

Working Paper No. 03-01

**IMPACT OF TRADE LIBERALIZATION ON
PHILIPPINE CORN PRICES**

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Impact of Trade Liberalization on Philippine Corn Prices

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ABSTRACT

This paper analyzes corn prices and the policy environment for the crop in terms of import policies, tariffs, and other trade policies embodied in the General Agreement on Tariffs and Trade-World Trade Organization (GATT-WTO). Comparative analysis of trends between the pre-GATT years (1990-1995) and the post-GATT years (1996-2000) was done for the highest corn-producing regions in the Philippines (Southern Mindanao for white corn and Cagayan Valley for yellow corn and Northern Mindanao for both yellow and white corn). Compared with the pre-GATT years, the post-GATT years have resulted in higher production and higher profits for yellow corn farmers but lower production and lower profits for white corn farmers. Although both yellow and white corn farmers got higher prices for their products and were still highly protected, yellow corn farmers apparently benefited more from GATT. This may be attributed to the increasing demand for yellow corn in the feed industry. The price competitiveness analysis at the respective wholesale markets in the production areas showed domestic corn to be highly competitive with imported corn both at the in-quota and out-quota tariff rates. After adding marketing and distribution cost up to Manila from the respective production areas, domestic corn was found to be either marginally or not competitive at all with imported corn at the Manila wholesale market at the in-quota tariff rates. At the out-quota tariff rates, the price of domestic corn was competitive with that of imported corn.

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Impact of Trade Liberalization on Philippine Corn Prices²

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I. Introduction

Before the Philippines joined the World Trade Organization (WTO) and before it adopted the principles of the General Agreement on Tariffs and Trade-World Trade Organization (GATT-WTO) negotiated under the Uruguay Round, corn has been a protected commodity through import licensing, subsidies, tariffs, and quantitative restrictions. With the country acceding to GATT in December 1994, the corn industry began to be gradually liberalized. Analysis of price trends and the policy environment for the crop in terms of import policies, tariffs, and other trade policies embodied in the GATT-WTO would therefore be a significant step toward providing marketing information that can guide policymaking and setting up better directions for the corn industry.

Exchange rates, tariffs, and other trade policies, together with prices of production inputs, volume of production and imports, demand for corn, and availability of support services such as farm-to-market roads and other infrastructure needed in the distribution of corn could have significant effects on corn prices.

Theoretically, with tariff, it is expected that domestic prices are high, quantity consumed is low, domestic production is high, and imports decline. When tariff is reduced, domestic prices go down and approach the world price, a situation advantageous to consumers but disadvantageous to producers. Hence, the tendency is to have lower production and to have more imports. Removal of tariffs means a lowering of protection to producers but increasing the gain of consumers because of lower domestic prices. With decline in tariffs, domestic corn becomes less competitive with imported ones. If there is no tariff, domestic corn loses its competitiveness.

In the case of world prices of corn, the lower border or world prices would lower the landed cost of imported corn, making locally produced corn less competitive. A peso devaluation though would make corn imports more expensive. Higher exchange rates

²Primary data on corn prices in Bukidnon were provided by the Sustainable Agriculture and Natural Resource Management-Collaborative Research Support Program (SANREM-CRSP). This working paper was part of the SANREM CRSP/SEA-23 output and was made possible through the support provided by the Office of Agriculture and Food Security, Bureau for Global Programs, United States Agency for International Development, under the terms of Award No. PCE-A-00-98-00019-00.

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would mean higher landed cost of imported corn, higher domestic prices, increased welfare gains of producers, higher production, lower consumption, and lower imports.

A comparative analysis of trends between the pre-GATT years (1990-1995)⁴ and the post-GATT years (1996-2000) was done for the Philippines, Northern Mindanao, (highest corn-producing region), and Bukidnon (one of the provinces in northern Mindanao). Bukidnon and Northern Mindanao were made the point of reference in this paper because of the availability of time-series data generated by a University of Southern Mindanao project funded by the Sustainable Agriculture and Natural Resource Management-Collaborative Research Support Program (SANREM-CRSP). The following questions are addressed in the paper: What is the implication of the country's ratification of GATT on our trade policies? What is the impact of changing trade policies on domestic prices? How profitable is corn production after GATT?

II. Philippine Trade Policies

A. Pre-GATT-WTO Scenario

The policy environment prior to GATT-WTO encouraged domestic production and provided some protection from the world market either through monopoly of corn imports (with the National Food Authority [NFA] determining the volume of corn imports by considering domestic demand and supply conditions in consultation with other government agencies and then allocating the imported feedgrains to end-users by taking into account the volume requested by them, their actual need, and stock availability), through imposition of licensing requirements, and/or through quantitative restrictions (Chupungco 1991).

The NFA is mandated to support farm-level prices and keep consumer prices low. However, its price support program and quantitative restrictions of international trade in corn have apparently created more uncertainties in corn prices thereby limiting the trading activities of the private sector. The NFA budget was not adequate to stabilize farm prices at the desired level. Bureaucratic delays created lags between the decision to import corn and the actual delivery of the imported crop. Imports arrived when prices are low, again causing uncertainty in the corn sector (Teh and Yorobe 1996).

The tariff policy and the government's monopoly on feed imports enabled domestic corn producers to gain from price protection (Arboleda and Cabanilla 1986, Perez and Gonzales 1992). Consumers and meat producers, on the other hand, were in the losing end due to higher corn prices. The Philippines' Bureau of Agricultural Statistics (BAS) data on production costs and returns, however, disclose that planting corn gives very little returns to farmers.

⁴The year 1995 was considered a pre-Gatt year in this paper as Republic Act 8178 or the Agricultural tariffication Act, removing the quantitative restrictions in corn And replacing them with tariffs, was signed only in march 1996. Likewise, there may have been other adjustments made before the actual implementation of the Gatt-WTO policies

B. GATT-WTO Scenario

A fundamental principle of GATT-WTO is the generally free entry of goods into an importing country. This provides a framework for tariff level negotiations to eliminate tariff. In the case of corn, non-tariff measures such as quantitative restrictions were replaced with tariffs, thereby gaining market access.

Among others, the Agreement on Agriculture (AA) under the GATT has provisions on tariffication, binding of tariffs (i.e., maximum levels of tariff that may be applied), reduction of tariffs, tariff rate quotas, and minimum access volumes (MAV). Consistent with tariffication, the AA prescribes the use of tariff rate quotas or a system where some volume of imports shall be allowed at a lower tariff rate, with imports over the said volume being levied a higher tariff rate. They were set at 3% of 1986-1988 consumption in 1995, increasing to 5% of the 1986-1988 consumption by 2004.

Another commitment under the AA was for the Philippines and other developing countries to bind the most favored nation (MFN) rates on all agricultural products such that average tariffs would decline by an average of 24% for the sector. The minimum reduction per tariff line is 10% for the 10-year implementation period from 1995 to 2004. One core principle under the WTO is that every member must extend to all other members the MFN treatment or the same trade advantages that it offers to its most favored trading partner for any given product (Aranal-Sereno 1999). Hence, Executive Order 313, issued in March 1996, set the tariff rates from 1996 to 2000 at the maximum rates possible, given the country's commitment to the WTO. The existing and WTO-bound tariff rates or the out-quota tariff rates (i.e., the higher rate of customs duty levied on the quantity of an imported agricultural product in excess of the MAV for that particular product) for corn declined from 100% in 1996 to 80% in 1997 and 1998 and to 65% in 1999 and 2000. In 2004, the bound rate is 50% for corn. Prior to tariffication, the tariff rate for corn was 20% from 1990 to 1995. The in-quota tariff rate for MAV imports is set at 35% from 1996 to 2000 until 2004.

