6 Agro-processing Industry

6.1 Agro-based Industry

Industrial sector in Tocantins developed in continuation strikingly between 1990 and 1994, as shown by the number of factories which increased by 26.9% in this period. Among the factories in various fields, the agro-based factories are for wood/ rubber/ leather, skin and similar/ beverage- alcohol and vinegar/ food products. According to number of Establishments per Activities in 1993, there are 1,163 factories (63%) based on agricultural materials, and 732 (40%) produce food products.

6.2 Supply of Materials and Products

Agro-based industry in the State is mainly related to wood, livestock, rice processing due to the procurement of materials. At present, there is no factory in Tocantins which processes soybean.

Wood factories (NORDESTE) are located in Xambioá and Araguaína which are the base of transportation of timbers through the Araguaia river. In these days they produce semifinal products such as plywood and wooden doors which are rare export goods from Tocantins, instead of timber export in the past.

Major companies operate slaughter-houses and meat processing plants (SAFRIGU, FRIGOTINS, FRIMAR, FRICOL) which are well equipped, and a tanning factory (CRTUME AÇAY) as livestock raising is a main activity in the State. They are trying to improve quality and value added to their products by introducing new technology.

Rice is the largest cereal production in Tocantins and occupies nearly 3.0% against the total rice production in Brazil. Four(4) rice processing facilities (rice mills) are established in Formoso da Araguaína (COPERJAVA, CONAB) and Paraiso do Tocantins (Terra Futuro, Serrano), and produce mainly low and medium quality milled rice (Tipo-2,3) because of paddy quality and market demand for them.

Tocantins produced 14,030 ton of soybean in 1996 (Estado do Tocantins Informaçães Gerais). It is much less than for the economic operation scale of an oil extraction factory for one year.

Soybean is cultivated in Formoso da Araguaína as the second crop after rice harvest, and also in Pedro Afonso under Project PRODECER III. However there is no soybean oil extraction plant in the State for the limited current amount of production. Some entrepreneur in anticipation of production increase is interested in soybean extraction plant in around Gurupi where soybean may be collected.

In respect to other agricultural commodities except the above mentioned, present production volume for each crop in Tocantins can not afford to allow the economical operation for facilities.

In the northern part of the State, a large quantity of Babaçu palm grow naturally in a

forest, and people traditionally utilize it to extract the edible oil by home-industry scale.

6.3 Promotion of Agro-processing Industry

The Government implements some program in order to promote agro-processing industry.

ZPE(Zona Processamento de Exportaçãn) is located in Araguaína, and completed the facilities in 1996, but no factory is in operation actually.

Secretary of Industry and Commerce in charge of preparing the action plan to promote agro-industry investment in the State by implementing the following;

Factory is to be planned in the production area of materials or as nearly as possible.

To rent free of charge the idle public warehouses to begin small business easily, and later make the next entrepreneur utilize it in turn.

To plan the vegetable oil extraction project in the State, and support an entrepreneur to establish it.

To promote home-industry under the program of SENAC (Serviço Nacional de Aprendizagen Commercial) by means of the technical and operation fund assistance from SERCAS.

To promote and extend PROSPERAR.

To promote the attraction of factories in ZPE with benefits of the current socio-economic conditions.

6.4 Training of Agricultural Processing Engineers

In the past agricultural processing engineers demanded within Tocantins have been mostly provided by outside the State.

UNITINS Centro de Educação Technologica, Food Processing Dept. at Praiso do Tocantins is the only institute for bringing up such engineers in the State presently. Eighty(80) students consist of 1st and 2nd grade are studying since 1996 under 5 years education system, and in the year 2000 1st students are expected to graduate. The Department requests for improvement for the facilities that are badly inferior to the university level in quality and quantity.

6.5 Agro-industry Sector in Industrial Structure

(1) Production for each industrial sector

Industrial structure of the whole Brazil is as shown in the next table. Nominal gross domestic production (PIB Nominal regional) in 1994 is 519.61 billion R$, its breakdown is agriculture and stock-farming 12.6%, industry 33.o% and services 54.4%. Per capita gross national production (BIB Regional Per Capita) is 3,380R$, apparently they show the state of medium advanced nation.

