IS FERTILIZER EXPENSIVE? A RELATIVE CONCEPT PUT INTO PERSPECTIVE

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Fertilizer consumption has remained fairly constant over the past 12 years - around 2 million tons per annum with a variance of 8% around the average. The variances are due to varying crop incomes affected by climatic conditions.

Competition within the fertilizer industry is very strong and is clearly reflected within the nett prices monitored by the FSSA. The nett real fertilizer price as supplied by the FSSA has remained constant at approximately R350/ton over the period 1987 - 1995.

The local industry is totally subjected to the international market prices; it does not depend on tariff or import protection. In fact large quantities of raw materials and finished products are imported which are subject to international prices.

During 1994 the local fertilizer prices were substantially lower than international prices.

There are several approaches to the proposed question "Is Fertilizer expensive? A relative concept."

1. Fertilizer price increases against inflation.
2. Gross value of field and horticultural crops with that of fertilizer sales.
3. The trading value of a ton of crop vs a ton of fertilizer.
4. Fertilizer input costs vs total input costs.
5. Local fertilizer prices vs international prices.

FERTILIZER PRICE INCREASES AGAINST INFLATION

Figure 1 shows the nominal fertilizer price and the real fertilizer price for the period 1987 - 1995 as supplied by the FSSA, with an estimate for the 1995 year. The real price of fertilizer has been declining over this period.

Table 1 shows the nett fertilizer prices, that is the fertilizer prices after discounts in relation to the PPI and the farm requisites indices.

Figure 2 shows a plot of three indices *viz* fertilizer, PPI and farm requisites for the period 1987 - 1995. An estimate was made of the 1995 prices. Clearly the fertilizer index has been lagging behind the other indices, even after the major commodity price increases experienced over the 1994 - 1995 period.

VALUE OF CROPS AND FERTILIZER SOLD

There has been a relative decrease in the value of fertilizer used in relation to the value of the crop (see Table 2).

These figures as illustrated in Figure 3 reflect several factors.

- Fertilizer sales have decreased from 2,4 million tons in 1985 to 2,1 million tons in 1993 - a decrease of 11,6%.
- The comparable crop production in 1985 was 35 million tons and in 1993, 33 million tons - a decrease of 5,7%.
- Crop value increased by R8,816 billion or 130%, whereas fertilizer value sold increased by R511 million or 70%.

Crop values have increased significantly despite the drop in total production. The increase is far greater than the increase in the value of fertilizer sold.

This price trend is further argued when comparing price trends of individual crops over this period (see Tables 3 and 4).

The period chosen from 1985/86 - 1993/1994 is totally arbitrary.

Product price increases varied from 58 to 300%

and with fertilizer, as per the FSSA, at 92%.

Clearly there is a major problem with the maize situation which cannot maintain the price trend of other crops. This is mainly due to the over-supply situation forcing prices down.

This situation further highlights the absolute necessity for maize farmers to look more intensively at their whole maize production scenario and to try and formulate other strategies. These may include the following:

- Remove all uneconomical lands from production;
- Alternative crops;
- Increase the production per unit area.

Oranges show a similar trend to maize - once again a very competitive product in the world markets.

With international markets opening up to RSA product, quality produce is certain to achieve good prices. These markets are a target for many RSA farmers interested in diversification. There are surely many more opportunities available than the crops listed here. The RSA has a very diverse set of climatic conditions which can meet the requirements of many crops found elsewhere in the world and for which good markets exist.

TRADING VALUE OF CROPS FOR FERTILIZER

Table 5 gives the trading value of a ton of a specific crop for fertilizer for the 1985 and 1993 years.

Table 5 is illustrated in Figures 4, 5 and 6.

In general more fertilizer could be bought in 1993 than in 1985 as shown by the high-lighted numbers in Table 5. In some instances significantly larger quantities of fertilizer can be obtained for a ton of produce.

FERTILIZER AS AN INPUT COST

Maize

Tables 6, 7 and 8 show the relative values of fertilizer, total input costs and crop value for maize in the Western Transvaal, Eastern Transvaal and Eastern Free State. Total input costs include, seed, fertilizer, diesel, labour, herbicides, insecticides, harvesting maintenance, etc.

These Tables are illustrated in Figures 7, 8 and 9.

Fertilizer as a percentage of total costs actually came down despite the higher yield targets.

Table 9 shows fertilizer as a percentage of total input costs and crop value for several different crops.

Figure 10 illustrates the effect.

Maize and wheat production are more dependent on fertilization than the other crops. Any major price changes in fertilizer prices will therefore impact more severely on the maize and wheat producers. It is therefore imperative that the farmer continue to improve his production efficiency so as to achieve a higher yield per unit area. Clearly for some crops fertilizer is not a major factor.

HIGH YIELD vs LOW YIELD TARGETS

The higher the yield target the higher the percentage of fertilizer input. The other input costs are largely fixed in nature namely seed, diesel, labour, herbicides, insecticides, harvesting and are largely constant irrespective of yield.

Fertilizer is the one input that has a major effect on yield and its application will really depend on the particular risk profile adopted. Higher use of fertilizer can leverage farm profit to higher levels.

INTERNATIONAL FERTILIZER TRENDS

Figure 11 shows the indices for various imported fertilizer products as well as the exchange rate. The increases in the imported products are a function of exchange rate, higher international prices, higher harbour and rail tariffs.

The international commodities have increased by 220-250% since 1987.

Figure 12 plots the international urea index against the RSA nett fertilizer index. Clearly, even with an estimate for the 1995 RSA price, the RSA

prices are lagging well behind the international prices.

Figure 13 is interesting in that it shows the significant price increases of the major fertilizer raw material input - ammonia (c&f North West Europe). The price increase is dramatic - 270% in the last two years.

CONCLUSION

In general it can be argued that even with the significant price increases in fertilizer experienced in the RSA in 1995 that

1) Domestic fertilizer prices lag behind international prices.

2) Domestic fertilizer prices lag crop prices except in a few special instances.

3) Optimal use of fertilizer can leverage farm profit to higher levels.

4) For some crops fertilizer is not a significant input cost.

It has been demonstrated that although there have been significant price increases, value is obtained from fertilizer purchases.

