Global Agricultural Commodity Price Trends: Possible Impact on the Fertilizer Industry*

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Introduction

The contribution of commodities to global prosperity has declined steadily in its importance. For instance, in 1999, for the first time, the share in the value of commodities to total merchandise trade dropped below 20 %. Several factors are contributing to this erosion: continuing improvement in the efficacy in the production or exploitation has lowered the price of the commodities, shifting emphasis towards manufacturing (and services) resulting in higher volume of these products, and the recent successive financial crises and accompanying devaluations among many developing and transitional countries that are highly dependent on commodity exports. Nonetheless, commodity producers have from time to time enjoyed bursts of prosperity. Records show that over the past thirty years, spectacular returns were enjoyed by the following: gold with an annual average price of $ 615 per troy ounce for 1980; urea, $314/mt for 1973/74; crude oil, $37/barrel, 1981; cocoa, $3900/mt, 1978; coffee (Robusta),$5.00/kg, 1977; and more recently, cotton, $4.65/lb,1995 and wheat, $175/mt or $4.75/bushel, 1996. While these prices have been breached from time to time, the sustained demand for over a year at such lofty levels must have truly brought unimaginable returns to the producers.

Beginning from the peak of value, the rubber barons in Brazil reaped immense wealth with the advent of automobile but before the rubber seeds were spirited away to some obscure British colonies in the Far East. The remnants of their ostentatious living are still evident to this day. On the other end, gold, until 1972, was guaranteed at $ 35/ oz before its relation to the dollar was severed by the Nixon administration. Even worse was crude oil. It was peddled for a paltry a dollar a barrel up to 1970 before the newly formed Opec decided it was time to do some managed production recovery of their own.

History has shown that once a product is reduced to a “commodity” status, it becomes enchained to a cycle of feast and famine, mostly famine. Over-production or excessive capacity are the by-words for commodities. During good times there would be no shortage of investors or producers. It is not unusual that many would come to grief before the crops are harvested or the factories commissioned. For those with stamina, they can hang on for the next upturn but others have no choice but to exit with losses. Like most investors, commodity players are generally endowed with mega doses of optimism.

Agricultural Commodities

The trends for the various parameters: production, consumption, stock, price, etc, of agricultural commodities are generally very well documented due to keen interest among many parties for such vital data. For this article, the price trend over the last decade of eight agricultural commodities, representing five major crop groupings that account for some 80 percent of the global fertilizer demand will be illustrated here.

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* Presented at the 15th FMB European Fertilizer Conference & Exhibition, on 24-26 October 2001, Antwerp, Belgium

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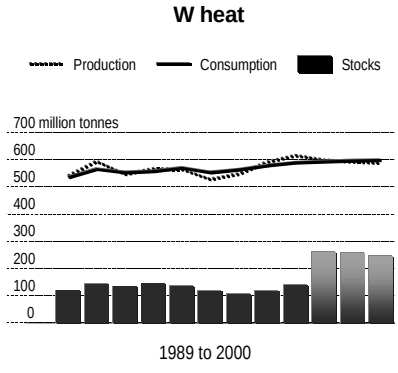
Throughout civilization, cereals have been a basic denominator that has helped to sustain the well being from small ethnic groups to mighty empires. The granaries that are always filled is a symbol of national stability. Various incentives have been formulated to ensure the steady production of cereals. One of the well known attempt to maintain an artificially good and steady price was the “Corn Law” of 1804 by Great Britain. Internal revolt finally forced its repeal only some 40 years later. On the other hand, the Great Depression in U.S.A. from the late 1920’s to the early thirties resulted in the introduction of agricultural subsidies that have remained basically unchanged ever since. Similarly in the European Community, the Treaty of Rome in 1960 established the Common Agricultural Policy with the objective of ensuring a more equitable deal for the farming community in return for a steady output of their efforts. Elsewhere, many other countries have experimented with various means to induce a steady flow of output with minimal price fluctuations but the results have invariably been either overproduction or at great costs to consumers. The trends of the various commodities will illustrate the cyclical nature of commodities especially when distortional forces are removed.

Wheat

The current cultivated area for wheat has virtually been unchanged at 215 million hectares since 1970 but production has since increased by some 80 % to an annual average of over 590 million tons in the last three years (Figure 1). Ninety percent of the production takes place in the northern hemisphere and the largest producers for 1999 are China (114 Mt),EU (97 Mt), India (71 Mt), USA (63 Mt), the Russian Federation (34 Mt), Canada (27 Mt), Turkey (18 Mt), Pakistan (18 Mt) and Ukraine (15 Mt). The two largest producers in the southern hemisphere, Australia (25 Mt) and Argentina (16 Mt) export at least two-thirds of their output. USA and Canada rank first and second in export at 29 Mt and 18 Mt respectively with EU at 16 Mt taking the fourth spot. Kazakhstan is the only significant exporter from Central Asia at 6 Mt. Wheat import is fairly well dispersed since it is used to complement either dietary diversity or deficiency in food production. The largest importers are Iran, Brazil, Japan and Egypt in which each have an average importation of between 6 to 7 Mt over the last five years. Algeria and Indonesia are also substantial purchasers. The Russian Federation has from time to time make forays into the market whenever crop failures strike. Interestingly, the Former Soviet Union used to import quite heavily before the collapse of its agriculture but have now stayed away. It is possible that the poor financial condition could be a factor. However, on the other hand, the Russian Federation imports a substantial amount of meat, particularly poultry.