Initially, MAV was based on import history. However, issues such as the allocation system not being equitable enough and the system tending to limit actual imports, arose. Guidelines were thus revised. Subsequent allocations were made to existing quota holders, depending on import performance, and better access was given new entrants on the basis of non-MAV import history and/or on a first-come-first-served basis (for those without import history). The administration of the MAV for corn was likewise transferred from the NFA to the MAV Management Committee and the MAV Secretariat.

Trends in MAV utilization for corn showed that it was high in the first year but has declined since then basically because of downward adjustments, starting in 1998, in the MFN tariffs of corn substitutes (de la Peña and Noveno 2000).

De la Peña (2000) contends that the country needs to determine whether to expand or phase out MAVs as this, in effect, creates two tiers of rates per commodity, bringing about administration difficulties and market distortions.

C. Other Trade-Related Variables

Lapiña (1999) estimated the global competitiveness of yellow corn under import substitution in Isabela (a province in Cagayan Valley), Bukidnon, and South Cotabato (a province in Southern Mindanao) for the period 1995-1996 to 1998-1999 using mostly projected data, including world prices. He found out that at 35% tariff, all provinces are price competitive with imported corn at the respective wholesale markets in the production areas. This means that import parity ratios (ratios of import parity price to domestic wholesale price) are greater than one. Import parity ratios ranged from 1.26 to 1.77 for Isabela, 1.66 to 1.98 for Bukidnon, and 1.43 to 1.87 for South Cotabato. This is due to the relatively high distribution cost from the province to the Manila wholesale market, which made imported corn in the province relatively more expensive. This is caused by lack of developed market infrastructure such as postharvest facilities, roads, and ports from the provinces to Manila. At lower tariff rates and even at zero tariff, the price of local corn was likewise found to be competitive with that of imported corn at the respective wholesale markets in the production areas.

When the price of corn from the production areas was adjusted for marketing and distribution cost up to Manila (to determine whether local corn shipped to Manila can still compete with imported corn considering the present marketing and distribution infrastructure), it was shown that corn from Bukidnon had marginal price competitiveness with imports at the Manila wholesale market at 35% tariff. Import parity ratios were 0.99 for 1997-1998 and greater than one (1.06-1.12) for the other years. At the Manila wholesale market, domestic corn in Isabela was not competitive from 1995-1996 to 1997-1998 at 35% tariff. It became competitive only in 1998-1999 because of the higher exchange rate. In South Cotabato, domestic corn was competitive only in 1998-1999 at 35% tariff. At lower tariff rates, domestic price is generally no longer competitive.

When the projected data used by Lapiña (1999) in his computation of price competitiveness of domestic corn production with imported corn were replaced with actual data on world prices, exchange rates, and domestic wholesale prices presented in this paper, while also using Lapiña's projected data on handling, trading and distribution costs, similar results were obtained. Estimates for white corn were also computed inasmuch as white corn could also be used for feeds, although not as highly preferred as yellow corn (the latter has carotene) (Arboleda and Cabanilla 1986). The import parity ratios were all greater than one at the respective wholesale markets in the production areas for both yellow and white corn at 35% tariff (**Table 1**). However, at the Manila wholesale market, domestic corn was no longer price competitive with imported corn, except in Isabela for the year 1998-1999 (import parity ratio is 1.06).

It can be deduced that, since the exchange rate was highest for the year 1999-2000, the same price competitiveness situation at the respective wholesale markets in the production areas as well as in Manila holds true. Importing corn at the out-quota tariff rates during the post-GATT years would make prices of local corn in production areas more competitive than imported corn at the wholesale markets in the production areas since out-quota tariff rates were much higher: 65-100%. At the Manila wholesale market, except for 1997-1998 in Bukidnon where the import parity ratio is 0.96 for yellow corn, all the import parity ratios for yellow corn in Bukidnon and Isabela, and for white corn in Bukidnon and South Cotabato were greater than one. This means local corn in the production areas was price competitive with imported corn at the Manila wholesale market at the out-quota tariff rates for each year. It is worth noting, though, that there were still large corn imports at the out-quota tariff rates, implying a greater demand for corn in Manila and nearby areas (or simply that corn procurement from the high corn-producing provinces was not enough to meet the demand of feedmillers and livestock/poultry raisers). Or perhaps, there were difficulties in importing corn under the MAV allocation. The estimated nominal protection rates (NPR) suggest that in all the years during the pre- and post-GATT periods, yellow and white corn were highly protected, with average domestic wholesale prices higher than average world prices by 76% and 103% for yellow corn and 64% and 82% for white corn during the pre-GATT and post-GATT years, respectively.

Comparing the averages during the pre-GATT-WTO years and during the post-GATT-WTO years, with exchange rates increasing from PhP 26 to PhP 36 to a US dollar, with tariff rates increasing but with no more quantitative restrictions (from 20% during the pre-GATT years to 35% during the post-GATT years for MAV imports and to 100% declining to 65% in the post-GATT years), with world prices increasing from PhP 2,839 to PhP 3,636 per metric ton, with the El Niño phenomenon happening in 1997, and with the same problems confronting the corn sector, the following findings were obtained: more imports, less use of seeds (from 65,000 mt to 52,000 mt), less use of corn for feeds (from 3.1 million mt to 2.8 million mt), increase in per capita consumption (from 16 to 17 kg per year); higher production, higher yield, higher production cost per kilogram, higher net returns, and higher net profit-cost ratio for yellow corn farmers (yellow corn hectareage decreased for the whole Philippines but increased in Cagayan Valley, Northern Mindanao, and Bukidnon); but lower production, lower hectareage, lower net returns, lower net profit-cost ratio, and higher production cost per kilogram for white corn farmers (**Table 2**). There was not much difference in yield of white corn during the two periods under consideration. The Philippines had minimal exportation of corn seeds from 1990 to 2000.

III. Domestic Price Trends

A. *White Corn*

Farm prices

Comparing the prices in Southern Mindanao, Northern Mindanao, Bukidnon, and the whole Philippines, Bukidnon had the lowest prices, followed by Northern Mindanao, the Philippines, and lastly, Southern Mindanao both during the pre-GATT and the post-GATT years. All prices were higher during the post-GATT years (**Fig. 1**). Average prices ranged from PhP 4.52 to PhP 4.91 per kg during the pre-GATT years and PhP 5.98 to PhP 6.67 during the post-GATT years. Available data on farm prices for Lantapan in Bukidnon in the post-GATT years indicated a higher average price for Lantapan than that of Bukidnon, by PhP 0.04. It is interesting to note that there was not much price difference among the areas. While prices generally increased from 1990 to 1995, there were more fluctuations during the post-GATT years and prices were noted to be lowest in 1997 for Bukidnon and 1998 for all the other areas, the years when the El Niño phenomenon affected these areas. There was no observed correlation whatsoever between quantity produced and farmgate prices. Factors, other than quantity produced, could have had greater effects on the prices.

Wholesale prices

Data on wholesale corn prices for Metro Manila and Bukidnon were not available. Hence, their prices cannot be compared with prices set in other areas in the Philippines. During the pre-GATT years, the average price in Southern Mindanao (PhP 5.24/kg) was higher than that in Northern Mindanao (PhP 5.15). During the post-GATT years, however, the PhP 8.76 average price for Northern Mindanao was higher than the PhP 7.19 for Southern Mindanao. Average prices for the Philippines went up from PhP 5.39 to PhP 7.45 per kg during the two periods. Prices were closer to each other during the pre-GATT years than during the post-GATT years. Also, there were more fluctuations in prices during the post-GATT years (**Fig. 2**).

Available data for Malaybalay in Bukidnon and Agora market in Cagayan de Oro City showed that prices were lower in the former than in the latter. Wholesale prices in these areas were the lowest.

