1		9,1	12,6	8,7	0,9
- Margarine	7,3	3,5	8,5	1,2	21,4	12,3		18,1	-	5,3	-
- Cheese	9,2	13,8	9,2	9,8	8,2	7,2		9,3	2,2	5,2	14,8
- Milk	99,0	112,7	101,8	65,5	163,9	92,5		121,0	213,0	143,0	72,2
- Eggs	-	12,5	16,3	10,6	11,2	14,1		10,9	13,8	14,7	10,7
- Other oils	-	9,9	4,6	19,3	2,7	3,6		13,0	4,7	5,6	17,2

1) B.F. Equivalent weight

2) Approximative

3) All milk types

Table 5

Number of young bulls (12–18 months) produced by the French co-operatives mainly for the Italian market

Year	Number
1966	300
1967	2 700
1968	8 100
1969	38 500
1970 (Dec.)	83 000
1971 (Dec.)	112 000
1972 (Dec.)	117 900
1973 (Febr.)	229 500
1973 (May)	267 400
1973 (Sept.)	282 500

Table 6

Comparison of imports of live cattle and feeder calves into Italy (January–June)

	1972	1973
<i>Total imports</i>	12 241,00	11 076,00*
of which from:		
France	3 536,00)
Germany, Fed. Rep. of	2 595,00)
Poland	1 658,00)
Yugoslavia	751,00) Not available
Hungary	737,00)
Rumania	603,00)
Austria	437,00)
German Democratic Republic	382,00)
Other countries	1 542,00)

* The lower imports (–10%) are probably due to the financial problems and uncertainty experienced in 1973

Table 7

Cattle population of the E.E.C. (1972)

	Cattle	Cows	Number of cows milked	
			N	in % of the total number of cows
Germany	13 832 000	5 480 000	5 433 000	99
Benelux	2 945 000	1 093 000	1 063 000	97
France	21 902 000	9 368 000	7 118 000	76
Italy	6 669 000	3 949 000	3 165 000	80
Netherlands	4 107 000	2 006 000	2 006 000	100
Denmark	2 788 000	1 125 000	1 125 000	100
Ireland	6 441 000	1 894 000	1 894 000	100
United Kingdom	13 485 000	4 793 000	3 322 000	69
Total	74 170 000	29 711 000	25 129 000	84,6

Table 8

Slaughtering of mature cattle in the E.E.C. (%) in 1971-1972

Country	Oxen	Bulls	Cows	Heifers
France	27,4	10,9	44,3	17,4
Germany	2,5	49,5	32,1	15,9
Italy	13,9	65,8		20,3
Netherlands	5,2	14,0	64,8	16,0
Belgium	18,1	29,3	30,0	22,6
Luxembourg	20,7	36,6	18,0	24,7
United Kingdom	52,1	6,0	17,2	24,7
Ireland	44,6		23,7	31,7

It is thus felt that although the Community will be obliged to take action to encourage the production of beef and veal, whether indirectly through pressure on the market through guide prices, intervention prices, etc. or through direct incentives for example premiums, the logically expected total steady rise in consumption will provide non-member countries with export outlets which will not decrease even within the new context of the enlarged Community. (Rises in the E.E.C. Commission reference beef prices (in European units): 1971/72: 720; 1972/73: 750; 1973/74: 862; 1974/75 (Commission proposals): 950). It is possible that the enlarged Community, thanks to Ireland, might be in a position to cover a larger part of its requirements of beef and veal, but will nevertheless continue to have a considerable deficit of particularly deboned factory meat and high-quality cuts and hind-quarters. France is the best example of this, which even in the abnormal 1973 conditions, remains an important exporter and importer of beef.

In fact, a rational forecast shows that the "Nine" will have a beef and veal shortage of not less than 900 000 tons in 1980, i.e. $\pm 15\%$ of the amount consumed. The trends recorded between 1968 and 1973 confirmed the hypothesis that the considerable present shortage can only persist, in spite of more rational methods of production.