However, gross domestic production of Tocantins state is 980 million R$, only 0.2% of whole country. Per capita domestic production is only 993R$. It is the 26th place in the 27 states of the whole country, one of the most destitute state. Share of each economic segment of the state is agriculture and stock-farming 58.9%, industry 3.7% and services 37.4%. Agriculture and stock-farming are the mainstay of her economy.

Nominal Gross Domestic Production of the whole Brazil and Tocantins-(R$)

Year		Nominal GDP	Agriculture	Industry	Commerce	Per Capita
Brasil	1990	455,311,510,309	52,6,34,665,321	191,944,495,884	278,716,774,228	3,146.07
	1991	489,859,056,993	56,103,349,719	190,595,816,498	305,252,783,550	3,330.70
	1992	485,890,713,888	59,003,907,507	185,329,348,357	304,922,191,888	3,253.21
	1993	501,731,095,646	62,615,703,209	191,642,941,033	328,916,740,836	3,310.19
	1994	519,613,853,823	74,145,059,109	193,583,079,252	319,227,853,815	3,380.14
Tocantins	1990	738,090,626	476,812,966	23,560,075	300,356,151	823.46
	1991	887,898,320	542,370,891	23,287,676	388,726,663	965.84
	1992	898,360,523	547,844,028	21,974,043	406,095,865	948.19
	1993	920,389,875	555,592,629	35,140,277	431,367,786	948.60
	1994	983,636,212	657,893,247	41,257,310	418,661,002	922.81

Source: GAC/IPEA/DIPES(1996) e IBGE.

Elabora o: Altas Regional das Desig aldades. IPEA/DIPES, IBGE. PIB Nominal e C sto de atores.

Nota: Os alores, de lacionados elo de lator im l cito-do-PIB,-est o-ex ressos-em R .de-1995.

(2) Number of companies, and employees by sector

The number of companies in small, medium and large scale and their ratio (%) in the industrial sectors such as commerce, industry and services are shown in Table 4-2-5(1). The services section has the most companies in the sector, which is equal to 46.87%, followed by Commerce (trade) : 42.35% , industry : 10.56%, and agriculture : 0.22%.

There is the same tendency in the number of employees, as services companies accounts for 47.7% followed by commerce : 35.79%, industry : 15.87%, and agriculture : 0.56%. And micro-companies which employee less than 7 people occupy more than 98% among all the companies.

Formal Economic Activities

Segment Indicator	Trade	Industry	Services	Rural	Total
Number of Companies	9,404	2,346	10,409	48	22,208
Ratio(%)	42.35	10.56	46.87	0.22	100.00
Micro-companies(%)	42.48	10.47	46.83	0.21	98.26
Small Companies(%)	36.34	16.52	46.85	0.30	1.50
Medium Companies(%)	25.71	8.57	62.86	2.86	0.16
Large Companies(%)	16.67	22.22	61.11	0.00	0.08
Informality(%)	43.41	65.52	80.84	79.17	63.36
Number of Jobs	21,392	9,489	28,558	336	59,778
Frequency(%)	35.79	15.87	47.77	0.56	100.00

Source: SEBRAE - Companies' Census (1995)

(3) Number of Companies by Field in Industrial Section

The number of companies in the four sectors in terms of their business activities is shown in the next table. Companies related to agriculture, food production, food products and food occupy 28.81% among the 22,207 companies. Companies for food products in the industrial section seem to be predominant as 31.7%. It implies that the industry in Tocantins is mostly based on agricultural products

Number of Formal Companies per Economic Segment

Sector	Kind of Business Activities	No. of Companies	Frequency(%)
Commerce	Retailer of General Merchandise	3,252	34.58
	Retailer of Clothing and Textiles	1,518	16.14
	Retailer of Food Products and Beverages	1,330	14.14
	Retailer of Chemical, Pharmaceutical and Veterinary Products	667	7.09
	Retailer of Vehicles, Parts and Accessories	574	6.10
	Other	2,063	21.94
Industry	Food Products	744	31.71
	Furniture	326	13.89
	Clothing	238	10.14
	Ceramics manufactured goods	162	6.90
	Other	876	37.35
Services	Food	4,323	41.53
	Repair, Maintenance and Installation	1,900	18.25
	Personal Services	1,314	12.62
	Auxiliary Services rendered to People, Companies and Entities	686	6.59
	Regular Education	270	2.59
	Other	1,916	18.41
Rural	Agriculture	12	25.00
	Cattle Raising	12	25.00
	Aquaculture	3	6.25
	Others	21	43.75