Retail prices

Retail prices in Northern Mindanao ranging from PhP 6.18 to PhP 8.81 and averaging PhP 7.12 per kg, was the lowest during the pre-GATT years (**Fig. 3**). Average prices for Southern Mindanao and the Philippines were PhP 7.55 and Ph 7.50, respectively. During the post-GATT years, however, as in the case of wholesale prices, lowest retail prices were noted in Southern Mindanao, from PhP 8.05 in 1997 to PhP 12.26 in 1996 or an average of PhP 9.22 per kg. Average prices were PhP 11.50 for the Philippines and PhP 11.55 for Northern Mindanao.

Data on retail prices were not available for Metro Manila.

B. Yellow Corn

Farm prices

The highest farm prices were observed in Cagayan Valley, the highest producing region, with an average of PhP 4.96 to PhP 6.21 per kg during the pre-GATT and post-GATT years, respectively. Bukidnon, followed by Northern Mindanao, had the lowest average price of PhP 4.32 during the pre-GATT years whereas Northern Mindanao, followed by Lantapan and Bukidnon, had the lowest average price of PhP 5.53 per kg during the post-GATT years. Philippine prices rose from an average of PhP 4.81 to PhP 5.96 during the two periods. In general, there was an increasing trend from 1990 to 1995 and a decreasing trend from 1996 to 1999 (**Fig. 4**).

Wholesale prices

Comparing prices in Northern Mindanao, Cagayan Valley, Metro Manila, and the Philippines, Northern Mindanao had the lowest average price of PhP 4.88 per kg, while Metro Manila had the highest average price of PhP 6.07 during the pre-GATT years. Post-GATT data showed that Cagayan Valley had the lowest average price of PhP 6.88, followed by Metro Manila, Northern Mindanao and the Philippines (average price of PhP 8.27). Including the available data for Malaybalay and Agora during the post-GATT years, wholesale prices in these two areas were observed to be lowest, with average prices of PhP 5.88 and PhP 6.19, respectively. Differences between prices among the areas were higher during the post-GATT years than during the pre-GATT years (**Fig. 5**).

Retail prices

Data on retail prices available for Cagayan Valley, Northern Mindanao, Metro Manila, and the Philippines revealed that Cagayan Valley had the lowest prices, followed by Northern Mindanao, the Philippines, and Metro Manila in both periods (**Fig. 6**). Average prices in Cagayan Valley went up from PhP 7.37 to PhP 10.39, whereas those in Metro Manila increased from PhP 10.96 to PhP 15.07. From 1990 to 2000, retail prices in Metro Manila were the highest.

It could be discerned from these price trends that, although wholesale prices were higher than farm prices and retail prices were higher than wholesale prices due to marketing costs and some profits of traders, it would be hard to relate prices interregionally.

IV. Profitability of Corn Production

Two types of corn are grown in the Philippines, white corn and yellow corn. Considered as the second most important crop after rice, corn is consumed by around 20% of the Filipinos (mostly in Cagayan Valley, the Visayas, and Mindanao) as a staple in the form of milled white corn grits. It is also a good substitute for rice during adverse times.

The most dominant use of corn, predominantly yellow corn, is as feed ingredient. Seventy percent of the corn produced is used as feeds and it has been estimated that the demand for feeds would grow at 5-6% annually due to the increasing requirement of the poultry and livestock industries (UAP 2000).

Corn is also an important raw material in the manufacture of cornstarch, corn syrup, corn oil, snack foods, gluten, and glucose and caramel products.

The average total corn production per year for the Philippines decreased from 4.60 million mt for 1990-1995 to 4.28 million mt for 1996-2000. Of this total production, the share of white corn went down from 55% to 43%; subsequently, the share of yellow corn went up.

A. *White Corn*

Prior to GATT, the Philippines had a high white corn production, averaging 2.53 million mt per year and ranging from 1.86 million mt to 2.97 million mt (**Table 2 and Appendix Table 1**). With GATT, annual production range was lower at 1.62-1.89 million mt, with an average of 1.82 million mt.

Area harvested was likewise reduced from 1.67-2.74 million ha prior to GATT to 1.45-1.70 million ha during the post-GATT years. The average hectarage decreased from an average of 2.2 million ha to 1.6 million ha. Yield per hectare, however, did not vary much -- from a range of 1.08 to 1.25 mt/ha (average of 1.14 mt) from 1990 to 1995 to a range of 1.11 to 1.20 mt/ha (average of 1.13 mt) for the period 1996-2000.

Compared with Luzon and Visayas, Mindanao had the largest contribution in terms of production, with an average of 79% for the pre-GATT years and 82% during the GATT years. Among all regions, Southern Mindanao had the largest production from 1990 to 2000 (an average of 26% for 1990-1995 and 18% for 1996-2000). During the post-GATT years, however, Southern Mindanao ranked only second to Central Mindanao. In Northern Mindanao, the share of white corn production to the country's total production was 6-12% (an average of 8%) from 1990 to 1995 and 8-11% (an average of 9%) from 1996 to 2000. Bukidnon contributed an average of 6% to the country's production of white corn in both pre-GATT years and post-GATT years. To total white corn production in Northern Mindanao, it gave a share of 76% during the pre-GATT years and 65% during the post-GATT years.

The average cost of producing a kilogram of white corn in the Philippines continuously increased from PhP 3.37 in 1991 to PhP 5.85 in 1995 (with an average of PhP 4.35) and from PhP 5.89 in 1996 to PhP 6.46 in 2000 (with an average of PhP 6.27). Northern Mindanao had the lowest average production cost per kilogram of PhP 3.27 6 years before trade liberalization and PhP 5.98 5 years after GATT. Average production cost for Southern Mindanao was PhP 4.26 before GATT and PhP 6.26 after GATT.

BAS data indicated very little profits from planting white corn. Average net returns per hectare all declined from 1991-1995 to 1996-2000. It was already small at PhP 680 prior to GATT, but it declined further to PhP 116 during the post-GATT years. The average net returns of PhP 930/ha for the years 1991-1995 went down to PhP 587 during the post-GATT years for southern Mindanao. For northern Mindanao, the decline was quite sharp from PhP 1168 to PhP 152. Average net profit-cost ratios ranged from 0.15 to 0.20 during the pre-GATT years and from 0.02 to 0.09 during the post-GATT years. The low averages during the post-GATT years were due largely to production losses incurred by farmers in Southern Mindanao and the Philippines in general in 1998 and 1999. Northern Mindanao farmers incurred losses in 1997. Such production losses could have been partly due to the El Niño phenomenon.

B. Yellow Corn

In contrast, production of yellow corn was higher from 1996 to 2000 (2.20-2.76 million mt range) and annual average of 2.46 million mt than production from 1990 to 1995 (1.75-2.43 million mt range) and 2.07 million mt average (**Table 2 and Appendix Table 2**). Although area harvested per year declined from 1.05 million ha to 0.99 million ha, yield increased from 1.96 to 2.45 mt/ha.

Among the regions, Cagayan Valley had the highest production and the highest area harvested, followed by Southern Mindanao, Northern Mindanao, and then Central Mindanao. For the years 1990 to 1995, production in Cagayan Valley comprised 16-26% or an average of 21% of the country's production of yellow corn; total production in Mindanao had a share of 56-68% or an average of 60%. With the GATT-WTO years, the share of Cagayan Valley went up to an average of 28% (a range of 19-35%), whereas that of Mindanao went down to an average of 53% (a range of 49- 60%).

Production in Northern Mindanao averaged 0.31 million mt and ranged from 0.17 million mt to 0.45 million mt prior to GATT. It rose to an average of 0.42 million mt and a range of 0.38 million mt to 0.48 million mt during the post-GATT years. Its contribution to the country's yellow corn production increased from an average of 14% during the pre-GATT years to an average of 17% during the post-GATT years. Average area planted also went up from 0.11 million ha during the pre-GATT years to 0.14 million ha for the post-GATT years. Average yield likewise increased from 2.31 to 2.96 mt/ha.