Table 1. Fertilizer, PPI and Farm Requisites Indices

Year	Nett fertilizer price		PPI Index	Farm requisites Index
	R/t	Index		
1985	303,76	57,0	50,3	50,5
1986	332,37	62,4	60,1	60,3
1987	375,24	70,4	68,5	65,9
1988	403,02	75,6	77,5	74,5
1989	497,65	93,4	89,3	89,3
1990	532,88	100	100	100
1991	593,74	114,2	111,4	110,4
1992	577,84	108,4	120,5	117,9
1993	584,00	109,6	128,6	130,2
1994	644,14	120,9	139,0	140,0

Source: FSSA

Table 2. Value of fertilizer as percentage of crop value

Year	Gross crop value R(bn)	Nett fertilizer value R(bn)	Fertilizer % of crop value %
1985/86	6,755	0,729	10,79
1986/87	7,719	0,681	8,82
1987/88	9,019	0,755	8,37
1988/89	10,968	0,876	7,99
1989/90	11,428	1,058	9,26
1990/91	12,365	1,038	8,39
1991/92	11,637	1,200	10,31
1992/93	15,141	1,088	7,19
1993/94	15,571	1,240	7,96

Source: Effective Farming/FSSA

Table 3. Major crop prices

Year	Maize	Wheat	Sorghum	Sugar cane	Tobacco	Sunflower	Soya beans
1985/86	225,27	322,00	177,64	30,76	610,23	460,84	439,54
1986/87	246,00	373,50	189,66	35,99	744,60	564,50	524,55
1987/88	255,00	403,50	191,60	32,62	837,21	580,81	528,34
1988/89	259,00	351,75	207,66	41,11	941,51	683,91	589,87
1989/90	302,67	452,50	205,12	50,58	1133,70	739,29	614,34
1990/91	357,62	515,14	232,38	55,39	1134,63	736,40	699,00
1991/92	452,81	620,76	295,00	56,39	1452,57	806,00	815,00
1992/93	417,00	713,09	458,00	94,66	1497,81	820,00	820,00
1993/94	375,00	750,69	440,00	99,89	1523,24	878,00	839,00
1994/95		733,26	435,97				
% Increase: 1985/86-1993/94	67	128	145	225	150	91	91

Source: Effective Farming

Table 4. Various fruit and vegetable prices

Year	Apples	Grapes	Peach	Avocado	Banana	Pineapple	Orange	Potato	Tomato	Onion
1985/86	517	715	689	839	559	307	345	262	378	282
1986/87	631	800	779	926	594	298	384	367	535	426
1987/88	666	873	814	990	694	409	405	508	630	463
1988/89	746	1127	949	1249	768	518	437	341	671	414
1989/90	962	1311	1317	1237	774	703	542	403	892	678
1990/91	1033	1539	1302	1494	937	1128	513	500	924	451
1991/92	1319	1800	1555	1675	945	1201	553	640	879	644
1992/93	1201	1925	1524	1994	1520	1309	605	838	973	618
1993/94	1134	2012	1445	2129	1130	1237	544	537	1104	834
% Increase: 1985/86-1993/94	119	181	110	154	102	302	58	105	192	196

Source: Effective Farming

Table 5. Fertilizer tons able to be purchased per ton of produce

	1985	1993
Potato	0,86	**0,92**
Onion	0,93	**1,43**
Tomato	1,24	**1,89**
Orange	1,14	0,93
Banana	1,84	**1,93**
Apples	1,70	**1,94**
Pineapples	1,01	**2,12**
Peaches	2,27	**2,47**
Grapes	2,35	**3,45**
Avocado's	2,76	**3,65**
Sugar	0,10	**0,17**
Maize	0,74	0,64
Sorghum	0,58	**0,75**
Wheat	1,06	**1,26**
Soyabeans	1,45	1,44
Sunflower	1,52	1,50
Tobacco	2,01	**2,61**

Table 6. Western Transvaal : Maize

Year	Target Yield	Production Price	Crop Value	Fertilizer Cost	Total Input Cost	Fertilizer % of Total Cost	Fertilizer % of Crop Value
	t/ha	R/ton	---------- R/ha ----------			---------- % ----------	
1986	1,80	258	464	55	214	25,7	11,9
1987	1,79	260	465	49	226	21,7	10,5
1988	1,80	264	475	64	290	22,1	13,5
1989	1,79	303	542	75	382	19,6	13,8
1990	1,86	358	665	88	376	23,4	13,2
1991	2,40	453	1087	86	372	23,1	7,9
1992	1,98	417	826	96	450	21,3	11,6
1993	1,98	375	743	101	511	19,8	13,6
1994	1,99			119	549	21,7	

Source: Nampo

Table 7. Eastern Transvaal : Maize

Year	Target Yield	Production Price	Crop Value	Fertilizer Cost	Total Input Cost	Fertilizer % of Total Cost	Fertilizer % of Crop Value
	t/ha	R/ton	---------- R/ha ----------			---------- % ----------	
1986	3,3	246	812	96	394	24,4	11,8
1987	3,3	255	842	116	478	24,3	13,8
1988	3,3	259	855	120	515	23,3	14,0
1989	3,3	303	999	155	637	24,3	15,5
1990	3,3	358	1180	183	723	25,3	15,5
1991	3,3	453	1494	194	824	23,5	13,0
1992	3,5	417	1460	206	907	22,7	14,1
1993	3,5	375	1313	229	1035	22,1	17,4
1994	3,5			269	1111	24,2	

Source: Nampo

Table 8. Eastern Free State : Maize

Year	Target Yield	Production Price	Crop Value	Fertilizer Cost	Total Input Cost	Fertilizer % of Total Cost	Fertilizer % of Crop Value
	t/ha	R/ton	---------- R/ha ----------			---------- % ----------	
1986	2,37	246	583	79	328	24,1	13,6
1987	2,37	255	604	89	339	26,3	14,7
1988	2,37	259	614	96	382	25,1	15,6
1989	2,38	303	720	128	453	28,3	17,8
1990	2,67	358	955	133	535	24,9	13,9
1991	2,66	453	1204	158	609	25,9	13,1
1992	2,77	417	1155	142	701	20,3	12,3
1993	2,78	375	1043	172	862	20,0	16,5
1994	2,78			173	867	20,0	

Source: Nampo

Table 9. Other crops

Year	Target Yield	Production Price	Crop Value	Fertilizer Cost	Total Input Cost	Fertilizer % of Total Cost	Fertilizer % of Crop Value
	t/ha	R/ton	---------- R/ha ----------			---------- % ----------	
Potato	37	537	19869	1066	15575	6,8	5,4
Onion	40	834	33360	933	13539	6,9	2,8
Tomato	71,2	1104	78605	1048	6822	15,4	1,3
Sugar cane	100	100	9989	797	4386	18,2	8,0
Banana	24	1130	27120	1368	6328	21,6	5,0
Wheat: Irrigation	7	733	5133	625	2524	24,8	12,2
Wheat: Dryland	1,8	733	1320	128	510	25,1	9,7
Maize	3,5	375	1313	269	1111	24,2	20,5