Intensification in the beef and veal industry

The answer to this "red meat shortage" has for the past decades led to the magic phrase "intensification and rationalisation of cattle meat production". Taking the United States of America as a typical example, the planners from France to South Africa and from Greece to Kenya, believed that it would suffice to concentrate production in a few "industrial units" to solve the world's beef problem, and even bring the prices down! Unfortunately, even in the United States with its highly beneficial environmental, economic and social conditions (the great planes of the West for breeding combined with the relatively low cereal prices for fattening and optimal mechanisation for milking and fattening), beef prices rose by 25% in eight months in 1972/73, and for milk production although there are some 13 000 dairy herds with over 100

cows each, they only represent a small fraction of the 700 000 dairy herds in the country!

In fact, intensification in cattle production is not necessarily a synonym of industrial-size production units and large-scale feedlots (bulls, heifers and/or young steers), but can and should also represent, for example, a more rational use of natural pastures, suckling cows fostering a second calf, extensive judicious crossbreeding undertakings on a national level, as well as the use of crossbred bulls in a well planned breeding programme.

Small-sized production units certainly prevent beef and veal from being produced at lower cost prices, but it is an illusion to believe that if Australia produces beef at 50% and the Argentine at 30% of the E.E.C. cost price, this is only due to farm size. In fact, the reason could be that these two countries produce mainly beef from pastures, while in recent years, Europe has been increasingly dependent on imported plant proteins and their skyrocketing prices. Another reason is that farmers hire ground from the state on a 99 year basis, and the only real costs entailed are development costs.

In any event, for Western Europe, animal production – and beef and veal production in particular – will for many years to come depend on average-size production units, even if the economic production conditions become more favourable. Beef and veal production will also depend to a greater extent on a cow population destined primarily for milk production (Table 7).

For comparative purposes and for the interest of South African producers, the case of an E.E.C. country (namely, France) is presented here, where intensification of meat production – in the sense of the feedlot fattening of young bulls – is recent (Table 5), and where the product as is the case in the Republic, is not very readily acceptable by the local population. In fact, the French are inclined to prefer traditional "red" (oxen and cows) or "white" (8 to 12 months old calves) meat, and not to favour the in-between types of "pinkish" meat, as is the case in Italy and the Federal Republic of Germany (Table 8).

Taking the above as a starting point, the following picture of this recently developed enterprise in France (mainly at the incentive of the Technical Institute for Cattle Production and local meat producing co-operatives) can be given:

- (a) It represents less than 10% of the adult animals slaughtered and about 5% of all slaughterings (Table 9).
- (b) More than half of all young bulls fattened come from milk herds, and the rest from specialised pure and crossbreeding beef herds (Table 10).
- (c) Production is concentrated mainly in two geographic areas, namely, the North East and the Brittany/Normandy complex (mainly as a by-product of large dairy herds).
- (d) The bulls and heifers are mainly from milk and dual-purpose breeds (62%), with a slaughter age varying from 12–13 months and 240 kg (French Friesian) to 16–18 months and 320–340 kg (specialised beef breeds and crossbreds, Table 11).
- (e) Intensive fattening is mainly on maize silage (58%) and dehydrated lucerne and pulp (18%) (Table 12).
- (f) The “feedlot unit size” can vary from a few animals on a family dairy farm (Brittany) to several thousand animals in a co-operative feedlot (Soual); the “open-air” type of feedlots being by far in the majority.

Table 9

Number of cattle (beef and veal) slaughtered in France according to sex and age

	1972		Variations (1973/1972) ¹⁾	
	Number of slaughtered animals (1 000 heads)	Distribution (%)	In number of heads (%)	In tons of carcasses (%)
Big cattle	<u>4 544²⁾</u>	<u>100,0</u>	3,6	- 1,1
of which:				
– Total females	<u>3 326</u>	<u>65,7</u>	- 6,7	5,4
Heifers		3,7		
Culled young females		15,2		
Culled adult cows		46,7		
– Total oxen	<u>861</u>	<u>24,3</u>	- 2,8	+ 0,8
Young oxen		14,3		
Adult oxen		10,0		
– Total bulls	<u>357</u>	<u>10,0</u>	+13,4	+ 17,2
Young bulls		8,4		
Adult bulls		1,6		
Calves (8 – 14 months old)	<u>3 333</u>	<u>100,0</u>	-10,0	4,5
Male calves	2 137	64,1		
Female calves	1 196	35,9		