The relative share of yellow corn production in Bukidnon to that of Northern Mindanao was a very high 95% during the pre-GATT years and 97% during the post-GATT years, constituting an average of 14% and 17% of the country's production, respectively.

Average production cost per kilogram of yellow corn for the Philippines, estimated at PhP 3.37 prior to GATT, increased to PhP 4.03 during the post-GATT years. It was lower for Cagayan Valley and Northern Mindanao. In Cagayan Valley, production cost was even lower at PhP 2.75/kg during the post-GATT years; it was PhP 2.74 prior to GATT. In Northern Mindanao, average production cost rose from PhP 2.29 to PhP 2.84.

Net returns and net profit-cost ratios obtained by farmers were higher in yellow corn than in white corn. Comparing the pre-GATT and post-GATT years, average net returns rose from PhP 3,486 to PhP 5,124 for the Philippines and was even higher for Cagayan Valley (PhP 5,644 to PhP 11,349) and Northern Mindanao (PhP 5,550 to PhP 7,644). Investing a peso in producing yellow corn would give average profits of PhP 0.92 to PhP 1.46 in Cagayan Valley and PhP 0.86 to PhP 0.96 in Northern Mindanao during the pre-GATT and the post-GATT years, respectively.

V. Conclusions and Policy Implications

V.1. Conclusions

The GATT-WTO and the gradual trade liberalization of the corn sector (but with tariff rates higher than pre-GATT years because of tariffication and removal of quantitative restrictions in importation) have resulted in higher corn production and higher profits for yellow corn farmers but lower production and lower profits for white corn farmers. Although both yellow and white corn farmers received higher prices for their products and were still highly protected (based on NPR estimates), yellow corn farmers apparently benefited more from GATT-WTO. This could be due perhaps to the increasing demand for yellow corn in the feed industry.

The price competitiveness analysis showed that at the respective wholesale markets in the production areas, corn was found to be highly competitive with imported corn both at the in-quota and out-quota tariff rates. Adjusting for marketing and distribution cost up to Manila from the respective production areas, it was found that domestic corn was either marginally or not competitive at all with imported corn at the Manila wholesale market at the in-quota tariff rate. At lower tariff rates, domestic corn was generally no longer price-competitive. This could be attributed to the high distribution cost incurred in bringing the corn from the production areas to Manila.

At the out-quota tariff rates, domestic corn was price-competitive with imported corn. One significant observation, however, was that there were still large corn imports at the out-quota tariff rates. This implies a greater demand for corn in Manila and nearby areas or there was not enough corn procurement from the high corn-producing provinces

to meet the demand by feedmillers and livestock/poultry raisers. Some difficulties also occur in importing corn under the MAV allocation scheme.

V.2. Policy Implications

Habito (2000) asserted that it is impossible to attribute actual trends in output, employment, and prices to trade reforms associated with the country's WTO commitments inasmuch as the El Niño-induced droughts and the adverse effects of the Asian financial crisis complicated the economic landscape in the wake of the WTO ratification. He has observed, however, that in the post-WTO period, yields of corn were disturbingly low compared with the rest of the world.

David (1997) noted that the government budget for R&D in corn in the past is extremely low. Although there were private-sector support and expenditures for R&D in corn for hybrid propagation, a large percentage of the country's corn farms are still planted to open-pollinated varieties whose yield is very low. There was also the issue of tariff protection of corn, but the very low yield is the primary issue.

The Manila wholesale market is a significant market for corn as most livestock and poultry growers are located near Metro Manila. Most feedmillers in the country are located in Central Luzon and southern Luzon. Most corn imports likewise enter the Manila port. The bulk of production, however, is in Mindanao. The 1997 data taken from the National Statistics Office on the marketing flow of corn coming from Cagayan de Oro port indicate that the highest percentage, 38%, went to Metro Manila; 31%, to Cebu; 22%, to Batangas; and the rest, to other parts of the country. Teh and Yorobe (1996) stressed that the weak infrastructure linking the production sector to the consumption sector, as well as the cartelization of interisland shipping, explains why Thai corn shipped from Bangkok will have a lower price at the port of Manila than a similar load of corn coming from Mindanao, for instance, Cagayan de Oro. Processing in situ may be encouraged, but this would depend on the cost involved in moving the feeds to poultry and hog production areas as well as in moving the outputs of poultry and hog production to consumption centers.

Corn farms are small and geographically dispersed. With inadequate infrastructure, with high interest rates giving higher storage cost for domestic traders, and with inadequate price information, production cost (due to higher procurement costs for production inputs) and marketing cost would be high, thus increasing the price of corn. Limited access to credit and technology, in addition to unfavorable weather conditions, contributes to low yield and profitability of corn farming. All these concerns make prices of domestic corn higher than landed costs of imported corn at the Manila wholesale market at the in-quota tariff rate of 35%. Altogether, it may be more cost-effective to import in order to meet domestic demand. This could be detrimental, however, to domestic corn producers but could be beneficial in terms of environmental quality, as corn is deemed an erosive crop. However, policies to encourage production of other crops, agri-business, and non-farm ventures that could replace corn production activities

may need to be studied. On the other hand, high corn importation at the out-quota tariff rates (where it is no longer cost-effective to import) must likewise be reviewed.

Nevertheless, priority should be given to infrastructure projects including transport, storage, and bulk handling facilities for corn to reduce costs of production, marketing, and transaction activities to increase the level of competitiveness of locally produced corn. There should also be policy reforms to lower tariff protection on key agricultural inputs such as packaging materials, lessen government regulation of private business, lower interest rates, and strengthen credit guarantee systems (Intal, Jr. and Quintos 1994). Use of higher yielding seed varieties should likewise be promoted to increase yields of farms, expand production areas, and increase net incomes of farmers.

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Table 1. Import parity ratios of local corn production at respective wholesale markets in production areas and at the Manila wholesale market, Bukidnon, Isabela, and South Cotabato, 1995/96-1998/99.

Import Parity Ratio	1995/1996	1996/1997	1997/1998	1998/1999
<i>At the wholesale market in the production area at 35% tariff</i>				
Bukidnon				
Yellow corn	1.52	1.28	1.13	1.29
White corn	1.27	1.19	1.25	1.32
Isabela (yellow corn)	1.31	1.44	1.61	1.77
South Cotabato (white corn)	1.31	1.45	1.68	1.71
<i>At the manila wholesale market at 35% tariff</i>				
Bukidnon				
Yellow corn	0.91	0.80	0.73	0.81
White corn	0.79	0.76	0.80	0.83
Isabela (yellow corn)	0.83	0.90	0.997	1.06
South Cotabato (white corn)	0.79	0.86	0.97	0.98
<i>At the Manila wholesale market at the out-quota tariff rates (%)</i>	100.00	90.00	80.00	72.50
Bukidnon				
Yellow corn	1.31	1.10	0.96	1.02
White corn	1.14	1.04	1.04	1.04
Isabela (yellow corn)	1.20	1.24	1.30	1.34
South Cotabato (white corn)	1.14	1.18	1.27	1.23

Table 2. Tariff rates, importation, exportation, other uses for corn, and nominal protection rates, Philippines, 1990-2000.