Source: Nampo

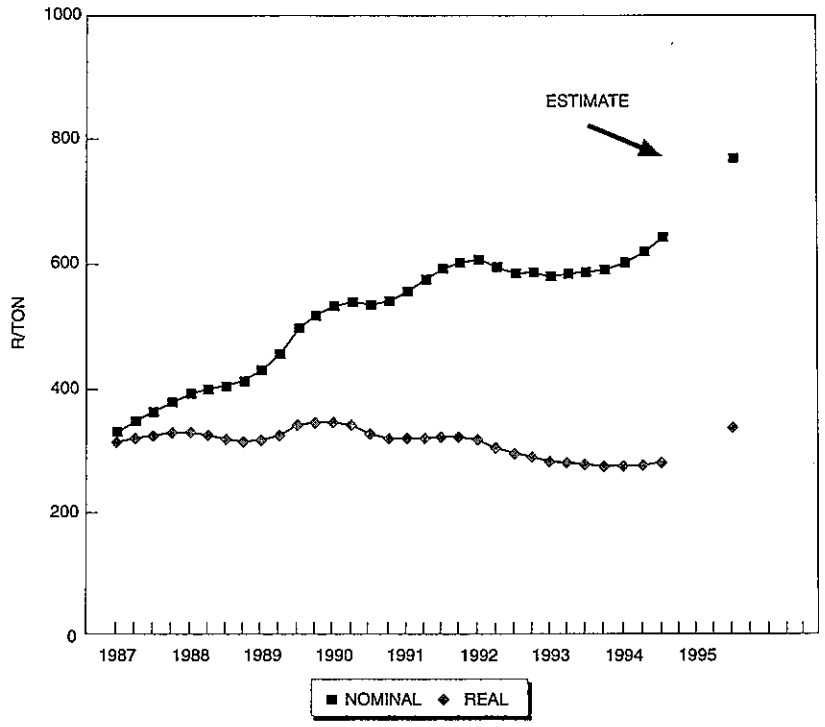

Fig. 1: NETT FERTILIZER PRICE
4-Quarterly moving average

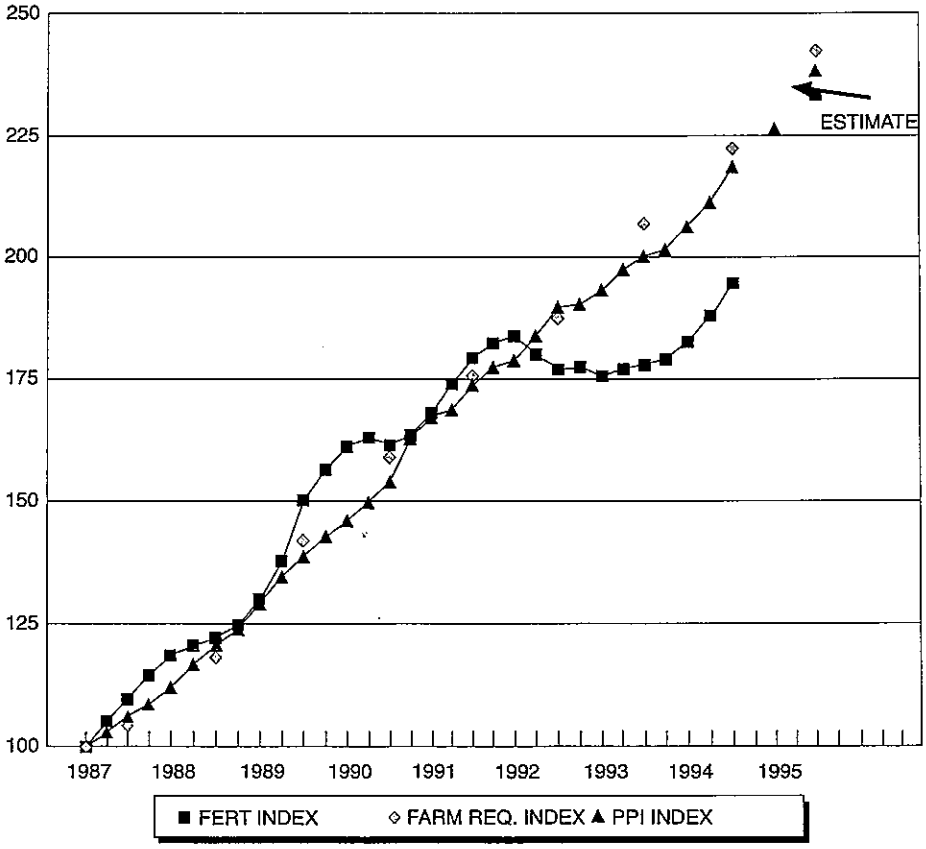

Fig 2: Fertilizer Index vs Farm Requisites and PPI Index