Source: SEBRAE - Companies' Census (1995)

7 Marketing System

7.1 Outline of Marketing

Agricultural products in Tocantins are mostly generated not only from livestock raising in the central-west and south-east regions of the State, but also from rice, soybean, pineapple cultivation area. On the other hand, the majority of consuming commodities in the State is imported from other states.

It could be said that the possibilities agricultural developement in Tocantins largely depend on the construction of access road to a cultivated area. In the middle of the1970s, the highway BR153 between Brasilia (Anápolis) and Belém showed a great contribution to the development along its way. Commodity flow in Tocantins, generally speaking, seems to be along BR153, and is connected to places outside the State such as Belém, São Luiz in the north-east and the south-east, via Brasília.

However, merchandise transportation to and from adjacent states is becoming active due to recent construction of railway, specially pavement of existing roads (width 7.0m and shoulder 2.0m). For instance, the state road TO-080 starts in Paraiso do Tocantins and goes to Casera at the riverbank of Araguaia river through Marianópolis do Tocantins and TO-336 leads to Conceição do Araguaia, Pará state at the riverbank of Araguaia from Guaraí. Both roads are used to transport calves to Pará state and bring raised cattle into Tocantins state.

Furthermore, the paved state road from Dianópolis to Mimosa or Barreiras, both in Bahia state, is an established route for transporting soybean and lime. Adding to the conventional south to north cargo transportation in the Tocantins state, east to west cargo transportation has already started.

7.2 Quantity of Marketed Agriculture and Livestock Products

According to the information estimated by ICMS, Department of Finance, Tocantins state, the marketed quantity of agriculture and livestock products in 1996 is as shown in the following Table. Depending on the items, marketed quantity exceeds the production quantity because some items are counted twice or more, each time a business transaction is taken place.

Marketed Quantity of Agriculture and Livestock Products in 1996
(Period - Jan to Dec./96)

Commodity	Marketed Quantity		
	In the State	Out of State	Total
Agriculture			
Rice	23,283,275.6 bags	955,810.7 bags	24,239,086.2 bags
Feijão	106,898.8 bags	21,299.0 bags	128,197.8 bags
Corn	13,915.6 bags	1,116,422.7 bags	1,130,338.4 bags
Soybean	750.0 bags	126.459.9 bags	127,209.9 bags
Powder	690.3 bags	664.7 bags	996.0 bags
Banana	3,391.6 kilos	15,100.0 kilos	18,491.6 kilos
Pineapple	-	4,686.0 units	4,686.0 units
Others	349.0	48,276.7	48,625.7
Livestock			
Fat Ox	47,996.8 heads	265,191.27 heads	313,188.0 heads
Thin Ox	497.0 heads	13,305.0 heads	13,802.0 heads
Pregnant Cow	3,240.0 heads	4,702.0 heads	7,912.0 heads
Slaughter Cow	167,419.5 heads	159,561.6 heads	326,981.2 heads
Single Cow	978.0 heads	9,316.0 heads	10,294.0 heads
Heifer	416.0 heads	27.247.0 heads	27,663.0 heads
Equine	157.0 heads	2,339.0 heads	2,496.0 heads
Male Calf	1,894.0 heads	98,545,0 heads	100,439.0 heads
Female Calf	480.0 heads	21,794.0 heads	22,274.0 heads
Garrote	923.0 heads	19,525.0 heads	20,448.0 heads
Buffalo	26.5 heads	2,987.0 heads	3,013.5 heads
Fat Pork	1,439.7 heads	164.4 heads	1,604.1 heads
Thin Pork	569.6 heads	312.0 heads	881.6 heads
Others	47,900.0 heads	303,539.0 heads	351,439.0 heads

Source: Secretaria da Fazenda, GIA - Geral do Estado - 96

7.3 Export and Import of Agricultural and Livestock Products from and to Tocantins State

Actual export figures of agricultural and livestock products from Tocantins state since 1992 are shown in the following Table. There are only three items, leather, timber and soybean. According to information obtained from the parties concerned, meat is also exported. However, due to the address of exporter, export quantity is statistically included in the record of some other states.