Item	Pre GATT-WTO							During GATT-WTO					
	1990	1991	1992	1993	1994	1995	Av	1996	1997	1998	1999	2000	Av
Tariff rate (%)	20.00	20.00	20.00	20.00	20.00	20.00	20.00	-	-	-	-	-	-
In-quota tariff rate (%)	-	-	-	-	-	-	-	35.00 ^a	35.00 ^b	35.00	35.00 ^c	35.00	-
Out-quota tariff rate (%)	-	-	-	-	-	-	-	100.00 ^a	80.00 ^b	80.00	65 ^c	65.00	-
World price													
US\$/mt	109.00	107.00	104.00	102.10	107.60	123.50	108.87	165.80	117.10	102.00	75.33	73.92	106.83
Php/mt	2,649.00	2,940.00	2,654.00	2,769.90	2,842.50	3,175.70	2,838.52	4,346.60	3,451.00	4,171.00	2,944.57	3,266.52	3,635.94
Exchange rate (Php/US\$)	24.31	27.48	25.51	27.12	26.42	25.71	26.09	26.22	29.47	40.89	39.09	44.19	35.97
Imports ('000 mt)	353.93	-	-	-	-	206.59	-	558.13	334.06	367.83	177.08	625.88	412.60
MAV allocation ('000 mt)	-	-	-	-	-	-	-	200.06	144.62	154.27	163.91	173.55	167.28
% of MAV imported	-	-	-	-	-	-	-	171.45 ^d	99.13	71.76	25.85	-	-
Exports ('000 mt)	0.09	20.07	0.00	0.02	0.04	0.07	3.38	0.02	0.02	0.17	0.06	0.25	0.10
Seeds ('000 mt)	76.00	71.79	66.63	62.99	60.12	53.85	65.23	54.71	54.52	47.08	52.84	50.21	51.87
Feeds & waste ('000 mt)	3,434.00	3,365.05	3,002.29	3,118.64	2,937.55	2,683.54	3,090.18	2,698.35	2,816.07	2,485.07	2,979.98	2,932.22	2,782.34
Per capita consumption (kg/yr)	15.97	17.39	18.00	15.43	13.22	15.73	15.96	16.85	15.78	14.97	17.69	18.58	16.77
Nominal protection rate (%)													
Yellow corn	58	30	96	76	90	104	76	54	93	73	151	145	103
White corn	54	25	73	58	82	95	64	60	79	49	110	111	82

^a Effective May 3, 1996. ^b Effective July 1, 1997. ^c Effective July 1, 1999. ^d Value was 1995/1996. Sources: Philippine Statistical Yearbook; MAV Updates, MAV Management Committee-DA and DA AO # 1 of 1998. De la Peña and Noveno (2000).

Table 3. Average production prices, production cost and returns of white corn during pre- GATT and post-GATT years, 1990-2000.

Item	White corn		Yellow corn	
	Pre-GATT	Post-GATT	Pre-GATT	Post-GATT
<i>Philippines</i>				
Production (mt)	2,525,036	1,819,187	2,070,548	2,461,339
Area (ha)	2,217,893	1,605,398	1,046,761	988,273
Yield (mt/ha)	1.14	1.13	1.98	2.50
Farm price (PhP/kg)	4.83	6.43	4.81	5.96
Wholesale price (PhP/kg)-Philippines	5.39	7.45	5.74	8.27
Wholesale price (PhP/kg)-Metro Manila	-	-	6.07	7.72
Retail price (PhP/kg) - Philippines	7.50	11.50	8.09	11.61
Retail price (PhP/kg) - Metro Manila	-	-	10.97	15.07
Production cost (PhP/kg)	4.35	6.27	3.37	4.03
Net returns (PhP/ha)	680	116	3,486	5,124
Net profit-cost ratio	0.15	0.02	0.49	0.52
<i>Southern Mindanao (for white corn)/ Cagayan Valley (for yellow corn)</i>				
Production (mt)	673,822	334,939	443,145	695,153
Area (ha)	496,327	313,432	204,794	240,205
Yield (mt/ha)	1.33	1.07	2.15	2.83
Farm price (PhP/kg)	4.91	6.67	4.96	6.21
Wholesale price (PhP/kg)	5.24	7.19	5.80	6.88
Retail price (PhP/kg)	7.55	9.22	7.37	10.39
Production cost (PhP/kg)	4.26	6.26	2.74	2.75
Net returns (PhP/ha)	930	587	5,644	11,349
Net profit-cost ratio	0.20	0.09	0.92	1.46
<i>Northern Mindanao</i>				
Production (mt)	207,127	163,220	309,008	419,685
Area (ha)	172,206	134,163	114,475	141,838
Yield (mt/ha)	1.21	1.22	2.31	2.96
Farm price (PhP/kg)	4.69	6.05	4.42	5.53
Wholesale price (PhP/kg)	5.15	8.76	4.88	8.16
Retail price (PhP/kg)	7.12	11.55	7.51	11.00
Production cost (PhP/kg)	3.72	5.98	2.29	2.84
Net returns (PhP/ha)	1,168	152	5,550	7,644
Net profit-cost ratio	0.19	0.02	0.86	0.93
<i>Bukidnon</i>				
Production (mt)	157,759	106,805	296,591	407,219
Area (has)	111,156	64,167	107,546	136,537
Yield (mt/ha)	1.44	1.67	2.73	2.99
Farm price (PhP/kg)				
Bukidnon	4.52	5.98	4.32	5.69
Lantapan	-	6.02	-	5.57
Wholesale price (PhP/kg)				
Agora	-	7.03	-	6.19
Malaybalay	-	6.61	-	5.88

Sources: BAS (1990-2000); SANREM –CRSP survey data (1995-2000).

Appendix Table 1. Production, prices, and production cost and returns of white corn during pre-GATT and post-GATT years, selected areas, 1990-2000.