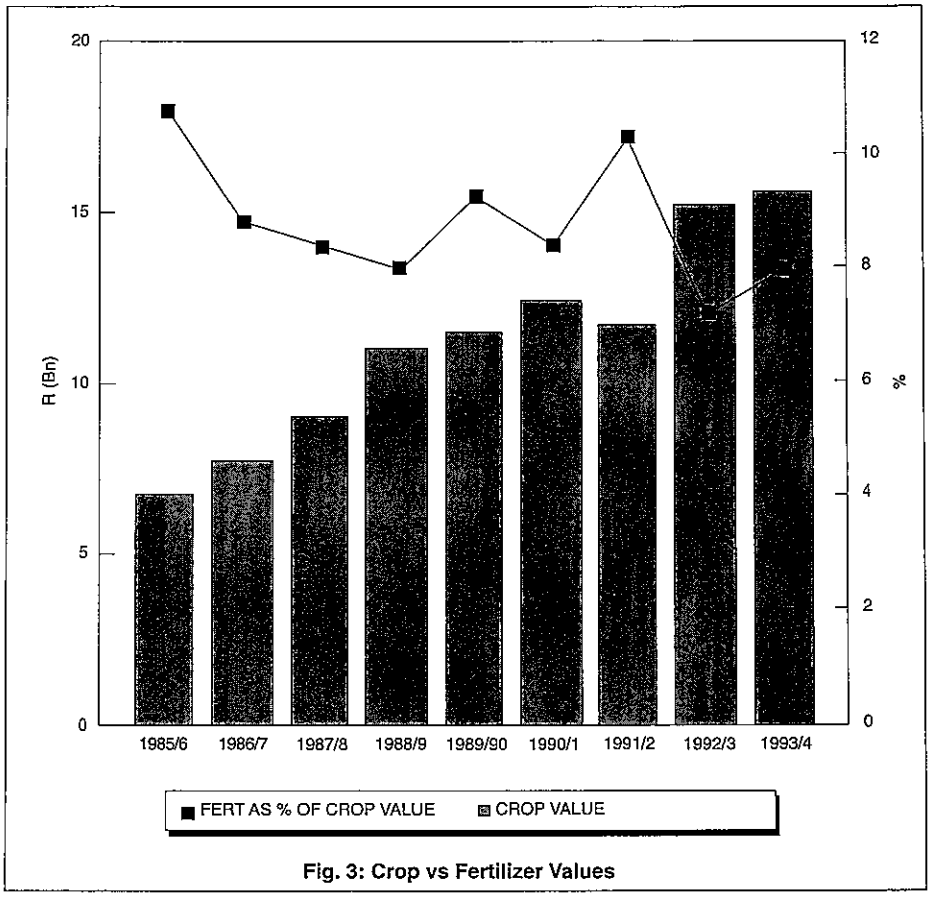

Fig. 3: Crop vs Fertilizer Values

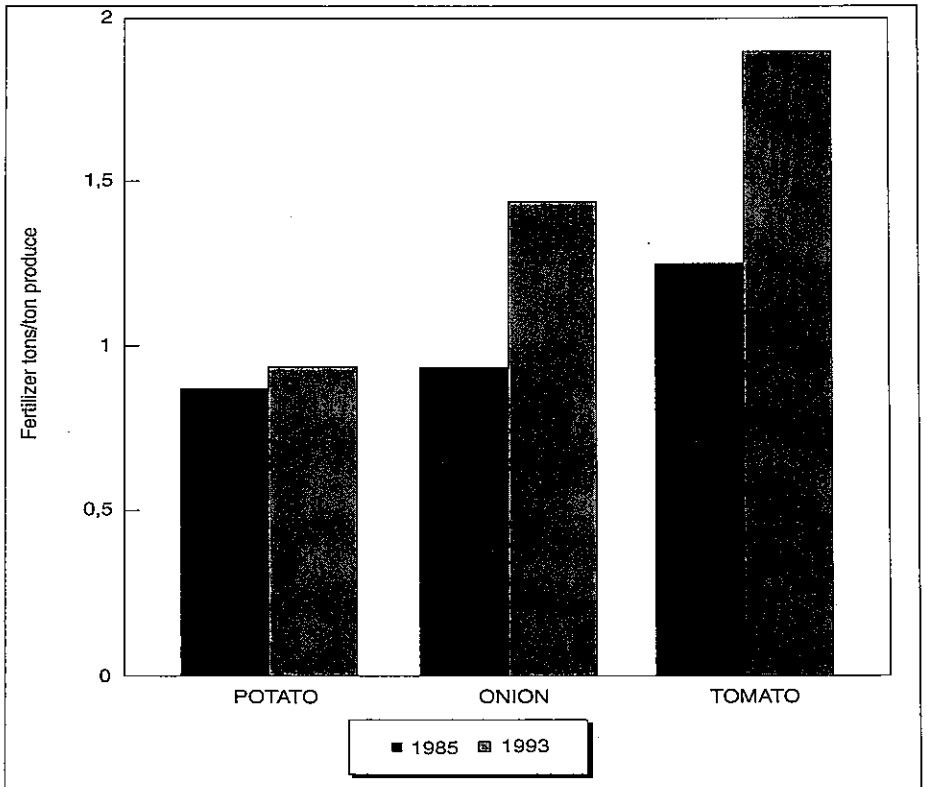

Fig 4: Trading value of crop 1985/1993 Fertilizer/ton vegetables

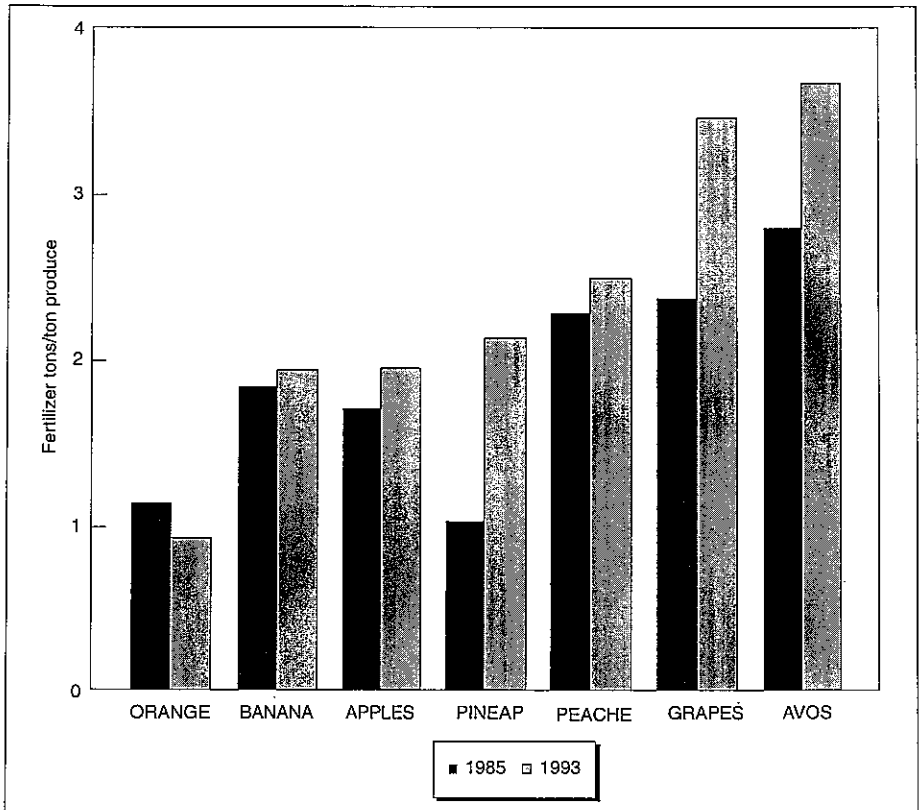