Figure 1



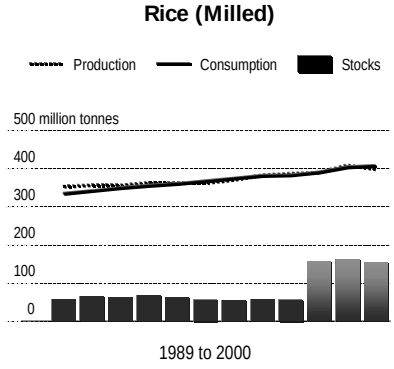
Overall, the global trade in wheat is relatively stable, fluctuating within a narrow band of between 90 to 110 Mt annually over the last decade.

Over the last 30 years, a very fine balance is achieved between production and consumption. It would be of interest to note that there had never been a period of three successive surplus of production over consumption or vice versa.

Rice

Of the major cereal crops, rice exhibited the least fluctuations in production. Unlike wheat in which the production area peaked in the mid-80's, the cultivated area for rice continued to grow steadily from 130 million hectares in 1970 to 155 million hectares in 1999 while production of paddy rose from 312 Mt to 611 Mt during the same period. Ninety percent of the rice is grown in Asia. The trend in global production, consumption and stock position is shown in Figure 2. The largest producers for 1999 are China (200 Mt), India (134 Mt), Indonesia (51 Mt), Bangladesh (34 Mt), Vietnam (33 Mt), Thailand (24 Mt), Philippines (12 Mt), and Japan (12 Mt). Outside Asia, the significant producers are Brazil (12 Mt), USA (9 Mt), and Egypt (6 Mt).

Figure 2



Rice is grown largely for domestic consumption as the majority of those involved are engaged in subsistence farming. Consequently, export of rice is rather limited compared with wheat. Only 5 % of the rice produced is sold across the national borders. Over the last decade the export volume has more than doubled to over 18 M.t. Poor harvest due to weather is the major factor that triggered sharp increases in imports. However, there appears a trend towards greater reliance on imported food, including rice, as fear on food security recedes. In the last decade the traditional exporters are Thailand, USA, China, Pakistan and Uruguay, but are now joined by Vietnam, India and Australia.

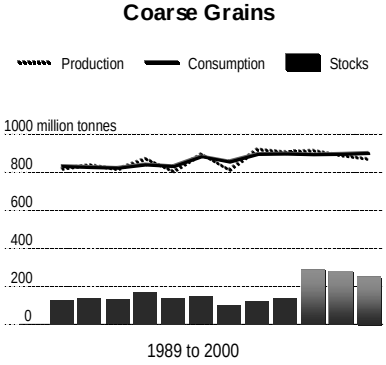
As rice is cultivated in some of the most densely populated countries in the world, their governments have paid special attention to ensure production meets consumption needs. Fortunately, catastrophic failures have been rare though weather has from time to time induced pockets of famine. As a result, production and consumption have been very intimately linked since the sixties.

Coarse grains

The composition of coarse grains is diverse. They are cultivated well beyond the tropical and temperate belts. In 1970, a total of 592 M.t. of maize, barley, oat, sorghum, rye and millet were produced from some 324 M. ha. Since then, only the maize crop has expanded in both

production tonnage and cropped area, largely at the expense of the others. The production, consumption and stock trend for coarse grains is shown in Figure 3.

Figure 3



The overwhelming dominance of maize provides a useful beacon for bearings on the development among the coarse grains. The bulk of maize is used for animal feed. Besides human consumption, maize now forms a base for the production of a wide range of products from industrial alcohols to fructose. Nearly 40 % of the maize is produced in USA, a volume that is far larger than any country or continent.

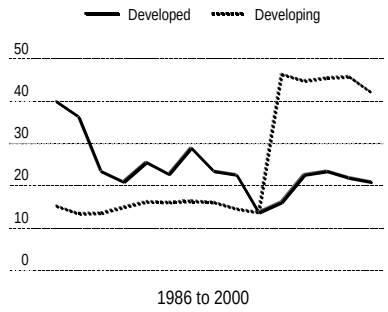
Production of coarse grains shows wide fluctuations and are quite reflective of the USA agricultural subsidy schemes.

Grain stocks

Figure 4 shows the latest statistics on global grain stocks from FAO. It is likely to be a subject of further scrutiny. Prior to 2000, the amount of stocks attributed to China was rather low. For instance, its average stock inventory between 1997 and 1999 was only 31 M.t. or equivalent to 8 % stock to consumption. This does not take into consideration the 10 M.t. that it averagely exported annually during the period. FAO considers 16 to 17 % stock to consumption as the minimum to maintain food security. Now, the latest statistics show the stock level has increased to an average of 400 M.t., or nearly 13 times compared with the previous report. As a result the global grain stock for developing countries has surged to over 40 % while the overall stocks to between 33 to 36 % or some 130 days of consumption against a previous 60 to 65 days.

Figure 4

Grains stocks to utilization (%)



Price trends in cereals

Figures 5 to 7 show the price trends for wheat, rice and maize respectively. The graphs show the weekly closing prices for immediate delivery at the Chicago Board of Trade for both wheat and maize or corn. For rice, it is the weekly settlement price at the Bangkok Rice Exchange.