Export of agricultural and livestock products from Tocantins state (Unit: kg)

Main Exported Products	1992	1993	1994	1995	1996
soybean grains, fees, soybean oil	---	0	15,070,000	0	2,308,910
leather	---	---	0	84,500	334,045
wood floor and wall board	---	---	---	0	76,475
unprocessed edge leather	---	---	---	0	150,000
fresh watermelon	---	---	---	0	22,000
other wood products	0	26,183	---	---	---
wood bed, drawers, shelves	70,675	26,705	---	---	---
kitchen wood table, chair, shelves	18,325	10,962	---	---	---
decorated wood board, plywood,	155,381	38,640	---	---	---
office wood table, chair, shelves	22,694	11,208	---	---	---
wood products except log	15	---	129,542	---	---

Source: MICT: Ministério da Indústria, do Comércio e do Turismo)
(SECEX: Secretaria do Comércio Exterior)/ DECEX SERPRO

On the other hand, there are only two records of import of agricultural and livestock products by Tocantins state for the period of 1992-96, as shown in the following table.

Imports of Agricultural and Livestock Products by Tocantins State

Year	Item	Quantity
1993	Seed bull for breeding	34 heads
1996	Garlic	770,120 kg

Source: SECEX/DECEX SERPRO

7.4 Market Information

Secretariat of Agriculture (SAG) had established and operates the price information system for weekly collecting the farmers gate-prices on 32 items of agricultural products through 9 regional offices, and reporting it to Bank of Brasilia, Bank of Amazon and Secretariat of Financial Bureau (SF). This price information system called SIMA (Agricultural Market Information System) is diffused to the public via mass-media such as TV, radio, newspapers.

On the other hand, the Ministry of Agriculture supplies wholesale prices information in the form of a BOLETIM (Managing Information of Agricultural Market) which compiles wholesale prices on main agricultural products in major production areas and main markets in the country.

7.5 Present Situation of Marketing Commodities

(1) Marketing of Fruits and Vegetables

Most of the fruits and vegetables circulating in the country passes through the way of wholesale markets (CEASA - Supply Centers) in the main cities. Very few quantity is delivered directly from producers to large scale venders such as supermarkets.

Laws and regulations for the establishment and management of a CEASA have been

already enacted by the Federal Government. However many state governments manage and operate CEASA by themselves, and also a few cases of CEASA privatization can be seen.

According to the regulations, only fruits, vegetables and eggs are dealt in a CEASA. Meat and fishes products can not be commercialized. However, the biggest CEASA in São Paulo deals with flowers and fish too. Some wholesalers in CEASA install their own cold storage for keeping valuable fruits imported from neighboring countries.

CEASA is generally divided into several sections based on the sort of commodity articles. In the same section many wholesalers compete in business. There is no bidding auction to form prices, but face-to-face negotiations between sellers and a buyers take place. Usually many CEASA also establish retail markets or open air markets where producers bring in their products directly and sale. This kind of retail markets also play the role of forming retail prices.

Imported valuable fruits are usually graded and packed in a corrugated carton box, however this is not common for domestic fruits and vegetables. In this case, wooden-box, cage, net, or jute box is selected for packing by the nature of products after being roughly classified into big or small sizes. The use of corrugated carton box and recycled plastic case has just started.

CEASA in major cities influences not only the area where it is located, but also the whole country by means of collecting and distribution functions. Big wholesalers may accept orders from buyers by long distance fax or phone.

The total transaction in weight, as for 1996, at the fruits and vegetable wholesale market of Belém, a typical city in northern Brazil, is 157,699 ton (DETECCEASA/PA). Their main procurement is from Pará state (24%), the second one is São Paulo state (17%) which is the collection and distribution center of the southern Brazil production, the third one is Bahia state (10%) followed by Pernambuco state (8%) and Minas Gerais state (7%). 4,782 ton (3%) is procured from Tocantins state, only a small portion of the whole Brazilian production. Banana and pineapple are the main items. This market procures all the tomato, carrot and green pepper outside their state. If Tocantins state produced those vegetables, they would procure them from Tocantins state.