Fig 5: Trading value of crop 1985/1993 Fertilizer/ton fruit

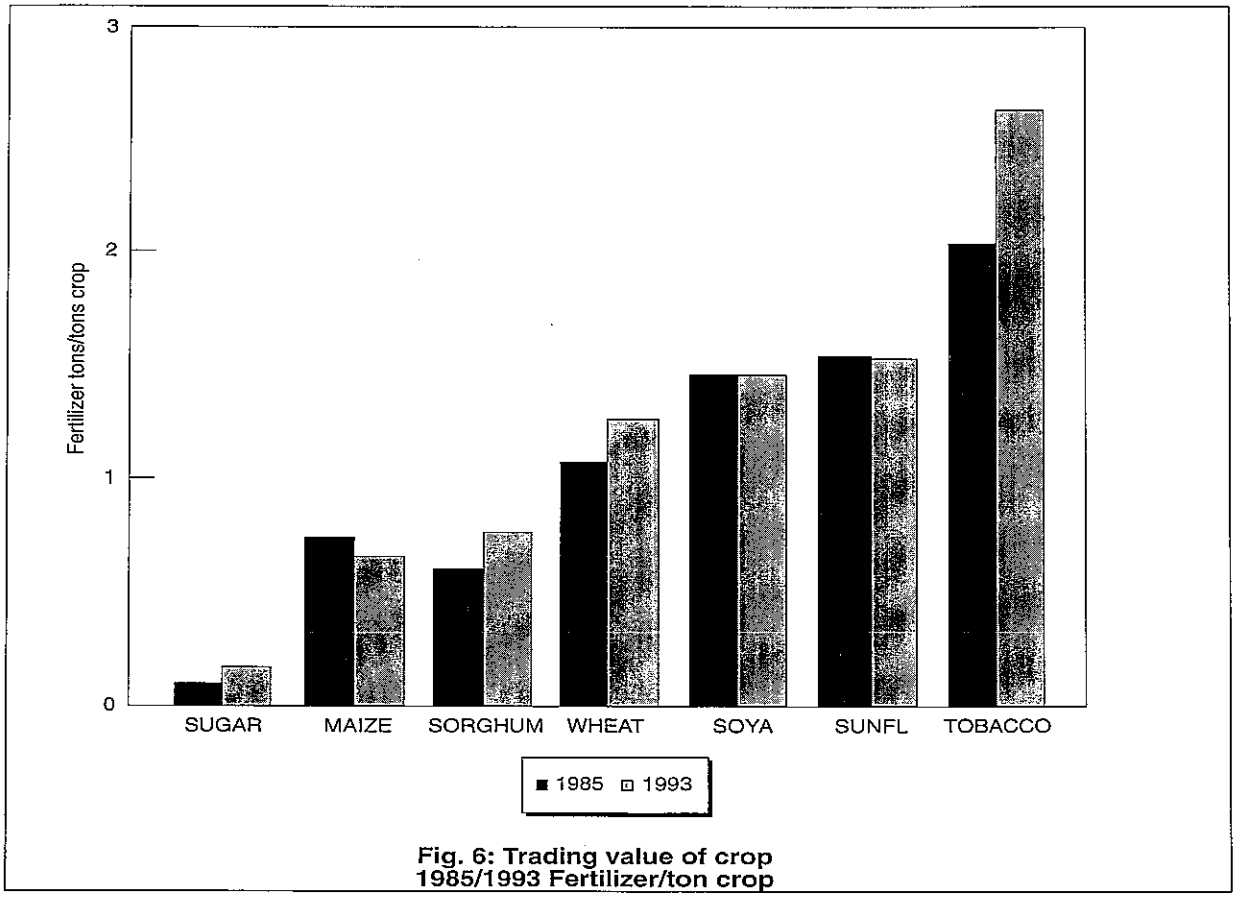

Fig. 6: Trading value of crop 1985/1993 Fertilizer/ton crop

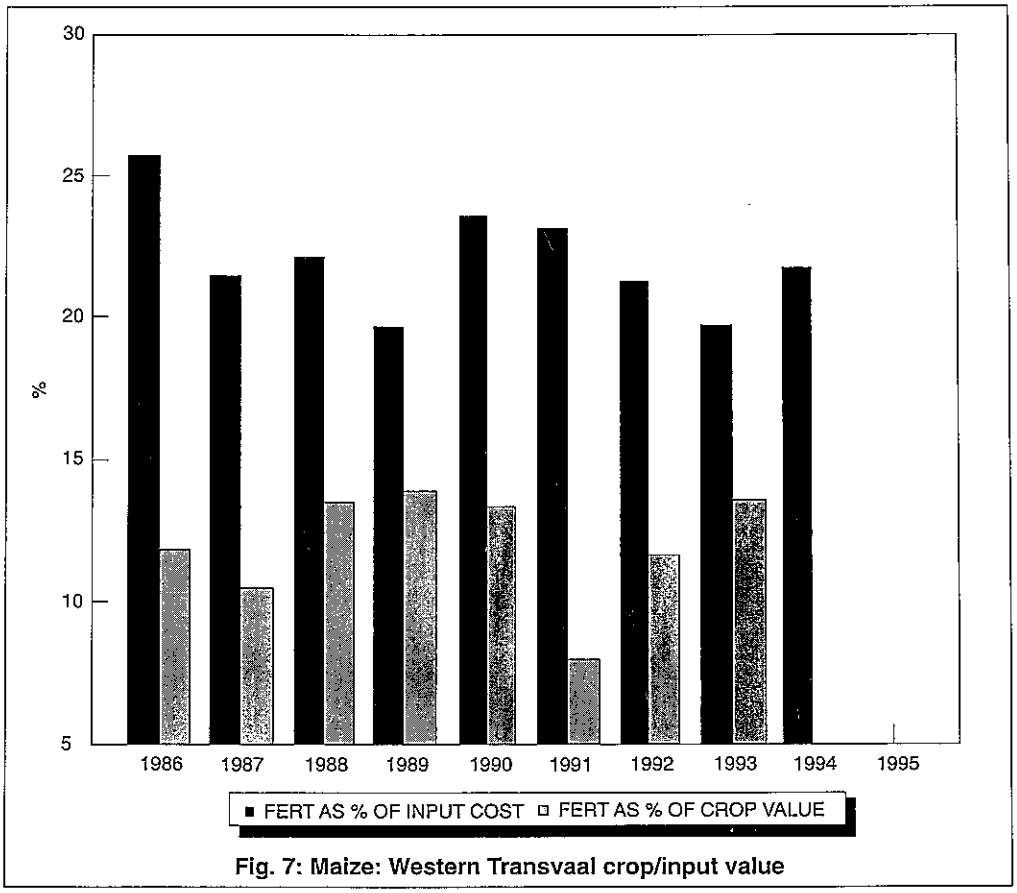