Figure 5

W heat price trend

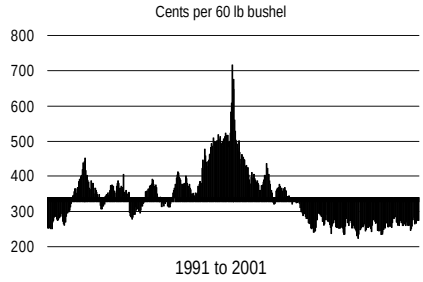


Figure 6

Rice price trend

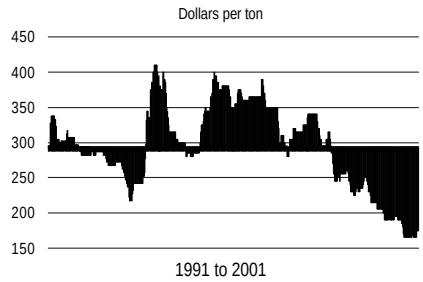
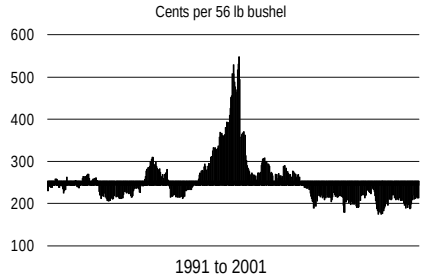


Figure 7

Maize price trend



In order to better understand the price trend for wheat and maize, it would be useful to refer to Figure 4. Prior to the end of the Cold War in November 1989, developed countries would hoard huge stockpiles of food reserves, for instance, as high as 40 % stock to consumption in 1986. Since the United States is a swing producer of a vast magnitude, its agricultural policy has a strong sway not only on output but a determining fate on the prices. The “Payment-in-Kind” (PIK) policy would stimulate production when stocks were low or its incentives could dampen whenever harvests were bountiful. It was apparent that effort to reduce stockpiles of grains in the developed world went into full swing after 1992 after successive large harvests of wheat in 1990 and 1992 and 93. The coarse grains had also established record harvests in 1992 and 1994. When the pendulum of production swung downward for wheat in 1993 and ’95 and for maize in 1993 and 1995, the result was a massive depletion of stocks in the developed countries. Total grain stocks to consumption fell to 13.7 % and 16.1 % or the equivalent to 50 and 59 days consumption respectively. When the traders sensed the imminent huge deficits in cereal stocks, the weekly closing prices for immediate delivery broke all-time records at the Chicago Board of Trade at the end of April 1996 at $7.16 per 60-lb bushel for wheat followed by corn in mid-July at $ 5.48 per 56-lb bushel. The euphoria spilled over to other sectors including fertilizers, meat, etc. Since then, prices have moved downward but the real blow came with the Asian financial crisis of July 1997. Currently prices have been oscillating well below the 10-year average.

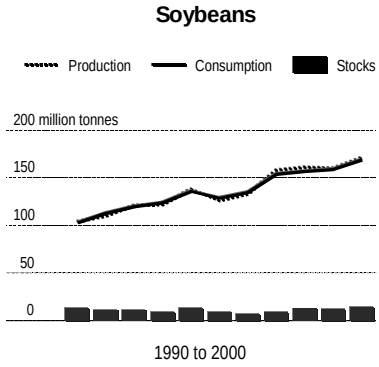
The price movement of rice was somewhat different in details. The weekly settlement prices for rice in the Bangkok Rice Exchange rose above the 10-year average towards the end of 1993 and largely remained there until the end of the first quarter of 1999. Since the Bangkok market is relatively small compared with CBOT, the price movements are affected by its local sentiments in Asia. For example, when a major shortfall in rice production developed in Japan in 1993, prices rose dramatically despite the fact the demand for rice in Japan is largely the *Japonica* variety as opposed to the *Indica* that is commonly consumed in the rest of Asia. The next boost came with the frenzy of grain demand that was gripping with the rest of the world in 1995/96. It did not evaporate with the fall in prices in CBOT or the Asian financial crisis. The *El Nino* was affecting rice production from North-east Asia to Indonesia in 1998. The restoration of normal production pattern after 1998 and the heavy financial difficulties of a number of rice exporting countries have ensured that the prices continue to dredge the bottom.

Oilseeds

Oilseeds originate from very heterogeneous families of flowering plants: Brassicae (rapeseed), Compositae (sunflower), Leguminosae (soybean, groundnut), Palmae (oil-palm, coconut), Malvaceae (cottonseed), etc. Among them, it is apparent that soybean and oil-palm are likely to dominate the oilseed and vegetable oil markets of the future.

The growth of the oilseed industry in recent times is far more impressive than the cereals. Planted areas for the five major oilseeds (soybean, rapeseed, sunflower, groundnut, cottonseed) have expanded from 101.6 M. hectares in 1970 to 180.2 M. hectares in 1999 while production jumped by 170 % to over 310 M.t. In comparison, the cropped areas for cereals are virtually unchanged although production grew by only 66 % during the same period.
Oilseeds are generally versatile since they provide, besides oils, valuable proteins and carbohydrates. Soybean is the base of a number of traditional and novel food products for human consumption. Soybean meal is the basic source for proteins in feeds. The largest producers in 1999 are USA (71.9 Mt), Brazil (30.9 Mt), Argentina (18 Mt), China (13.7 Mt), and India (6.5 Mt). In Brazil, the crop is planted in the cerrados which was previously a desolated area. By ingenious soil amelioration, the region is completely transformed. In Argentina, the crop was virtually non-existent 30 years ago. The production, consumption and stock trends for soybean is shown in Figure 8.

Figure 8



Trade in soybean is sizable. In 1998, some 38 Mt was sold across the national borders. The largest exporters are USA (20.4 Mt), Brazil (9.3 Mt.), Argentina (2.8 Mt) and Paraguay (2.0Mt). Europe and Asia with import of 16.3 Mt and 14.2 Mt respectively are the largest importers. Elsewhere, Mexico also imports a significant quantity.