1) Based on the available preliminary information during a period of 10 months

2) Underestimation

Table 10

Respective importance of the dairy and beef herds in relation to the total number of mature cattle slaughtered in France in 1972-1973

Type of animal	Milk herds		Beef herds	
	N	%	N	%
Cows	1 421	37,9	410	10,9
Heifers	583	15,6	168	4,4
Bulls	145	3,8	118	3,2
Oxen	408	10,9	499	13,4
Total	2 622	68,1	1 130	31,9

Table 11

Breeds used for young bull fattening in France (1973)

		Breeds used	Slaughtering age	Carcass weight	
Milk breeds:	62%	French Friesian (F.F.P.N.)	12-13 months	240-250 kg	
		Normandie	(5% only)		
		Montbéliarde	16-18 months	280-300 kg	
		Others	(95%)		
Beef breeds:	26%	Salers	16-18 months	300-340 kg	
		Charolais			
		Rustic breed x Charolais			
		Maine Anjou			
Crossbred (Milk breeds x beef breeds):	12%	Charolais x Normand) Charolais x F.F.P.N.)	12%	17-18 months	300-330 kg

Table 12

Diets used for fattening young beef bulls in France (1973)

Rations based on silage	<ul style="list-style-type: none"> - Maize - Grass - Beetroot pulp 	58% 4% <u>7%</u>	69%
Rations based on dehydrated products	<ul style="list-style-type: none"> - Lucerne and pulp - Graminae and maize 	18% <u>7%</u>	25%
Rations based on cereals	<ul style="list-style-type: none"> - Immature cereals - Dehydrated cereals - Wholesome foods 	1% 1% <u>4%</u>	6%

World beef shortage and the intensification of the South African cattle industry

Both the F.A.O. and O.E.C.D. experts expect the annual growth rate of world production to fall in the course of the current decade (particularly in North America and Eastern Europe). Potential total world demand, on the

other hand, can only increase in view of the rise in living standards and population growth. Consequently, those two bodies predict that the demand for beef and veal for which payment would be available, to exceed world production by 1 500 000 – 2 000 000 metric tons in 1980. This forecast simply means that there will inevitably be a levelling-off of the unsatisfied demand through a rise in the world price. (Tables 13, 14 and 15).

Table 13
Beef production by countries, 1970

Country	Beef production b) in 1 000 tons	Percentage of total beef production:		Proportion of beef in total meat production %	Beef production, in kg:	
		of total European production	of total world production		Per hectare of farmland	per capita
Austria	182	1,3	0,5	37	48	24
Belgium	244	1,7	0,6	28	155	25
Denmark	221	1,6	0,6	21	75	45
Finland	106	0,8	0,3	49	36	22
France	1 624	11,8	4,1	43	52	32
Germany, Federal Republic of	1 292	9,3	3,4	35	99	22
Ireland	335	2,4	0,9	61	70	115
Italy	550	4,0	1,4	35	31	10
Netherlands	318	2,3	0,8	24	148	25
Norway	56	0,4	0,1	39	56	14
Spain	308	2,2	0,8	25	10	9
Sweden	164	1,2	0,4	39	47	20
Switzerland	131	1,0	0,3	39	60	21
United Kingdom	997	7,3	2,6	37	51	18
Bulgaria	90	0,6	0,2	22	16	11
Czechoslovakia	362	2,6	0,9	34	51	25
German Democratic Republic	348	2,5	0,9	30	55	20
Hungary	184	1,3	0,5	25	29	18
Poland	544	3,9	1,4	28	28	17
Rumania	190	1,4	0,5	39	14	9
Yugoslavia	245	1,7	0,6	32	17	12
USSR c)	5 400	38,7	13,8	44	10	22
– Europe : Total	19 943	100,0	35,6	–	–	–
United States	9 990	–	25,5	44	23	48
Canada	899	–	2,3	43	14	42
– World: Total	38 984	–	100,0	–	–	–

a) Data from FAO *Production Yearbook*

b) Including veal

c) Data from the Central Statistical Office of the USSR (including by-products)