Fig. 7: Maize: Western Transvaal crop/input value

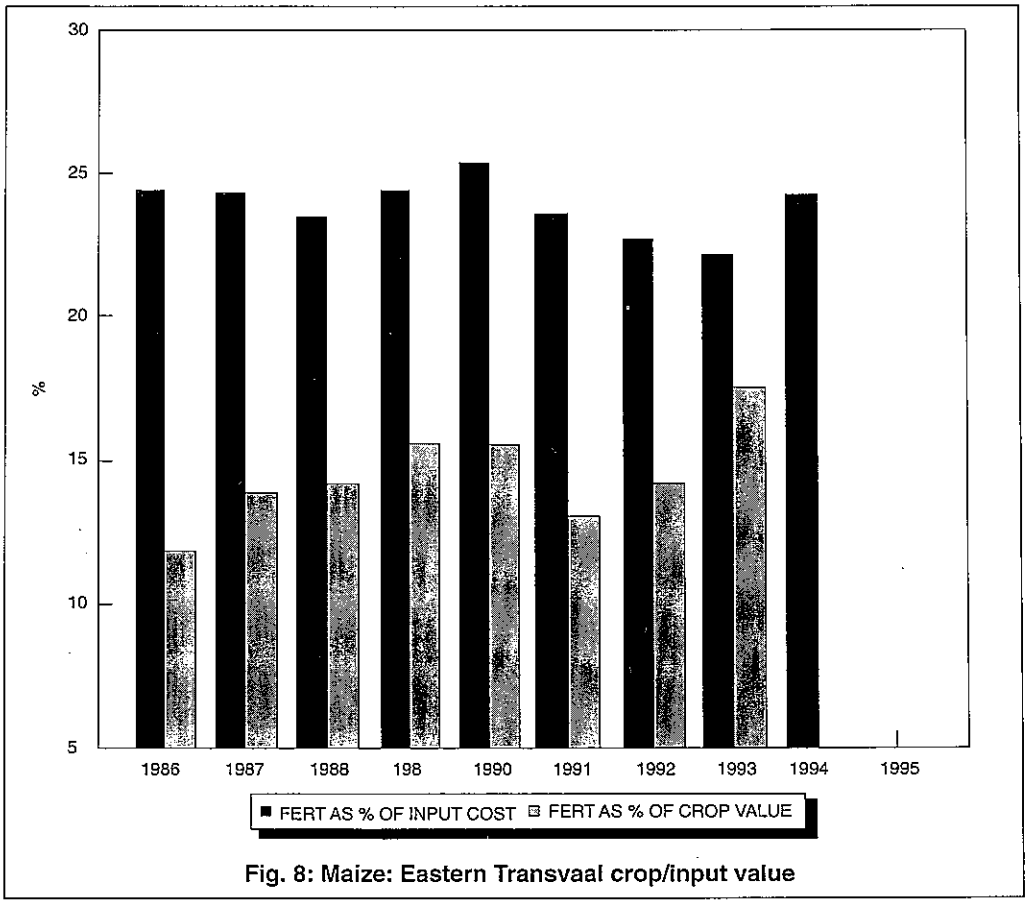

Fig. 8: Maize: Eastern Transvaal crop/input value

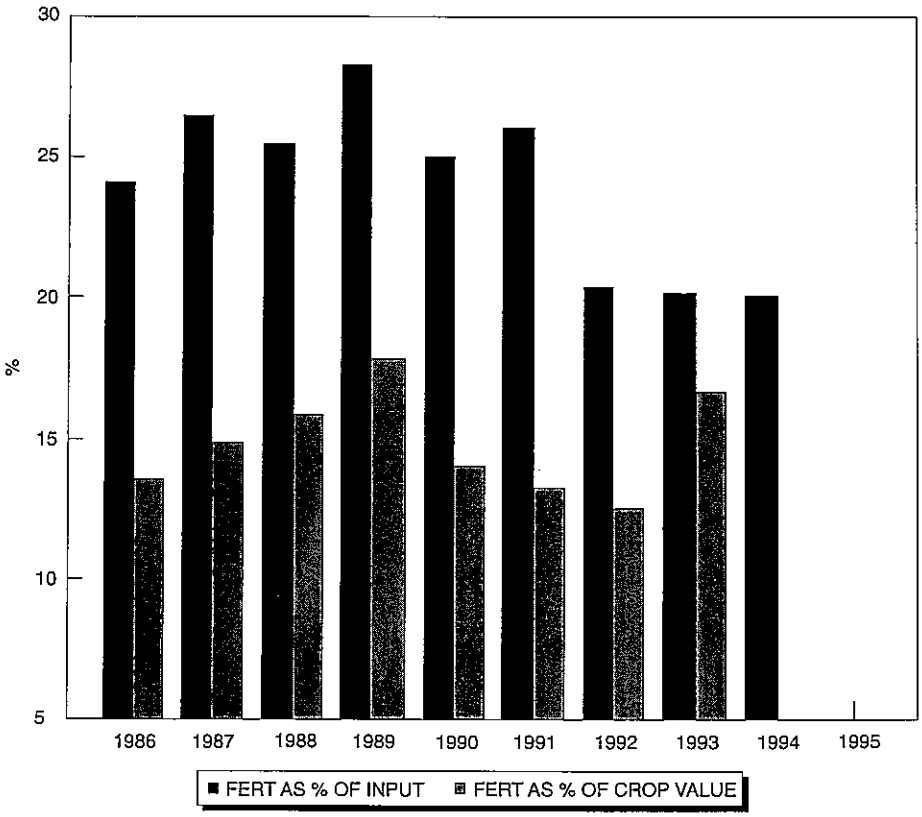

Fig. 9: Maize: Eastern Free State crop/input value