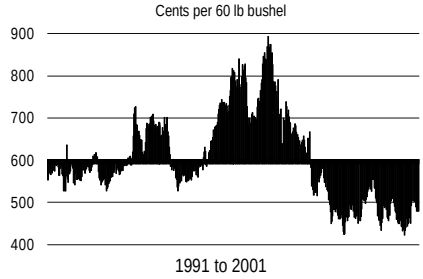
Production of soybean is generally balanced with consumption, current stock build-up has yet to be a serious problem. Soybean is much more competitively priced than the coarse grains for animal feeds.

The price trend for soybean is shown in Figure 9. In the early 1990's, prices oscillate in concert with a fine balance between production and consumption. Since 1991, however, there was a small but persistent excess of demand over supply and this finally brought stocks down to below 5 % stock to consumption in 1996, in which an 18 % increase in production over the previous year was followed by a corresponding increase in demand. Hence, there were successive peaks in prices for 1996 and '97. Indeed the weekly closing

price at the CBOT reached an unprecedented $8.90 per bushel July 1997. Thereafter, a combination of highly successful output from Brazil and Argentina, and the vigorous switch-over from both wheat and corn in the USA began to impact prices and stocks. As of the end of 2000, the stock has been rebuilt to the levels of the late 1980's and early 1990's. Prices are now significantly lower, partly reflecting the lower value of the Brazilian *real.*

Figure 9

Soybean price trend

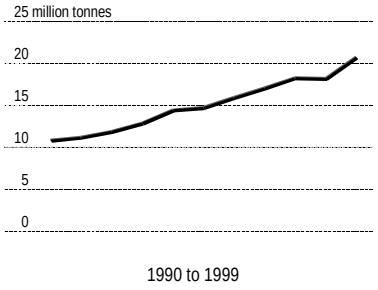


Palm-oil

Oil palms are indigenous to Africa. Up to 1960, oil palms existed as ornamentals in Asia and serious exploitation of its oil-bearing potential began only in the 1960's. In fact, in 1970, Africa led the world in palm oil production totaling 1.1 M.t. compared with 0.8 M.t. for Asia. The situation is now completely changed. Asia now produces some 18 M.t., approximately 10 times the output of Africa. The production trend is shown in Figure 10.

Figure 10

Palm oil production

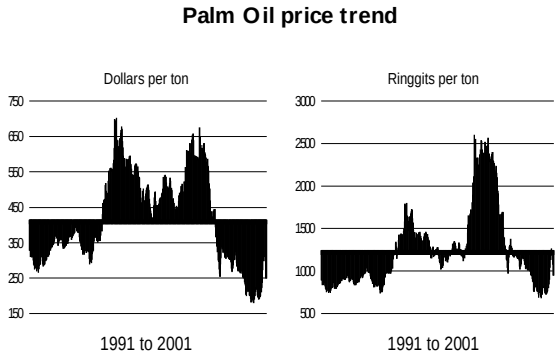


Although palm oil is largely used for human consumption, it has a number of other uses including feeds, soap, moulds , etc. Because of its prolific production, it is feasible to be converted to diesel fuel when economics are right. Malaysia is the largest exporters but in the medium term, Indonesia will emerge as the leader due to its huge tract of available land. The importing countries are largely the vegetable oil deficit developing countries.

Figure 11 reviews an interesting contrast when the price trends shown in local currency underwent devaluation in July 1997 against the dollar. In dollar term, the good return for the producers were from April 1994 to May 1999. Current prices are very depressed. On the

other hand, the best year in local currency was 1998 in which there was already a 40 % devaluation. This effect of a sense of well being is not confined to Malaysia but to all producers whose currency has suffered a devaluation. To date, devaluation is the key factor that continues to dampen price recovery among commodities.

Figure 11



Sugars

Cane sugars contributed some 83 % of the global production of around 154 Mt for 1999. Approximately the same percentage of the total output is refined or centrifuged. The major cane production were Brazil (33.2 Mt), India (28.2 Mt), China (8.9 Mt). Pakistan (5.3Mt) and Thailand (5.3Mt). Two thirds of the beet sugars are produced in Europe. Its share has been eroding since production is quite dependent on subsidies to sustain its viability.

One in four tons of sugars produced is exported. In 1998, global export of both raw and refined sugars exceeded 39 Mt with a value of some $12 bn. The largest exporters are Brazil (8.9 Mt), Australia (4.5 Mt), Thailand (2.5 Mt), Cuba (2.6 Mt) and the countries in Central America and the Caribbean.

The world is faced with a sugar glut. Over the last seven years, production has exceeded consumption. The trends in production of refined sugars, consumption and stocks are shown in Figure 12.

Figure 12

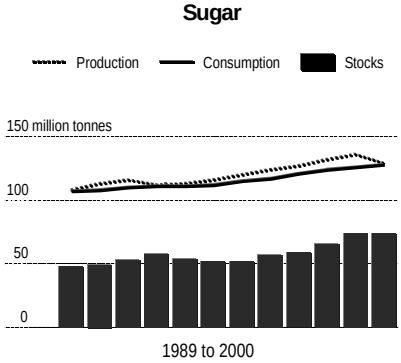
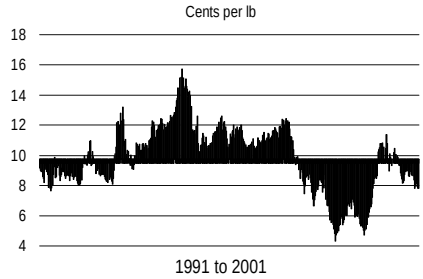


Figure 13 shows the price movement at the NYCSE. Due to various distortional measures, including quantitative tariffs, subsidies and the involvement of ISO, the prices generally do not reflect market efficiency. For example, in spite of the huge stock overhang, there was a brief rally towards the end of 2000 but this eventually collapsed as reality set in.