Table 14

Beef prices (average for 1969-71), based on information obtained in reply to the special questionnaire of the United Nations' Economic and Social Council

Country	Beef price as a percentage of price of other types of meat		
	Pork	Poultry	Mutton
Austria	130	150	-
Belgium	123*	168	-
France	147*	250*	-
Germany, Fed. Rep. of	133	182	127
Italy	108*	130*	-
Netherlands	150	225*	-
Norway	137	168	90
Spain	167	200	102
Sweden	150	130	112
United Kingdom	117	195	137
Turkey	-	112	100
Greece	142	162	105
Cyprus	142	200	125
Bulgaria	118	142	175
Czechoslovakia	83	80	135
Hungary	75	103	175
Poland	75	72	140
Yugoslavia	84	125	116
United States	137	200	95
Canada	117	150	77

* Source: FAO Production Yearbook

Recent events confirm this view, for we have indeed entered a period of shortage of beef and veal unprecedented in the last twenty years, bringing with it a rapid rise in prices. Between August 1968 and August 1972, prices on the world market have practically doubled. Since that date, they have continued to rise, though at a definitely slower and more *sigmoidal* curve rate than in 1972. Furthermore,

whereas world demand has increased by approximately 3% annually, supplies for export of chilled or frozen beef from the five main exporting countries (Argentina, Uruguay, Brazil, Australia and New Zealand) have only increased by an average of 1.5%. The following table shows the development and outlook for chilled, frozen or processed beef exports from 1968 onwards (excluding offal and live animals) in actual and estimated carcase tonnage:

	1968	1969	1970	1971	1972	1973	1975	1978
Argentina	607 000	768 000	668 000	494 000	568 000	-	730 000	-
Uruguay	113 000	118 000	141 000	86 400	113 000	-	-	-
Brazil	71 000	109 000	124 000	140 000	169 000	120 000*	-	-
Australia	402 000	398 000	500 000	516 000	596 000	-	1 090 000	1 200 000
New Zealand	194 000	200 000	263 000	269 000	275 000	-	306 000	370 000

* In Brazil, estimates approached 200 000 tons, with a quota restriction of 40%, leaving 120 000 tons.

Table 15

World production, consumption and import/export statistics for beef and veal
(1962-1972) of the O.E.C.D. countries**

Area	Total cattle slaughterings (000 metric tons)		Total imports (000 metric tons)		Total exports (000 metric tons)		Average weight (kg) of carcasses				Average per capita (kg) consumption	
	1962	1972	1962	1972	1962	1972	1962		1972		1962	1972
							Beef	Veal	Beef	Veal		
<i>E.E.C.</i>												
France	1 493	1,560	16	178	179	264	?	?	313	97	28,7	28,5
W. Germany	1 079	1 183*	231	332	38	80	267	51	281	84	21,6	23,4
Italy	668	663*	152	727	-	10	?	?	?	?	16,3	25,4
Belg. & Lux.	224	235*	6	80	9	44	266	70	300	96	24,7	27,3
Netherlands	262	251*	39	117	47	128	270	67	245	104	21,3	18,0
U.K.	915	956	481	433	35	94	265	23	263	32	25,8	22,5
Denmark	257	178*	-	-	167	96	224	84	246	149	18,7	16,2
Ireland	242	313*	25	22	221	273	216	91	261	91	16,3	19,6
<i>Non E.E.C.</i>												
<i>Europe</i>												
Austria	172	206	1	6	28	51	270	51	311	61	20,6	22,8
Finland	81	107	-	1	-	6	139	41	150	50	18,2	21,8
Greece	38	105	17	45	-	-	?	?	± 150	± 140	6,5	16,9
Iceland	2	2	-	-	-	-	140	22	150	17	9,3	11,5
Norway	59	56	1	-	5	6	153	24	196	47	15,1	15,5
Portugal	50	73	9	35	-	-	213	60	224	103	6,8	12,9
Spain	163	302*	43	90	-	-	185	108	228	123	6,7	11,5
Sweden	155	130	9	10	8	12	217	42	242	70	19,7	15,8
Switzerland	118	124*	26	45	-	-	269	64	267	92	23,7	26,3
<i>North America</i>												
U.S.A.	7 225	10 220	740	1 069	24	66	259	59	281	65	42,8	53,6
Canada	739	927	17	113	86	83	235	56	254	57	35,5	43,1
Australia	929	1 434‡	-	-	391	852	206	30	205	38	45,5	40,5
N. Zealand	287	411‡	-	-	170	276	210	21	219	19	47,3	45,6
Japan	146	317	-	79	-	-	213	32	288	30	1,6	3,7