Item	Pre GATT-WTO						Post GATT-WTO				
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<i>Philippines</i>											
Production (mt)	2,965,557.00	2,905,691.00	2,699,589.00	2,627,049.00	2,089,905.00	1,862,423.00	1,883,087.00	1,879,209.00	1,620,465.00	1,823,834.00	1,889,338.00
Area (ha)	2,738,540.00	2,583,370.00	2,350,890.00	2,098,370.00	1,865,870.00	1,670,318.00	1,695,615.00	1,698,964.00	1,451,249.00	1,607,755.00	1,573,408.00
Yield (mt/ha)	1.08	1.12	1.15	1.25	1.12	1.12	1.11	1.11	1.12	1.13	1.20
Farmgate price (PhP/kg)	4.24	3.79	4.56	4.63	5.27	6.51	6.93	6.32	5.62	6.32	6.97
Wholesale price (PhP/kg)	4.70	4.23	5.29	5.03	5.94	7.12	8.02	7.09	7.13	7.10	7.91
Retail price (PhP/kg)	6.50	6.40	7.34	7.34	8.08	9.33	11.32	10.88	11.78	11.49	12.02
Cost (PhP/kg)	-	3.37	4.01	3.75	4.79	5.85	5.89	6.13	6.14	6.73	6.46
Net returns (PhP/ha)	-	967.00	638.00	1,102.00	215.00	480.00	988.00	45.00	(582.00)	(468.00)	597.00
Net profit-cost ratio	-	0.26	0.14	0.24	0.04	0.07	0.15	0.01	(0.08)	(0.06)	0.08
<i>Southern Mindanao</i>											
Production (mt)	853,433.00	816,722.00	748,774.00	764,227.00	522,058.00	337,720.00	359,156.00	345,498.00	288,083.00	321,470.00	360,486.00
% share of production	28.78	28.11	27.74	29.09	24.98	18.13	19.07	18.39	17.78	17.63	19.08
Area (ha)	586,260.00	557,530.00	522,460.00	522,870.00	457,700.00	331,140.00	342,907.00	349,101.00	274,176.00	293,197.00	307,781.00
% share of area	19.77	19.19	19.35	19.90	21.90	17.78	18.21	18.58	16.92	16.08	16.29
Yield (mt/ha)	1.46	1.46	1.43	1.46	1.14	1.02	1.05	0.99	1.05	1.10	1.17
Farmgate price (PhP/kg)	4.13	3.72	4.85	4.35	5.45	6.99	7.25	6.73	5.95	6.98	6.44
Wholesale price (PhP/kg)	4.74	4.10	5.04	4.83	5.38	7.33	8.01	6.79	6.77	6.85	7.54
Retail price (PhP/kg)	6.39	6.11	7.28	6.97	8.18	10.38	12.26	8.05	8.15	8.75	8.91
Cost (PhP/kg)	-	2.77	3.43	3.35	5.11	6.64	6.41	6.87	5.74	6.36	5.91
Net returns (PhP/ha)	-	1,110.00	1,686.00	1,380.00	260.00	214.00	477.00	(107.00)	215.00	682.00	1,669.00
Net profit-cost ratio	-	0.28	0.35	0.29	0.05	0.03	0.07	(0.02)	0.04	0.10	0.24
<i>Northern Mindanao</i>											
Production (mt)	187,977.00	234,562.00	187,525.00	224,565.00	191,035.00	217,097.00	211,075.00	166,207.00	140,640.00	148,174.00	150,002.00
% share of production	6.34	8.07	6.95	8.55	9.14	11.66	11.21	8.84	8.68	8.12	7.94
Area (ha)	180,260.00	203,900.00	160,150.00	169,430.00	155,740.00	163,758.00	173,377.00	139,648.00	108,385.00	124,399.00	125,007.00
% share of area	6.08	7.02	5.93	6.45	7.45	8.79	9.21	7.43	6.69	6.82	6.62
Yield (mt/ha)	1.04	1.15	1.17	1.33	1.23	1.33	1.22	1.19	1.30	1.19	1.20
Farmgate price (PhP/kg)	4.35	3.70	4.50	4.14	5.12	6.32	6.67	5.94	5.76	5.96	5.91
Wholesale price (PhP/kg)	4.48	4.15	5.16	4.66	5.43	6.99	8.65	8.99	9.00	8.40	-
Retail price (PhP/kg)	6.77	6.18	6.52	6.67	7.76	8.81	10.31	10.23	14.15	-	11.50
Cost (PhP/kg)	-	2.38	3.21	3.14	4.41	5.47	5.84	5.55	6.08	6.98	6.45
Net returns (PhP/ha)	-	997.00	1,582.00	1,544.00	672.00	1,045.00	1,189.00	253.00	(1,100.00)	(1,535.00)	266.00
Net profit-cost ratio	-	0.23	0.26	0.25	0.09	0.12	0.13	0.03	(0.11)	(0.14)	0.02
<i>Bukidnon</i>											
Production (mt)	134,573.00	181,272.00	146,900.00	182,117.00	139,333.00	162,357.00	150,617.00	111,545.00	94,708.00	82,913.00	94,244.00
% share of production	4.54	6.24	5.44	6.93	6.67	8.72	8.00	5.94	5.84	4.55	4.99
Area (ha)	119,080.00	142,280.00	109,520.00	115,610.00	89,220.00	91,226.00	91,517.00	66,918.00	56,580.00	51,845.00	53,975.00
% share of area	4.02	4.90	4.06	4.40	4.27	4.90	4.86	3.56	3.49	2.84	2.86
Yield (mt/ha)	1.13	1.27	1.34	1.58	1.56	1.78	1.65	1.67	1.67	1.60	1.75
Farmgate price (PhP/kg)	4.33	3.48	4.38	3.96	4.79	6.17	6.51	5.51	5.65	5.77	6.46
Lantapan	-	-	-	-	-	5.89	6.36	6.03	5.79	5.77	6.15
Wholesale price (PhP/kg)	-	-	-	-	-	-	-	-	-	-	-
Agora	-	-	-	-	-	6.25	6.85	7.20	-	-	-
Malaybalay	-	-	-	-	-	6.72	6.87	6.25	6.12	6.60	7.21

(--) Means no available data for the year. Numbers in parenthesis are negative values. Sources: BAS (1990-2000) and SANREM -CRSP (1995-2000).

Appendix Table 2. Production, prices, and production cost and returns of yellow corn during pre-GATT and post-GATT years, selected areas, 1990-2000.

Item	Pre GATT-WTO						Post GATT-WTO				
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<i>Philippines</i>											
Production (mt)	1,888,334.00	1,749,335.00	1,919,265.00	2,170,928.00	2,429,341.00	2,266,087.00	2,268,245.00	2,453,208.00	2,202,719.00	2,760,759.00	2,621,766.00
Area (ha)	1,081,020.00	1,006,090.00	980,520.00	1,050,970.00	1,139,950.00	1,022,014.00	1,040,108.00	1,026,911.00	902,959.00	1,034,453.00	936,934.00
Yield (mt/ha)	1.75	1.74	1.96	2.07	2.13	2.22	2.18	2.39	2.44	2.67	2.80
Farmgate price (PhP/kg)	4.26	3.68	4.99	4.62	4.98	6.35	6.02	6.04	5.81	5.45	6.47
Wholesale price (PhP/kg)	4.80	4.40	5.99	5.60	6.20	7.46	7.68	7.65	8.30	8.49	9.22
Metro Manila	6.24	4.52	6.15	5.45	6.00	8.08	7.64	7.51	7.71	7.40	8.32
Retail price (PhP/kg)	7.05	6.80	8.20	8.07	8.53	9.91	10.88	11.10	11.65	11.73	12.69
Metro Manila	8.91	9.12	10.99	12	11.81	12.96	14.25	14.76	15.35	14.8	16.18
Cost (PhP/kg)	-	3.28	3.26	3.00	3.39	3.91	4.12	4.34	3.95	3.90	3.85
Net returns (PhP/ha)	-	1,385.00	2,995.00	3,346.00	4,017.00	5,687.00	4,448.00	4,798.00	4,151.00	5,048.00	7,177.00
Net profit-cost ratio	-	0.24	0.47	0.54	0.56	0.66	0.50	0.51	0.43	0.49	0.67
<i>Cagayan Valley</i>											
Production (mt)	443,198.00	342,760.00	491,466.00	351,928.00	455,090.00	574,429.00	436,194.00	630,726.00	547,344.00	959,912.00	901,588.00
% share of production	23.47	19.59	25.61	16.21	18.73	25.35	19.23	25.71	24.85	34.77	34.39
Area (ha)	227,670.00	190,230.00	209,770.00	176,130.00	200,450.00	224,514.00	201,766.00	229,852.00	214,233.00	290,915.00	264,260.00
% share of area	12.06	10.87	10.93	8.11	8.25	9.91	8.90	9.37	9.73	10.54	10.08
Yield (mt/ha)	1.95	1.80	2.34	2.00	2.27	2.56	2.16	2.74	2.55	3.30	3.41
Farmgate price (PhP/kg)	4.21	3.67	5.21	4.75	5.13	6.77	6.31	6.39	6.07	5.33	6.96
Wholesale price (PhP/kg)	4.64	4.31	5.99	5.97	6.26	7.64	7.31	7.09	6.70	6.06	7.25
Retail price (PhP/kg)	6.08	5.77	7.66	7.71	7.97	9.06	8.98	9.72	11.50	10.25	11.48
Cost (PhP/kg)	-	3.26	2.55	2.63	2.55	2.72	3.27	2.68	2.89	2.46	2.46
Net returns (PhP/ha)	-	1,524.00	6,212.00	4,225.00	5,861.00	10,398.00	6,908.00	10,082.00	8,041.00	16,586.00	15,126.00
Net profit-cost ratio	-	0.26	1.04	0.80	1.01	1.49	0.98	1.37	1.09	2.04	1.80
<i>Northern Mindanao</i>											
Production (mt)	178,322.00	165,989.00	225,464.00	444,144.00	454,676.00	385,452.00	398,855.00	477,064.00	452,634.00	377,540.00	392,332.00
% share of production	9.44	9.49	11.75	20.46	18.72	17.01	17.58	19.45	20.55	13.68	14.96
Area (ha)	84,650.00	73,820.00	71,680.00	151,370.00	171,000.00	134,329.00	142,640.00	164,250.00	147,331.00	128,950.00	126,020.00
% share of area	4.48	4.22	3.73	6.97	7.04	5.93	6.29	6.70	6.69	4.67	4.81
Yield (mt/ha)	2.11	2.25	3.15	2.93	2.66	2.87	2.80	2.90	3.07	2.93	3.11
Farmgate price (PhP/kg)	4.01	3.34	4.69	4.09	4.43	5.96	5.68	5.60	5.24	5.04	6.07
Wholesale price (PhP/kg)	4.23	3.65	5.33	4.60	5.06	6.42	6.68	6.77	10.18	7.60	6.55
Retail price (PhP/kg)	7.33	6.71	7.14	7.29	7.75	8.84	10.38	10.41	12.02	11.17	-
Cost (PhP/kg)	-	2.23	1.94	1.92	2.50	2.85	2.93	2.94	2.61	2.86	2.80
Net returns (PhP/ha)	-	3,468.00	5,379.00	4,922.00	5,103.00	8,879.00	7,462.00	7,577.00	7,287.00	8,252.00	9,611.00
Net profit-cost ratio	-	0.69	0.88	0.88	0.77	1.09	0.91	0.90	0.91	0.98	1.10
<i>Bukidnon</i>											
Production (mt)	165,907.00	154,580.00	215,204.00	431,469.00	439,766.00	372,622.00	385,967.00	467,878.00	436,204.00	366,012.00	380,033.00
% share of production	8.79	8.84	11.21	19.87	18.10	16.44	17.02	19.07	19.80	13.26	14.50
Area (ha)	76,630.00	67,170.00	65,480.00	144,520.00	162,480.00	128,999.00	137,419.00	159,406.00	140,991.00	123,947.00	120,920.00
% share of area	4.06	3.84	3.41	6.66	6.69	5.69	6.06	6.50	6.40	4.49	4.61
Yield (mt/ha)	2.17	2.30	3.29	2.99	2.71	2.89	2.81	2.94	3.09	2.95	3.14
Farmgate price (PhP/kg)	3.94	3.23	4.80	3.88	4.16	5.92	5.59	5.54	5.20	6.33	5.78
Lantapan	-	-	-	-	-	5.92	5.29	5.82	5.70	5.15	5.90
Wholesale price (PhP/kg)	-	-	-	-	-	-	-	-	-	-	-
Agora	-	-	-	-	-	6.55	6.02	6.13	6.42	-	-
Malaybalay	-	-	-	-	-	6.17	5.90	5.79	5.69	5.33	6.71