Figure 13

Sugar price trend

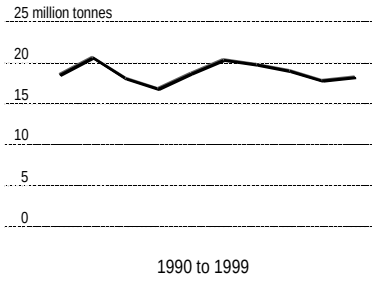


Cotton

Cotton production favours a dry spell during its growing season in order to assist fibre development. As a result the cultivated areas generally border the arid zones in Asia and Africa. Nearly 60 % of the cotton is produced in Asia, primarily in China, India, Pakistan and the Central Asian republics of the Former Soviet Union. Among the non-Asian producers, USA stands out with a share of over 20 %. The cultivation in Australia has grown rapidly over the last decade and is now a very significant exporter. In the last decade, production has stagnated, oscillating between 18 and 20 Mt. Although its growth has lagged behind the synthetics, it has largely avoided the decline suffered by the wool. The production trend is shown in Figure 14.

Figure 14

Cotton production

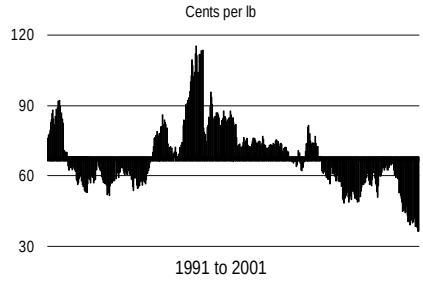


Price movements in cotton (Figure 15) is closely related, as in the other commodities, to several factors: stocks, tariff barriers, currency movements and in addition to the vagaries of fashion. For the latter, it is a question if cotton fibrics become the “in thing”. For instance, the large outputs between 1994 and 1996 was also associated with very healthy prices. Cotton prices are now in the doldrums. The major factor is the significant currency devaluation

among the countries of the Former Soviet Union in Central Asia. Most of their produce are simply dumped into the market in search for hard currencies.

Figure 15

Cotton price trend



Coffee

Some 80 % of the coffee produced is meant for export. Therefore it ranks very high among the major agricultural commodities traded:

Export Value (average 1996-98)	
Tobacco	$ 25.3 bn
Wheat	17.5
Coffee	13.4
Sugar	12.3
Maize	10.7
Soybean	10.1
Cotton	9.2
Rice	8.5

Among the coffee varieties, *Robusta* is most widely grown but it is the *Arabica* that commands a major premium in price. Coffee is a perennial crop and the varieties differ in flowering characteristic. *Robusta* flowers all year round while the *Arabica* has a short flowering season. While the *Arabica* is vulnerable during flowering, the coffee crop in Brazil is particularly susceptible to frost. The countries of Central and South America led by Brazil and Colombia, account for more than half the global production. The remainder is about equally shared between Asia and Africa. Recently the major producing countries, largely in countries in Central America and Colombia have cut back production. Brazil and Vietnam, both key *Robusta* producers have continued to expand their areas. Over-production has led to the disastrous collapse in prices in the last two years. The production trend is shown in Figure 16.

Figure 16

Coffee production

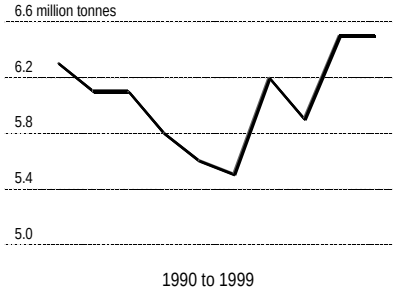
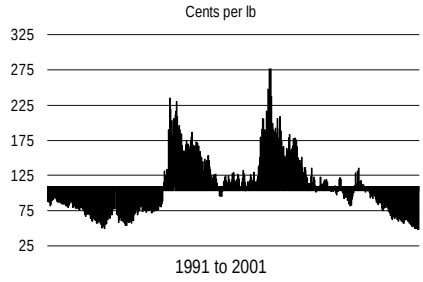


Figure 17 shown the price trend at NYCSE for *Robusta* coffee. The price spikes of 1994-5 and 1997 are the reflections of below average harvests for 1993 to 1996. The currents stocks are very high, especially the unsustainable large harvests from Vietnam. The stratospheric prices of 1997 had led to unprecedented expansion and unfortunately vast areas would now have to be replaced with huge losses.

Figure 17

Coffee price trend



Commodity Price Trend and Fertilizers

The demand for fertilizers is dependent upon its usage in crop production. Currently, global fertilizer consumption amounted to some 360 million ton (140 Mt. nutrient) per year. These products are derived from only 20 basic chemicals. About 60% of the fertilizer is used in cereals, 10% for pastures, 8% for the oilseeds while the remainder is taken up by the “soft” commodities such as sugars, cotton, the beverage crops and the root crops, horticulture, ornamentals, etc. The total area under fertilizer usage is approximately 1.4 bn hectares or 100 kg/ha nutrient. Efforts to correlate fertilizer demand and commodity price trend is extremely complex. There are several situations in which fertilizer demand and commodity prices are highly independent of each other :

- High support prices for agricultural produce as exemplified in West Europe and as well as among selected crops singled out for special support, for example, sugar, tobacco production in USA. The support prices are very high and that prevailing global prices have little impact on their production.