** Exclusive Turkey

* Similar productions in 1962 and 1972 (E.E.C.)

‡ Much higher production in 1972 (Oceania)

On the other hand, in a recent survey of the international beef market situation undertaken by the French Centre for Foreign Trade, emphasis was placed on the general upward trend in 1973 of the stocks available for

export by the 8 leading exporting countries (Argentina, Australia, New Zealand, Ireland, Uruguay, France, Netherlands and Brazil) which between them accounted for 75% of world exports of fresh, chilled and frozen meat.

The variation in the future E.E.C. and U.S.A. deficit of all beef and veal can thus first and foremost depend on the development of consumption in relation to supply. Bearing in mind the high prices reached in 1973 in several countries, such as Italy, France, Greece and the United States, consumption per capita no longer rose, and in Italy and Greece was even curbed somewhat. This induces the pessimists to speak of a regression in world beef consumption. We should rather believe that this is a temporary reaction to higher beef prices, in line with the traditional *sigmoidal* curve well-known in other productions. In fact, considering the developing human populations of the world, one can logically expect a rise in total red meat consumption even if there is a certain stagnation in the per capita consumption of the major beef-eating countries, such as the U.S.A., Argentina, France and Australia.

In the face of this long-term and unavoidable world shortage, it is necessary that South Africa should make every effort to develop its own production. This is of prime importance, not only to satisfy the inevitable long-term total increase in local consumption, but also to prepare for an eventual, vital, currency-winning, export drives. It would be interesting to evaluate the true production potential and the intensification capacity of the South African national cattle herd. Unfortunately, the available statistics render this task extremely difficult, and the forecast studies published to date are based mainly on slaughter data and do not take the true genetic potential of the available cattle population into consideration.

From a technical point of view, a great deal has been said about the necessity to "rationalise pasture husbandry" and the famous "number of hectares/cattle unit" approach to the problem; but unfortunately, the results of the stock reduction scheme have not been spectacular for the cattle industry. In fact, nearly 80% of the scheme concerned the drier sheep breeding regions. To rationalise and intensify cattle production, the following internationally acceptable *axioms* have to be seriously considered.

1. The rise in meat prices in any part of the world has been less of an incentive to the development of production than the relative drop in maize and other cereal prices. A study undertaken in Europe in 1970, concluded that the ratio between the price paid to the producer per kg live-weight of beef or veal and the price per kg of feed grain should exceed 7,7 to 1 to 8,7 to 1 (on the price of the new-born calf) for specialised beef and veal production units to be able to develop on a large scale. Owing to the constant rise in prices for new-born calves, this ratio should at present be approximately 9 to 1, perhaps more. This conclusion is confirmed by the facts. In the United States from 1958, the ratio between prices for beef and veal and for maize has become attractive, increasing from 7,5 to 1 to 14,0 to 1 in 1970. For this reason, a large number of American farmers decided to convert their maize to beef and veal.