(--) Means no available data for the year. Sources: BAS (1990-2000) and SANREM -CRSP (1995-2000).

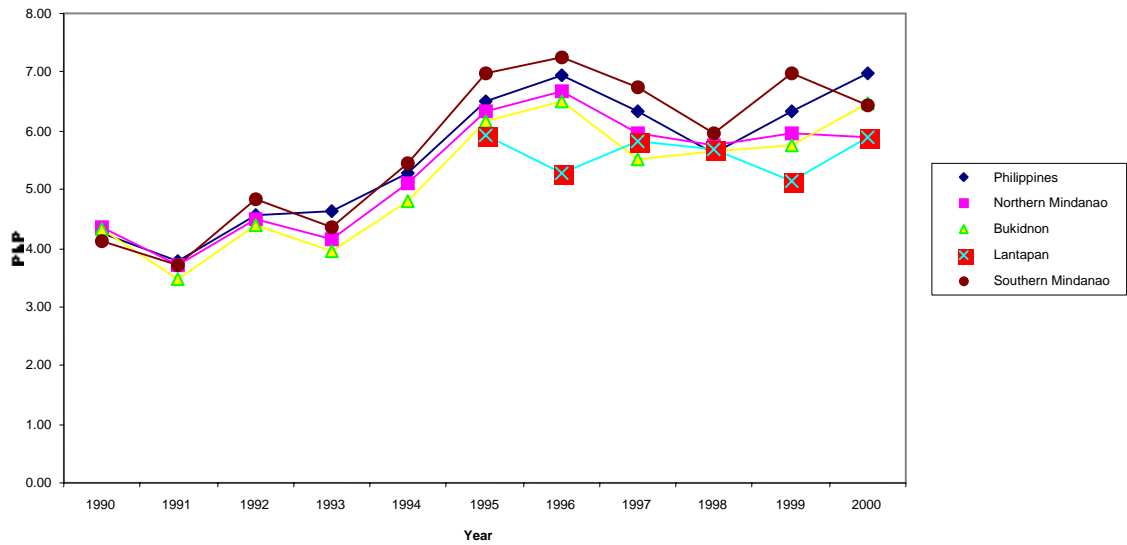


Figure 1. Average yearly farmgate prices of white corn, selected areas, Philippines, 1990-2000.

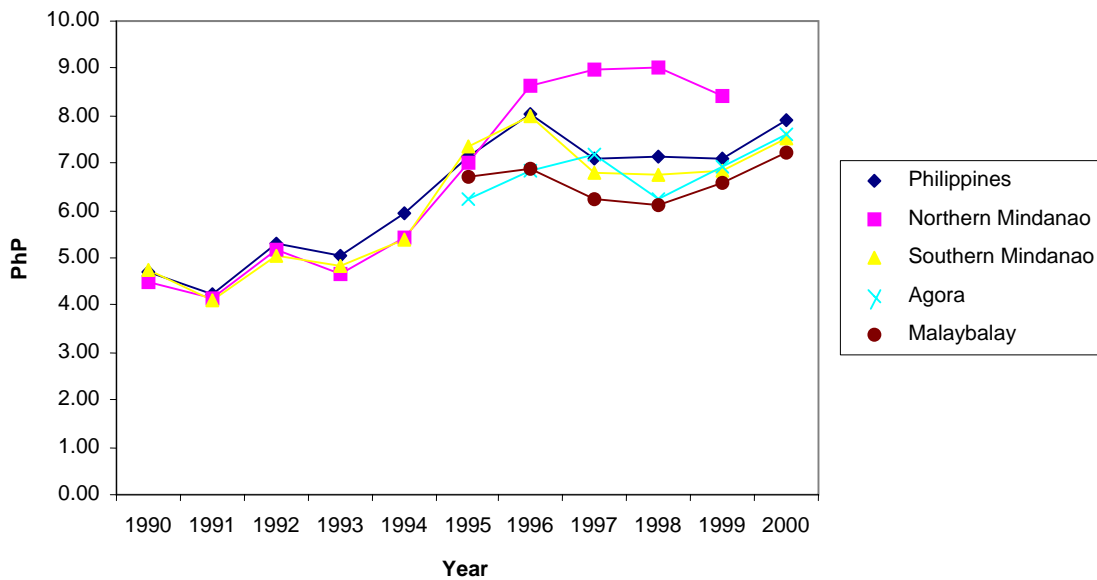


Figure 2. Average yearly wholesale prices of white corn, selected areas, Philippines, 1990-2000.