- Dependency on fertilizer subsidy. Under this scenario it is the fertilizer prices are generally well below those prevailing in the free market. This is the case in India at present.
- Subsistence farming

In recent years, especially under the GATT(now WTO) Agreement on Agriculture, attempt is being initiated to open the door more widely to agricultural trade. This involves removing non-tariff barriers and as well as lowering the tariff wall. The Cairns Group of 18 countries that represent some of the largest agricultural commodity exporters are among the most vocal for open agricultural trade. Their exporting fortunes are tied open trade in agricultural products.

Direct correlation between commodities prices and fertilizer demand would be indeed difficult to establish due to the interaction of many factors including the distortionary ones. Needless to say, producers are likely to apply more inputs that would enhance production, plant more or switch crops whenever they perceive good potential return or had benefited from previous harvests. The vast number of imponderables should not discourage attempt to correlate agricultural commodity prices to those of the fertilizers. Here, DAP is chosen since it is widely used, freely traded, data on price movements are well documented. It provides two pillars of nutrients : nitrogen and phosphate.

Figures 18 to 21 show the price movements of DAP against the wheat, maize, soybean and cotton prices at CBOT. In the early 1990's the fertilizer industry was affected by the severe downturn in the Former Soviet Union and Central Europe. DAP prices fell to $ 110 fob, one of the lowest for some time. Towards the end of 1993, prices started a strong recovery and almost doubled the beginning of 1995. A sharp correction took and by the middle of that year a sharp rebound came from the soaring prices of cereals. It reached a peak of $ 230 fob towards the end of 1995 and despite moving to a less buoyant level of around $ 180's, DAP was able to maintain a healthy pricing for over three years thereafter. The concern about the large new capacity build-up', the uncertainties surrounding the Chinese and Indian markets, together with the prolonged slump in the cereal prices finally broke the resistance that had kept the DAP prices up. Over the next 9 months, prices felled virtually uninterrupted to below $ 140 fob. Although there were some recovery in anticipation of a turnaround in the cereal prices, the rally was short-lived. The overall poor market sentiments, both among the agricultural producers and the consumers of agricultural produce have weighed in rather badly on the fertilizer industry.

Figure 18

Price movements of DAP against wheat prices at CBOT

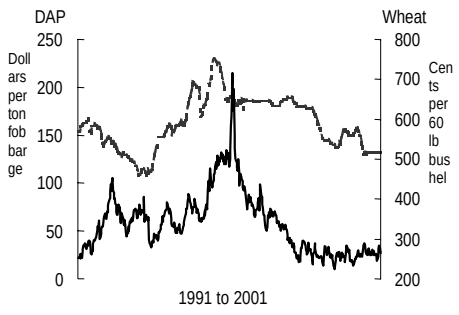


Figure 19

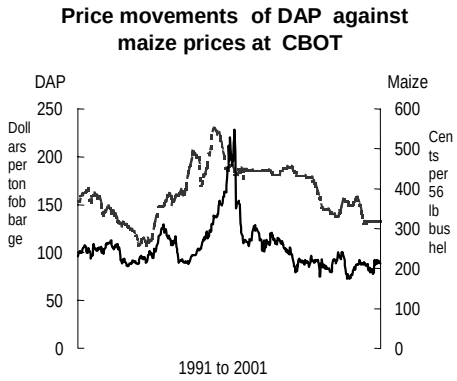


Figure 20

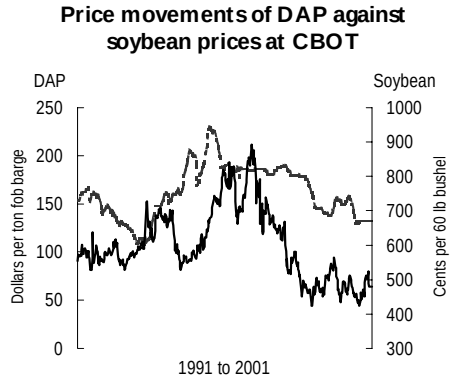
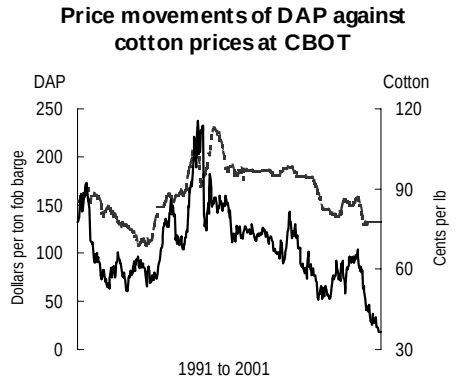


Figure 21



At a glance, DAP prices have largely moved in concert with those of the commodities mentioned. Contrasting trends however, are not clearly evident. However, the timing and the depth of correlation between the prices of the commodities and fertilizers vary since other factors that are distortionary become significant. Regression correlations would only offer partial confirmation of the relationship between the two. The dynamics of the commodities market will always be in a flux. Attempts to remove distortionary factors will invariably be replaced by new ones. Commodity prices will always provide a useful guide to the direction of the price movements for the fertilizers.

Acknowledgements

The author wishes to express his thanks to Luc M. Maene, Director General, IFA, for his fine encouragements, Helene Ginet and Jennifer Grzeskowiak, for the preparation of the graphs and manuscripts respectively. Special thanks are due to Kevin Hill of FMB for making available the data relating to DAP price movements.