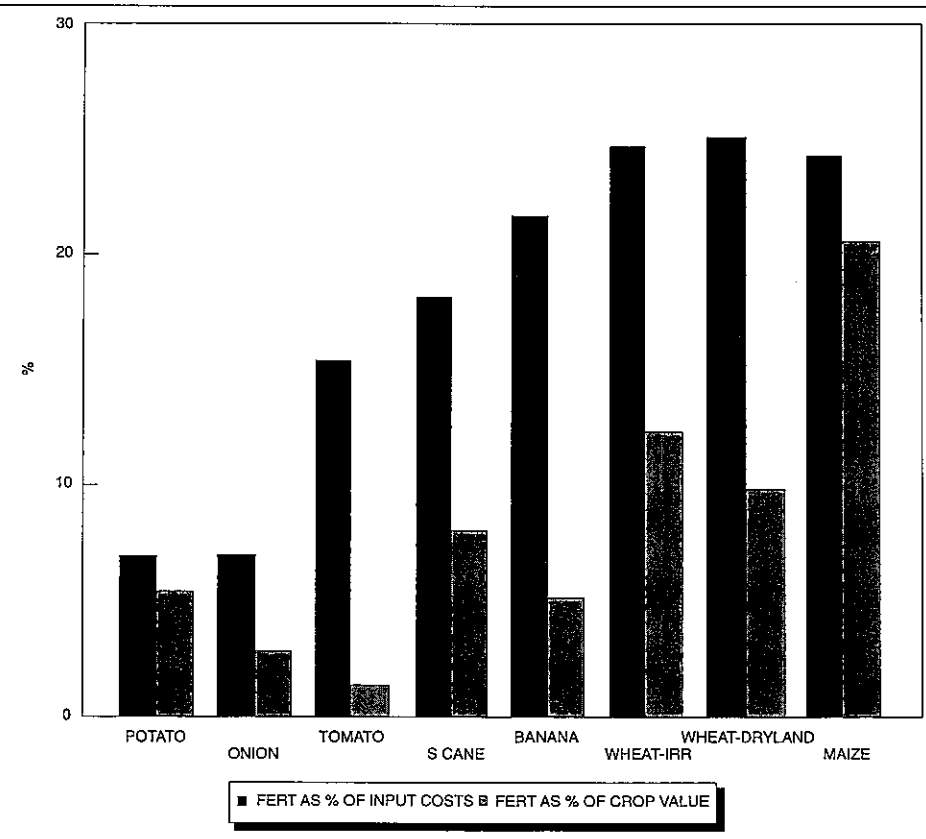

Fig. 10: Fertilizer cost as percentage of inputs and crop value

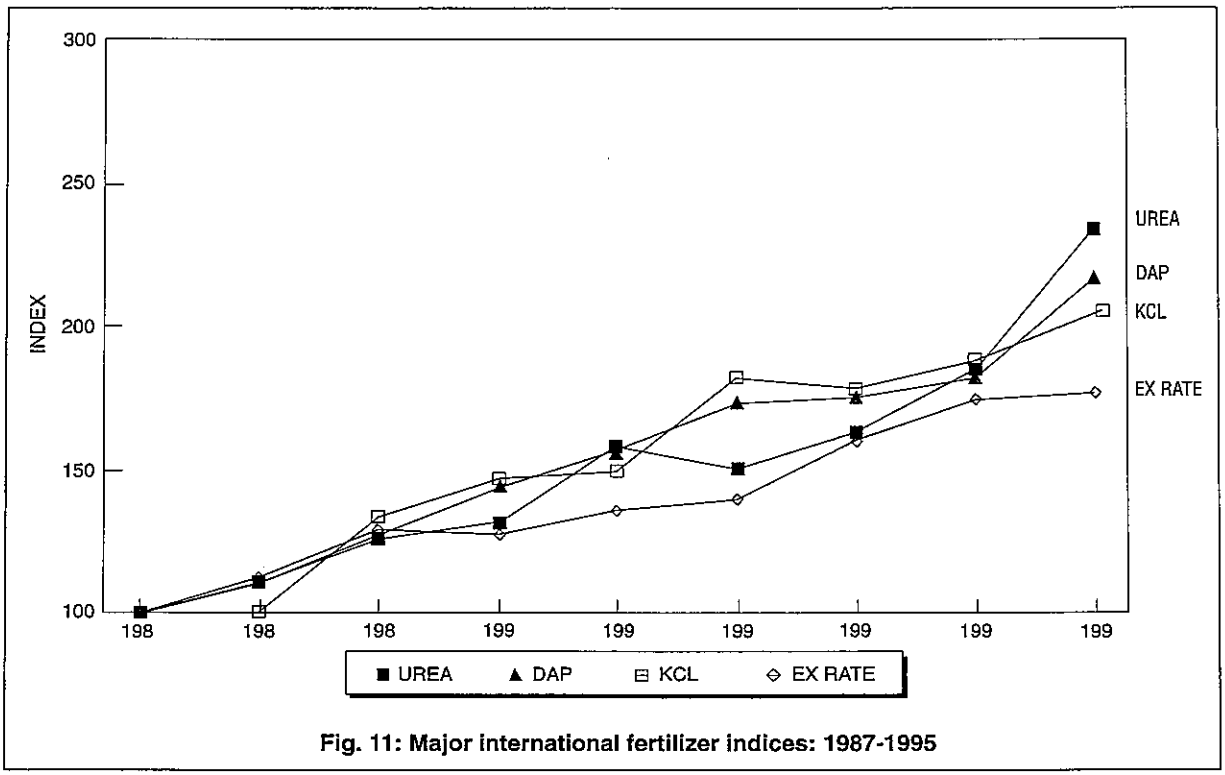

Fig. 11: Major international fertilizer indices: 1987-1995