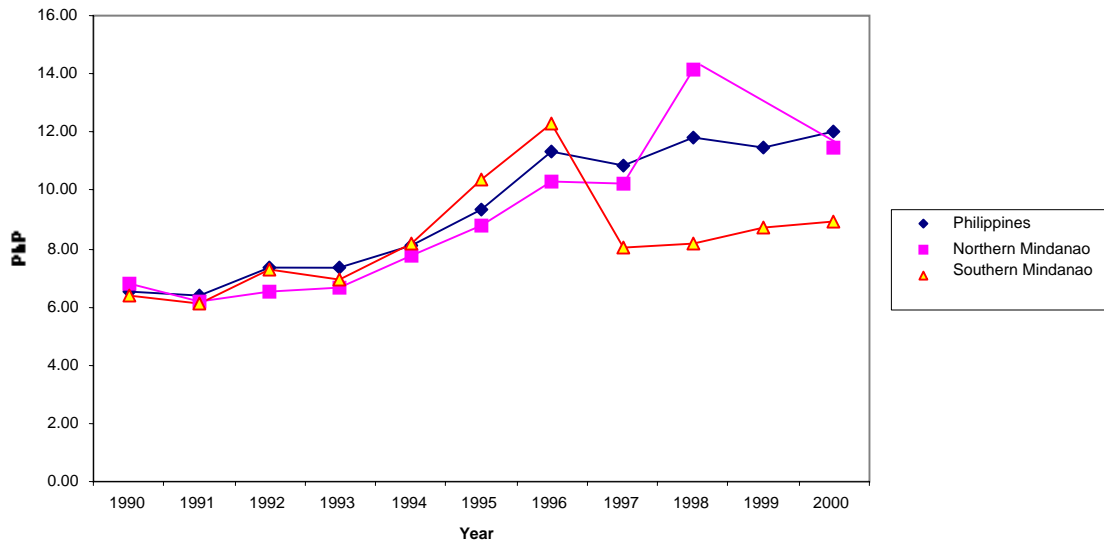


Figure 3. Average yearly retail prices of white corn, selected areas, Philippines, 1990-2000.

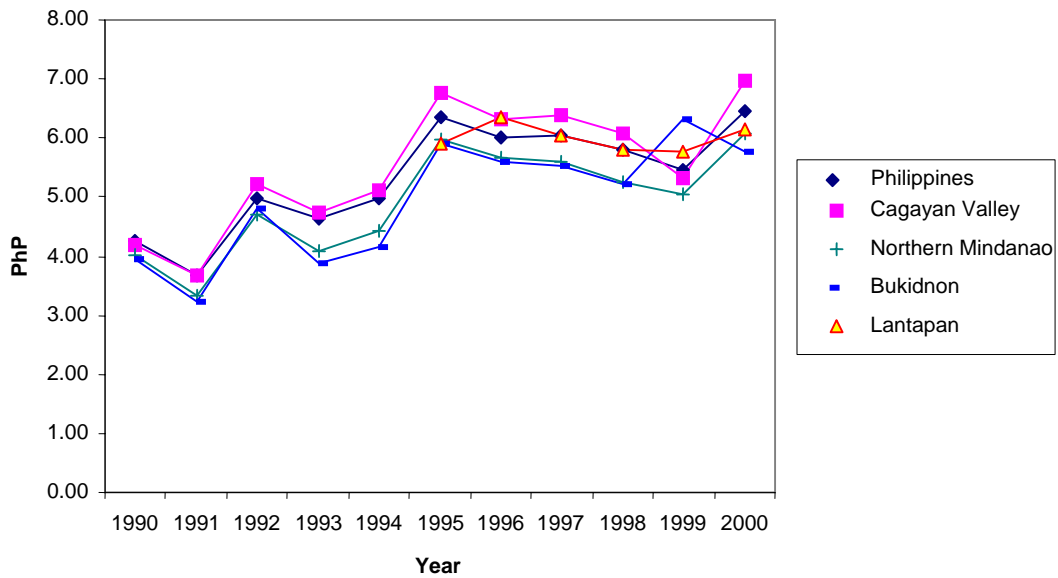


Figure 4. Average yearly farmgate prices of yellow corn, selected areas, Philippines, 1990-2000

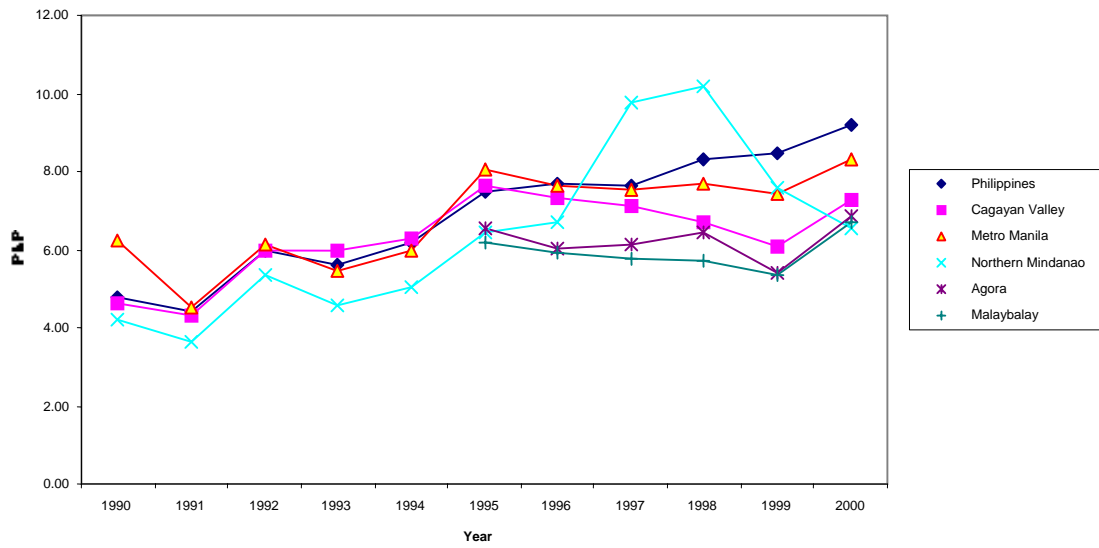


Figure 5. Average yearly wholesale prices of yellow corn, selected areas, Philippines, 1990-2000.

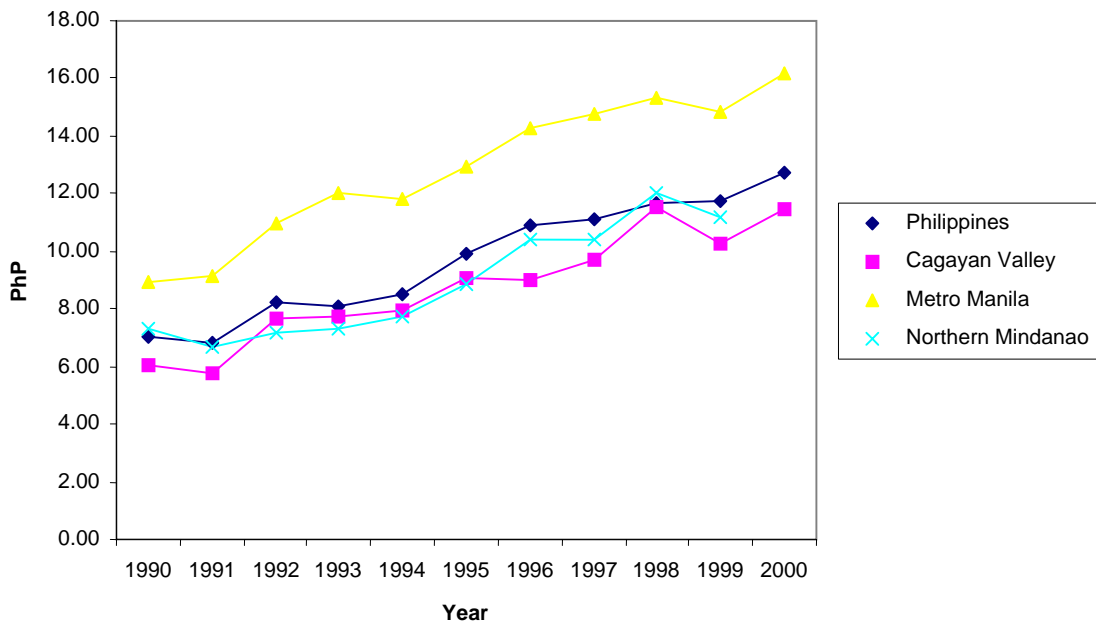


Figure 6. Average yearly retail prices of yellow corn, selected areas, Philippines, 1990-2000.