FMB 15th European Fertilizer Conference & Exhibition

Antwerp, Belgium – 24-26 October 2001

Global Agricultural Commodity Price Trends:

Possible Impact on the Fertilizer Industry

K.G. Soh
International Fertilizer Industry Association
Paris, France

- Background relating to commodities
- Production, consumption, stock, price

Wheat	Rice	Maize
Soybean	Palm Oil	Sugars
Cotton	Coffee	

- Commodity price trend and fertilizers

Commodities

Commodity share in merchandise trade below 20%

- Improved exploitation
- Shift to manufacturing services
- Devaluation in producing countries

Spectacular returns!

		Annual average	Current	
Urea	1973	$ 314	$ 115	t
Coffee	1977	$ 5.00	$ 1.05	kg
Cocoa	1978	$ 3900	$ 1060	t
Gold	1980	$ 615	$ 280	oz
Crude oil	1981	$ 37	$ 21	b
Cotton	1995	$ 1.05	$ 0.32	lb
Wheat	1996	$ 4.75	$ 2.85	bu

Evolution of commodities

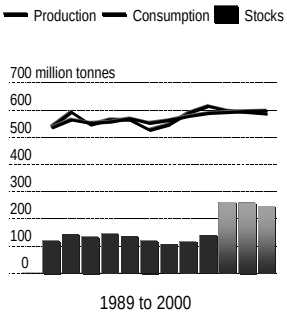
- **Rubber.** Barons from Brazil
- **Gold.** Nixon unleased from $30/oz
- **Oil.** $ 1 per barrel before OPEC
- **Cyclical.** Feast to famine

Agricultural commodities

Attempts to modulate cycles

- Corn law 1804 in Great Britain
- USA agricultural subsidies from 1930's
- EU Common Agricultural policy

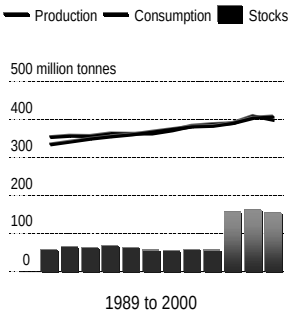
W heat



1989 to 2000

- Cultivated area unchanged since 1970 Production up 80% to 590 Mt.
- 90% grown in Northern hemisphere
- Two-third production in Southern hemisphere exported
- Trade volumes at 90-110 Mt. per year
- Fine balance between production & consumption

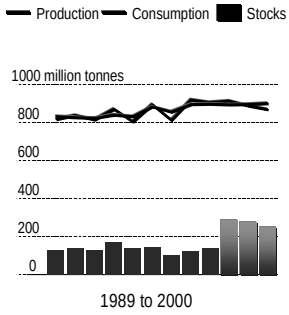
Rice (Milled)



1989 to 2000

- 90% rice produced in Asia most populous countries
- Cropped area +20% Production +96% since 1970
- Subsistence crop; 5% exported
- Catastrophic crop failures are rare – only pocket of famine
- Expansion in export opens door to new exporters

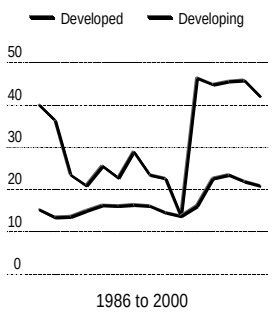
Coarse Grains



1989 to 2000

- Cultivation well beyond temperate / tropical belts
- Production and consumption oscillates alternatively
- Maize has emerged as the dominant crop
- 40% global maize 'corn' grown in USA

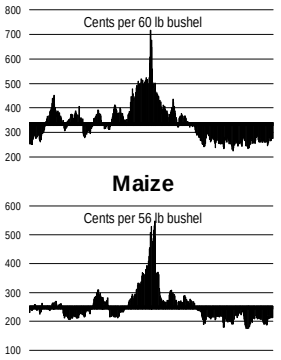
Grains stocks to utilization (%)



1986 to 2000

- Major stock revisions by FAO in 2001
- Developing countries stock-to-consumption consistently below 15%
- Major downsizing of stocks in developed countries may have triggered record cereals prices in 1995/96

W heat

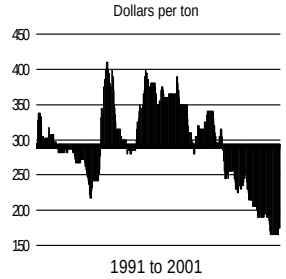


Maize

1991 to 2001

- Wheat and corn similar price trends
- Influenced by USA ag subsidy policy eg PIK
- Major reduction in stocks from 1992
- Shortfall in production in 1993, 1994 and 1995
- Financial crises and devaluations

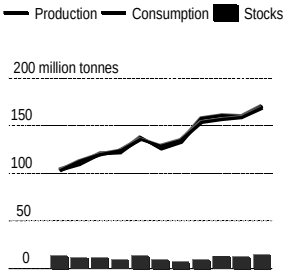
Rice price trend



1991 to 2001

- Attractive prices beginning 1990's
- Japanese shortfall in 1993 triggered recovering
- Sustained excellent market 1994-98
  - Buoyant cereal market
  - El-Nino production problems
- Disastrous devaluations : Australia to Vietnam

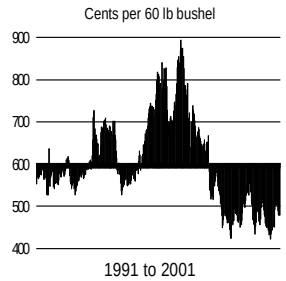
Soybeans



1990 to 2000

- Oilseeds have diverse origins
- Since 1970 Area : +80%, Production : +170%
- Source of oils, proteins, carbohydrates
- Soybean becomes leading oilseed
- Persistent greater demand vs production