The development of "feedlots" in the E.E.C. was impeded by the fact that the meat/cereal price ratio

has always been below 8 to 1. Except in Italy from 1964 to 1967, a period which, in fact, saw the development of major fattening plants, and in France since 1970, the year in which modern production, run by producer groups, got underway in that country. In addition Europe has to depend on imports for more than one-fifth of her feedstuff supplies. In 1972, this price ratio improved noticeably due to a rise in beef prices, and not a drop in grain prices and at the end of last year, exceeded 9 to 1 (even 11 to 1 in France). Although this indicates possible future expansion in the right direction this could be endangered by the present rising world shortage of grain.

At present, a drop in feed grain prices in Europe is neither politically acceptable, not anticipated on a short-term basis, in view of world conditions; particularly as the E.E.C. grain prices last year were lower than those of the world market. The situation in South Africa is not dissimilar, and *the relationship between beef prices and feed grain (maize) prices is not yet such as to favour the commencement of a large-scale expansion of specialised beef and veal production and fattening*. The ratio at present must be approximately 7 to 1, after having been for many years of the order of 4 or 5 to 1. On the other hand, one must also remember that keeping beef prices down in 1973 did not result in a rise in beef available to the American consumer. Why should the situation be different in South Africa!

2. The price paid to the farmer for a kg of live-weight as compared with that of fresh milk, is a further indication of existing incentives to produce more beef. The ratio considered to be a necessary minimum is 8 to 1, not taking into account "factory milk" in South Africa, and is particularly difficult to obtain in those countries with an average of relatively small sized farms. The successful system followed in the E.E.C. was one where a premium was paid for withholding milk and milk products (rise in the number of suckling calves), while the system based on premium payments for slaughtering cows is certainly not to be recommended.

Naturally, the situation in South Africa could be evaluated in a different manner if one were to consider that a large part of our population obtains animal proteins more readily and cheaply through milk than through meat, and it should be said that beef production should not expand to the detriment of the milk herds. On the other hand, these two commodities should be complementary and not competitive. However, it is well-known that dairy proteins can be bought on the international market much more easily and at relatively lower prices than red meat.

3. The third major characteristic is genetic productivity which can be deduced in several ways. For example:

- The ratio: CATTLE POPULATION/NUMBER OF COWS IN PRODUCTION;
- The ratio: CATTLE POPULATION (or NUMBER OF COWS IN PRODUCTION)/NUMBER OF SLAUGHTERINGS;
- The age distribution and sex ratio of the national herd;
- The age distribution per sex group of the slaughterings, etc.

With regard to the first ratio, it is considered to be "good" when nearing 45% (U.S.A. = $\frac{115}{50}$; E.E.C. = $\frac{72}{30}$; New Zealand = $\frac{9}{4}$) and "bad" when lower than 30%. This is the case in South America (an average of $\pm 20\%$) and in our own Bantu homelands ($\pm 30\%$). Theoretically speaking, the higher the ratio, the higher the availability of productive individuals. A ratio of 40–50% could indicate an almost ideal situation and a relatively low average slaughter age. One must, however, also take the cow populations' age distribution into account, as in many cases where the market for culled cows meat is unsatisfactory, or where tradition perpetuates it, the average age of the cows is too high (e.g. 60% in Australia). For South Africa, a value of 46% was indicated by Van Wyk in 1967, but this is probably based on the ratio of total cattle population/number of cows and two-year old heifers. If only cows in production are retained (even excluding the Bantu areas), the ratio will probably be between 30–32%.

Depending on the breeding method (A.I. or natural mating) and certain other parameters (e.g. average number of cows/sire in natural mating schemes), a relatively precise evaluation of the yearly "turnover" can be made.

With regard to the second ratio, it could at present be just over 20% (all slaughterings) in South Africa; however, taking the abnormally high slaughterings of the past two years into consideration, one must be careful not to jump to conclusions prior to further investigations. As an indication one can mention that the French ratio (which is indicative, but certainly not the best, of the E.E.C.) is over 30%.

In respect of the age distribution, the best indications under the prevailing conditions, could be those given by the routine records kept by the Division of Veterinary Services.