A wholesale market (CEASA-DF) in capital Brasília was opened in 1972. In 1996, it handled 266,332 tons of production. The ratio of fruits and vegetable procured outside the national capital region is rootcrop 78% and fruit 95%. Their buyers are supermarkets 40%, vegetable shops 30%, stall keepers (feira) 10%. Supermarkets are quite developed in Brazil but they seldom procure directly form growers, at present.

In CEASA, Japanese-Brazilian wholesalers often manage and operate shops, for example in Belém CEASA they may represent more than 10% of the total wholesalers, considering that many Japanese-Brazilians are engaged in fruit and vegetable cultivation. Some of them make the contract with producers on a commission basis.

At present, besides the national products, the CEASAs are also commercializing imported commodities such as onion, potato, garlic from Argentina, and some fruits from Chile. Therefore, the Brazilian products have to compete with those products in terms of quality and price.

There is no CEASA in Tocantins yet. Fruit and vegetable production in the State does not attain self-sufficiency in general. Imported fruits and vegetable from outside the State mainly come from CEASAs in Goiânia or Anápolis in Goiás State. Middlemen from Tocantins go there and purchase these products, selling them in retail shops in the State.

Regarding to pineapple production which is increasing in recent years in the State, producers usually sell their products directly to wholesalers in São Paulo and Rio de Janeiro. The means of transportation for pineapple are generally in bulk and by truck.

In main cities in the State, public markets (feiras) for food and daily necessaries are established by the municipal office. In Palmas, capital city of the State, the market opens on Saturdays. The market covers an area of 2 ha, light steel structured building, no side-wall, floor space 50x50m, no partition wall, approx. 200 shops selling daily goods, food, fruits and vegetables, meat, fish, milk products. Trucks loading banana, pineapple, watermelon, come from distances within 100 km, park around the building and sell the products without unloading them from the truck.

(2) Marketing of soybean

The soybean produced in Brazil is utilized as raw material for the production of oil and exported as grains, however the rice is totally consumed in the national market due to its low competitiveness in the international market. On the other hand, producers price on rice and soybean are being pressed down once cheap rice and edible oil are occasionally imported under the low price policy for staple food carried out by the federal government.

Marketing season of soybean produced in Brazil starts immediately after the harvesting in producing areas, which is around March. It coincides with the off season of soybean grown in the USA. However, the necessary time to transport the soybean from the production regions to exportation ports shall be taken into consideration. The soybean exportation figures are presented in the following table.

Soybean Exportation in Brazil (millions of ton)

Year	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Total
1995	1.7	6.7	4.8	3.6	16.8
1996	2.0	6.6	5.2	2.4	16.2
Average	11.2	40.3	30.3	18.2	100.0

Note: Includes beans, bran, crude oil and refined oil

Source: Brazilian Central Bank Bulletin, March/1977

Soybean harvesting season in Tocantins state is from March to June (in March 1997, a large quantity was heat damaged due to over 600mm rainfall). As for the water transportation in Araguaia river and Tocantins river, barges cannot efficiently navigate the rivers after July due to insufficient depth of water. According to the above list, about half the quantity is exported after July which means that through water transportation, the total quantity needs to be transported before the end of June.

(3) Marketing of Babaçu

The Babaçú palm tree (*Orbignya speciosa*) grows naturally in a large quantity in Minas Gerais, Bahia, Tocantins, Maranhão and Piauí states. Many rural people traditionally utilize it, trunk and leaves as housing-materials, and edible oil and detergent made of kernel which contains 50% of oiliness. The kernel residues after the extraction of oil becomes animal feed, and husk for fuel. Kernel weighs 10% of the fruit total weight. Generally, women are engaged on crushing and taking out the kernel from the fruits dropped on the ground, with a work efficiency of 10 kg/day (2.50 R$). A special crushing tool has been anticipated for a long time.