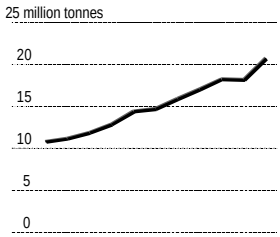
Soybean price trend



1991 to 2001

- Early 1990's oscillates fine balance between demand and production
- 1995. Price rises in sympathy with cereals
- 1996. Sharp depletion in stocks
- 1998. Financial crisis
  Devaluation of Brazilian real
- Current doldrums

Palm oil production

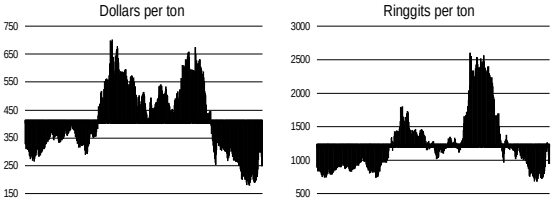


1990 to 1999

- Transfer of production from Africa to Asia
  - Africa 1.1 Mt now 2.0 Mt
  - Asia 0.8 Mt now 18.0 Mt
- Product for consumption : feed, soaps, industries, diesels

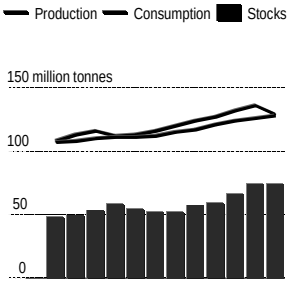
Palm Oil price trend

- Contrasting perception in value before and after devaluation



1991 to 2001 1991 to 2001

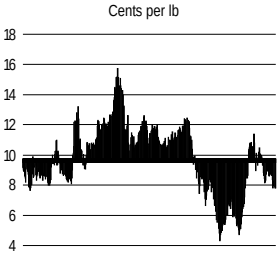
Sugar



1989 to 2000

- Cane sugars 83% - Beet sugars 17%
- Total 154 Mt : « Centrifuged » 128 Mt
- 1 in 4 tons exported
- Persistent glut : 7 years in a row production exceeds consumption
- Huge stock overhang

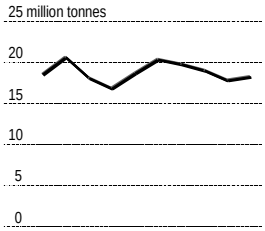
Sugar price trend



1991 to 2001

- Sugar prices very distortionary
- High subsidies
- Non-tariff and quantitative barriers

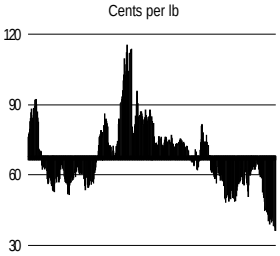
Cotton production



1990 to 1999

- Cultivated in semi-arid regions in Asia, Africa, USA, Australia
- Stagnation in production : 18-20 Mt
- Competition with synthetics, wool
- Fashion dictates demand

Cotton price trend



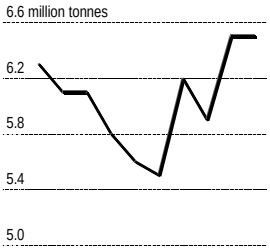
1991 to 2001

- Price closely associated with output
- Devaluation of Central Asian republics have disastrous impact

Coffee : a major EXPORT commodity

Tobacco	$ 25 bn	(Average export value 1996-1998)
Wheat	$ 18 bn	
Coffee	$ 13 bn	
Sugar	$ 12 bn	
Maize	$ 11 bn	
Soybean	$ 10 bn	
Cotton	$ 9 bn	
Rice	$ 8 bn	

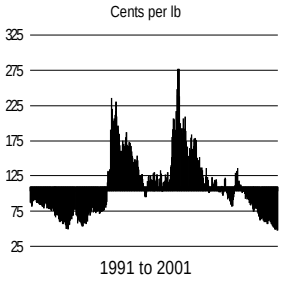
Coffee production



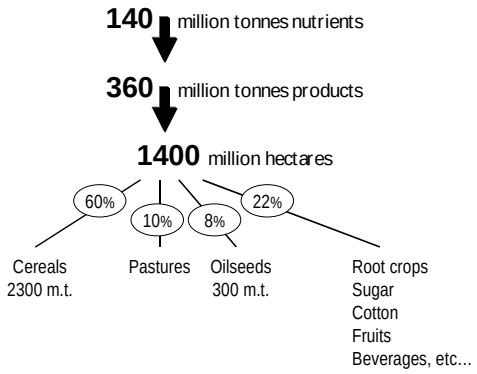
1990 to 1999

- Robusta coffee vs arabica coffee
- Continued expansion of robusta at expense of arabica
- Disastrous consequences in Vietnam

Coffee price trend



- Prices subject to wide gyrations : no distortionary forces
- Peaks represent shortfall in Brazilian output
- Current doldrums will take 3-5 years to remedy



Fertilizer demand independent of Ag commodity prices

Distortionary factors in fertilizer market

- High support prices for agric. produce
- Selective subsidies eg sugars, tobacco, etc...
- Fertilizer subsidy eg India

Subsistence farming

Movement to open agricultural trade

- GATT (WTO) Agreement on Agriculture
- Cairns Group Campaign