A complete population structure study is now becoming absolutely essential if we wish to obtain a clearer picture of the country's beef production potential even if it will be a time-consuming and expensive undertaking.

Conclusion

Notwithstanding a possible lower average per capita consumption due to higher prices, the European Economic Community in 1973 imported approximately 750 000 tons of beef and veal, as compared with 350 000 to 600 000 tons for the previous three years. Within two years (January

1971 to 1973), the prices of mature slaughter cattle in the Community rose by 42% and despite the suspension of custom duties and levies until September 1973, consumer prices of beef could not be restricted until very recently. We are thus after all faced with a world red meat shortage, and the rise in prices of live animals (e.g. $\pm 40\%$ in pesos in two years at the Liniers market of Buenos Aires), supports the hypothesis. Action by official bodies and a possible consumer reaction to the high prices naturally brought down the average consumption per capita in certain countries; however this is being followed – as is the case in the U.S.A., Greece and Italy – by relatively lower prices, a slackening in production, to be followed by a natural tendency for higher consumption within the following two years, and a return to future higher price trends: a typical *sigmoidal* curve situation and longterm skyrocketing prices.

Another phenomenon which could mean lower per cow meat production, due to the possible relative "abandonment" of intensive feedlot feeding for the present high price trends for feedstuffs, is shown by recent developments in the U.S.A. Here, the considerable demand for beef, the relatively low land and cattle prices, combined with low cereal and particularly maize prices, created, very favourable fattening (feedlot) conditions for units of 150–1 000 head in the Mid-West and 5 000–80 000 in the West. Today, the situation has changed due to land speculation following the monetary crisis and much higher cereal and plant protein prices. This could result in the animal industry, in its intensified form, losing ground to the more optimal use of extensive pastures and a rise in the production of cereals for human consumption. This tendency for optimal use to be made of extensive pastures (which for many years after the war were practically abandoned) for beef production, has also attracted renewed interest, since 1960, with great success, in the central and mountainous areas of France, the United Kingdom, Ireland and Southern Germany, as shown by the recent decisions for financial support of these developments taken by the E.E.C. authorities.

Finally, it must be kept in mind that the regulation of the national and international meat markets is, in many cases, the result of political rather than technico-economical decisions (animal protein versus plant protein and grain prices). Beef exports are not only a means of obtaining foreign currency, but also of prestige in international agro-commercial competition where South Africa in participation is an absolute necessity. This will also oblige us to be continuously on our toes, and not to produce *any* type of meat, but *export quality* meat.

In conclusion one must remember that in the U.S.A., Europe, parts of South America, Australia and also South Africa, red meat is not always eaten for its nutritive value alone, but increasingly because "beef" is becoming the symbol of a way of life. In other parts of the world, the idea could be to produce and sell beef, knowing that for one kg of red meat exported, four or five times the equivalent protein value in plant product form can be imported!