(4) Rice marketing

Cereal cultivation occupies about 90% of the cultivated land in Tocantins, out of which more than 60% is rice field. Main production fields are located in Formoso do Araguaia, Lagoa da Confusão, specially the Rio Formoso Project yields a high productivity. Wet paddy just after harvesting is sold to rice miller or cooperative directly by the producers, then rice mills process wet paddy for cleaning, drying, milling, grading and packing. After that, milled rice is delivered to retail shops directly or through wholesalers.

(5) Marketing Flow of Agriculture Products

Marketing flow is illustrated in the Figure VI-7.1.

(6) Price of agricultural production

The Brazilian Federal Government sets floor prices (Minimum Prices Approved for the Harvest) for agricultural production every year. Those floor prices for rice, maize and soybean are different according to the production area. The Tocantins state products prices are placed in the middle of the ranking. In producing areas near to the consumption places such as south, southeast and northeast of Brazil, the floor prices are set higher than the prices for inland areas. The difference is about 11% in 1996/97. For instance, soybean produced in Tocantins state is ranked 5.3% lower (7.50 R$) compared to the one produced in the south, southeast and middle-west regions (except Mato Grosso State) of Brazil.

Price ranking of agricultural crops produced in Tocantins state and its competitiveness can be known by comparing the prices of prime crops (soybean) in wholesale markets

or main producing areas of whole Brazil, based on the price information collected by federal government and state government, through SAG. As an example, soybean (Pedro Afonso) produced in Tocantins state is less advantageous in price due to its inland production site and high transportation cost owing to rather poor transportation infrastructure. A comparison of soybean prices (R$ per 60kg bag) 1995/96 is shown in the following Figure.

Comparison of soybean prices by region (RS per 60kg bag) 1995/96

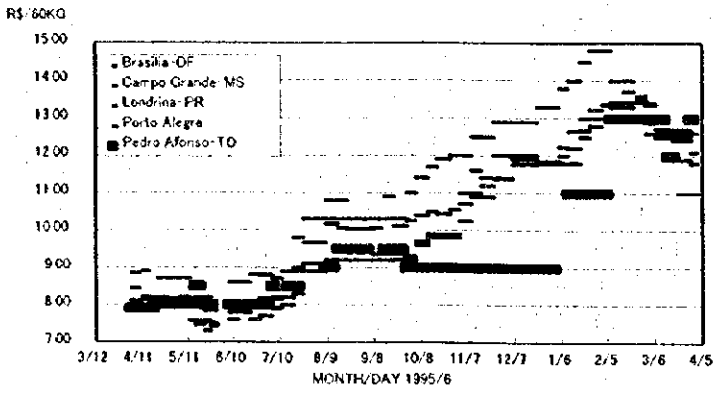
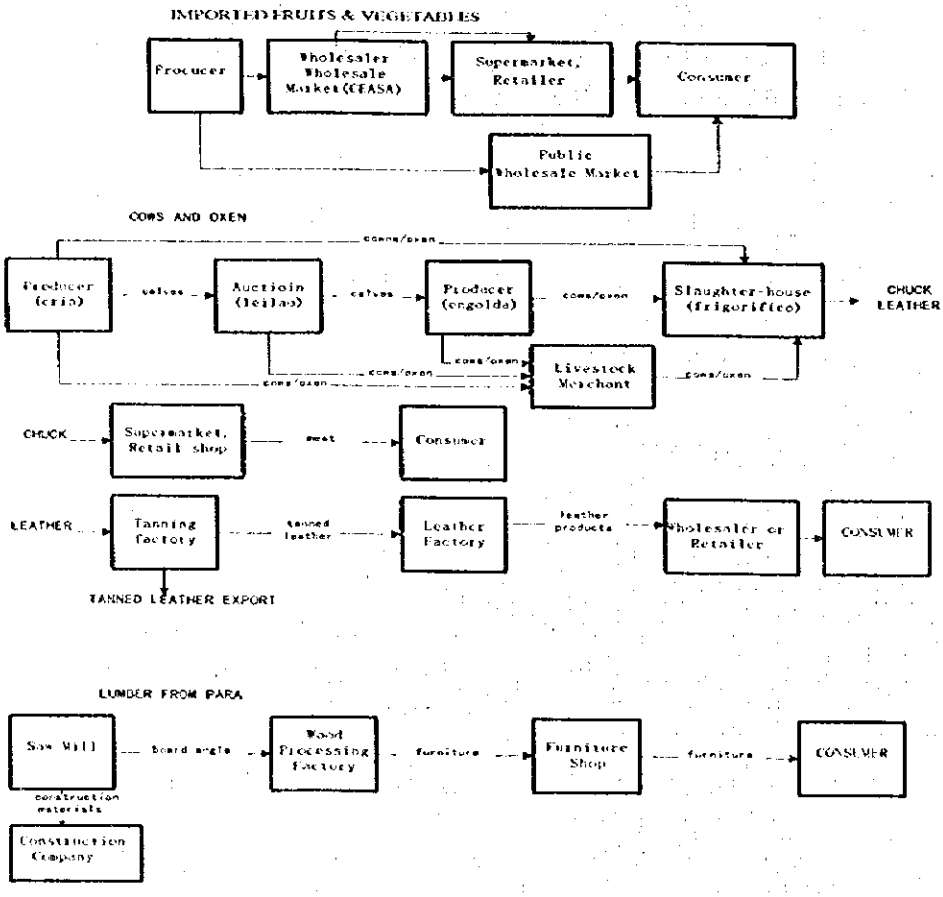