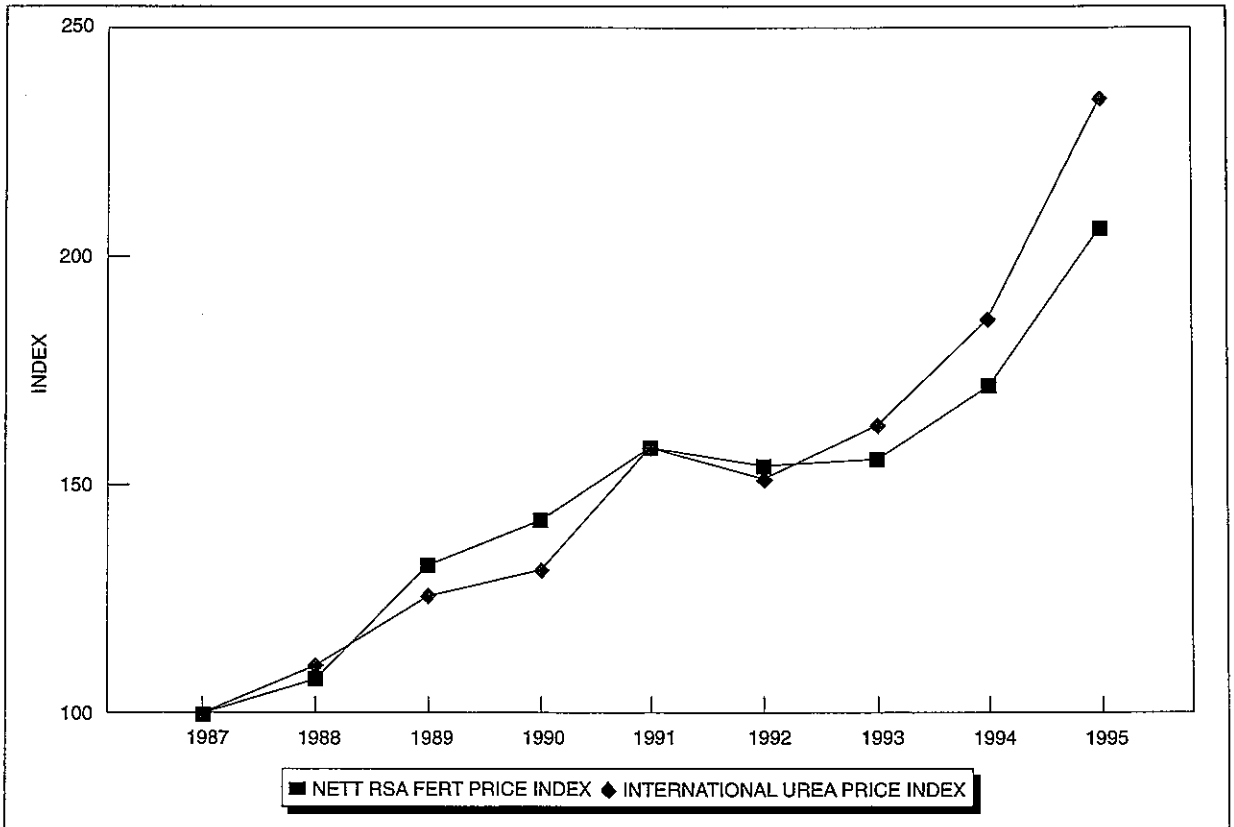

Fig. 12: International urea price index vs RSA nett fertilizer price index

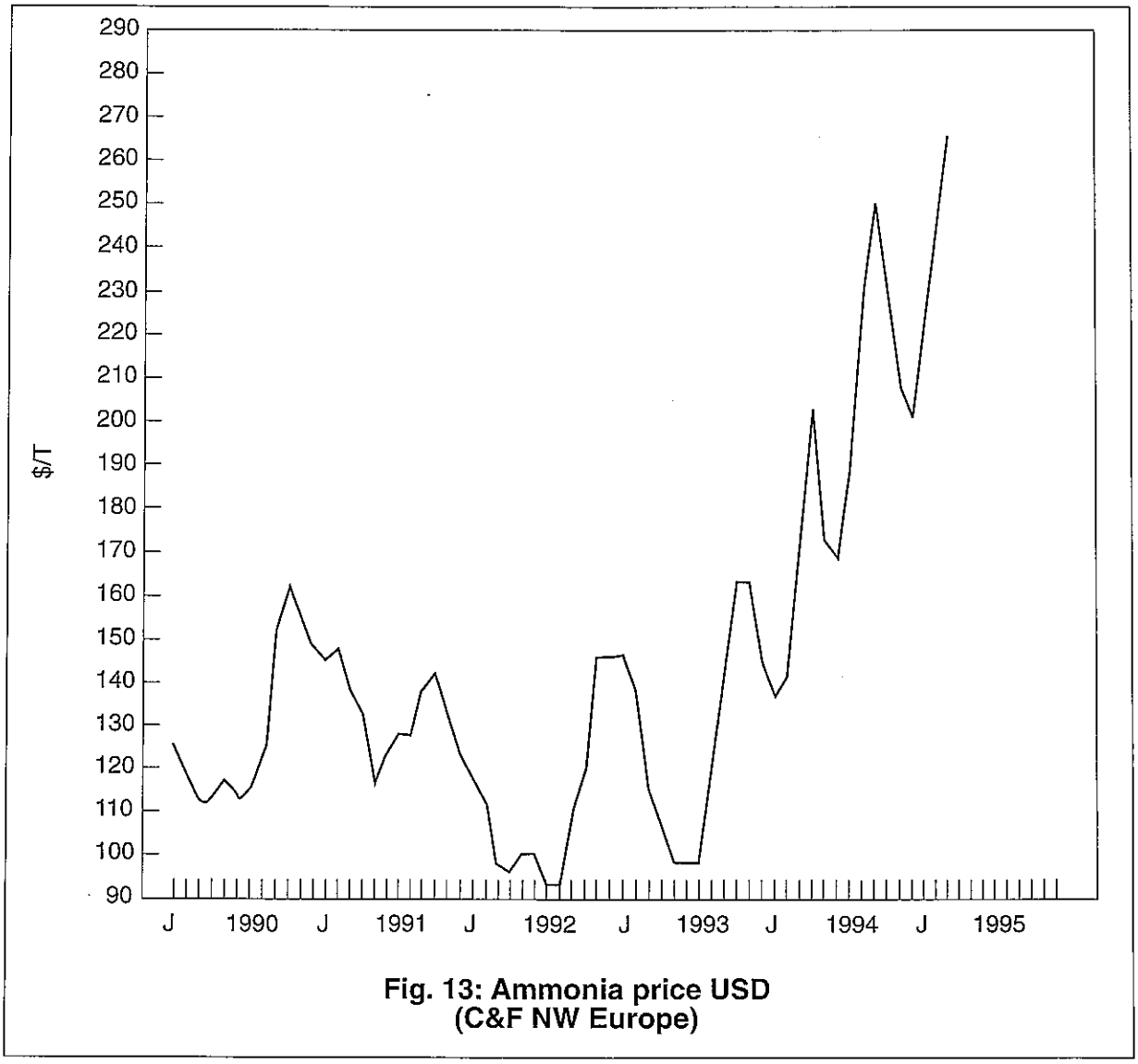

Fig. 13: Ammonia price USD (C&F NW Europe)