References

- ANONYMOUS, 1973. Cattle meat in the E.E.C. (in French). *B.I.M.A. (Paris)*, No. 618, A1–A6.
- ANONYMOUS, 1973. Beef situation and the possible remedies (in French). *B.I.M.A. (Paris)*, No. 620, E1–E2.
- ANONYMOUS, 1973. World beef export supplies still insufficient. *Agra Europe (London)*, 5 December 1973, M3–M5.
- ANONYMOUS, 1974. E.E.C. protein supplies. *Agra Europe (London)*, 16 January, 1974, E1–E10.
- ANGELONI, P. & GREGORIO, P. Di, 1970. Meat consumption in Italy (in Italian). *Assoc. Nazion. tra I Produttori di Alimenti Zoot.*, 61 pp.
- BACVANSKI, S., COBIC, T. & VUCEVIC SOFIA, 1974. Fattening young cattle in Yugoslavia. *Wld Anim. Rev.*, 8, 13.
- BINDER, Anneliese, 1974. Livestock feed and world grain supplies. *Wld Anim. Rev.* 8, 46.
- BOYAZOGLU, J.G., 1974. Cattle populations and the world's beef market. *Lectures, Post-graduate Section, University of Thessaloniki (Greece), Roneotyped*, 7 pp.
- BOYAZOGLU, J.G., 1974. The cattle industry of the E.E.C.: Population, structures, production and consumption (in French). *Lectures, Post-graduate Section, University of Thessaloniki (Greece), Roneotyped*, 11 pp.
- BOYAZOGLU, J.G. & BURGER, W.P., 1973. Die E.E.G. van nege en sy landboupotensiaal. *Jl. S. Afr. vet. ass.* 44, 74.
- BOYAZOGLU, J.G. & ZERVAS, N., 1974. A note on the present situation and future trends of animal production structures (in Greek). *Geoponika (Thessaloniki)*. (In the press).
- COMMITTEE ON AGRICULTURAL PROBLEMS (U.N.O.), 1973. The European market for meat and livestock in 1972 and 1973. *Economic commission for Europe (Geneva), Agri./R.3., GE 73-31991. Roneotyped*, 138 pp.
- DIVISION AGRICULTURAL INFORMATION (E.E.C.), 1973a. The situation in the beef and veal sector. *Newsletter on the Common Agricultural Policy (Brussels, X/373/73), No. 3*, 29 pp.
- DIVISION AGRICULTURAL INFORMATION (E.E.C.), 1973b. Development prospects for beef and veal, taking into account the enlargement of the Community and incentive measures at Community level. *Newsletter on the Common Agricultural Policy (Brussels, X/411/73–E)*, No. 4, 17 pp.
- DIVISION AGRICULTURAL INFORMATION (E.E.C.), 1973c. Memorandum Agriculture 1973–1978. *Newsletter on the Common Agricultural Policy (Brussels), Special Issue*, 37 pp.
- F.A.O., 1973. *Production Yearbook*, 496 pp.
- FAUCON, A., 1973. The types of meat demanded in France and the E.E.C. (in French). *Lecture to the French Academy of Agriculture (Paris), 21 November 1973, Roneotyped*, 43 pp.
- FAUCON, A. 1974. "Young bull" production and marketing in France (in French). *Int. Conf. on Systems of Beef Production (Berlin)*, (In the press).
- F.N.B./F.N.P.L./L.T.E.B., 1973. Cattle rearing and its productions (in French). *S.E.G.E.S.A. (Paris)*, 193 pp.
- GRAZIANI, R., 1974. The Italian meat industry (in Italian). *Int. Conf. on the Systems of Beef Production (Berlin)*, (in print).
- HARTMANN, J., 1974. Cattle meat production in the U.S.A. *Int. Conf. on Systems of Beef Production (Berlin)*. (In the press).
- HOFMEYR, J.H., 1973. "Ontwikkelingsprogram vir hoër beesvleisproduksie in Suid-Afrika". *N.I.V.S. Pretoria, Afgerol* 14 bls.
- I.N.R.A., 1974. How to reduce the animal consumption of imported proteins (in French). *Elevage et Insemination*, 138, 18.
- LIVESTOCK AND MEAT INDUSTRIES CONTROL BOARD, 1973. *Annual Report 1971/72*, 38 pp.
- O.E.C.D., 1973. *Food Consumption Statistics*, 290 pp.
- RENDEL, J., 1974. Beef production and supply – a world-wide problem (in German). *Int. Conf. on Systems of Beef Production (Berlin)*. (In the press).
- ROUY, H., 1974. The place of beef, veal, mutton and lamb in the world (in French). *Lecture to the Academy of Agriculture (Paris) on 14 November 1973*. (In the Press).
- RUNOV, B.A., KOMAROV, L.L., 1974. Economic and technological aspects of beef production in European countries. *Economic Commission for Europe (U.N.O.), AGRI/R. 13*, 27 pp.
- VAN MARLE, J., 1973. Verhoogde beesvleisproduksie in die Bantoe-tuislande. *Vleis*, 2(12), 34.
- WENIGER, J.H., 1974. Introduction (in German). *Int. Conf. on Systems of Beef Production (Berlin)*. (In the press).