Fig.VI-7.1: Marketing Flow



7.6 Food Storage and Management by CONAB

CONAB (National Supply Company) was established as a public organization which operates under the minimum price policy of the Federal Government. CONAB needs to purchase cereals when their prices become lower than the minimum established price, and discharge them when prices rise in order to cool a heated market. Purchasing volume is decided every year by the government in accordance with the production and market circumstances.

7.7 Plant-animal Quarantine and Inspection

Agricultural products inspection regulations and plant quarantine laws were enacted under the Acts No.6305 dated 15/12/1975, and amended under Acts No.82110 in 1975. At present, with the establishment of the MERCOSUL, necessary changes are being discussed in order to unify the vegetal classification among the member countries.

As for vegetal origin products classification, 5 types are classified in the State, i.e. rice, beans (feijão), maize, sorghum, soybean. SAG is the responsible organization for the implementation of this service. At present, the implementation organization is composed of the following; 29 staff members and 13 inspection offices installed in the State. In the past, every year about 400,000 ton used to be inspected by SAG, however in 1996 the inspected amount was 302,347.260 ton, and issued certificates only 13,464, as a consequence of the production reduction in recent years. Some portion of marketed cereals may not be legally inspected to avoid the payment of the inspection fee (paddy 0.87R$/ton, milled rice 1.47R$/ton).

8 Agricultural Support System

8.1 Present Conditions of the Agricultural Support System

Various agricultural supports have being supplied to farmers in Tocantins State, such as extension of agricultural technologies and guidance of farming, development of new technologies by research, supply of seeds, stocks and farm materials, agricultural credits, etc. Extension services are being provided by public extension institutes and various other private organisms.

The public organizations which provide the agricultural support are RURALTINS, DATER, banks etc. On the other hand, the private organisms which are related to agricultural support include various enterprises, NGOs, cooperatives, and many other groups.

8.2 Organizational Structure of RURALTINS and the Present situation of Agricultural Support

(1) Structure of RURALTINS

RURALTINS is the public institute connected with SAG of the State Government, which executes the policies decided by the State Government. Similar institutes are named as EMATER in other states.

The duties of RURALTINS are technical assistance to farmers, execution of projects along the policies of the Federal Government, such as PRONAF, planning the regional projects, guiding pest control and prevention of animal epidemics, improvement of farmers living standards, training for staff and farmers, etc.

ASBRAER (Brazilian Association of Technical Assistance and Rural Extension Organizations) serves as a coordinating and facilitating agency at the national level, and conducts a meeting of all the EMATERs and the similar institutes in Brazil once every three months. On the other hand, DATER of the Ministry of Agriculture and Supply (Federal Government) serves as the government coordination agency of the EMATERs at the national level. DATER has fourteen engineers and seven administrative officials, and gives priority for promoting and management of PRONAF as well as planning of extension projects and their information to the various EMATERs and similar organizations.

The central office of RURALTINS is located in Palmas, the State Capital. The whole state is divided into seven regions and a regional office is set up in each region. The central office and the regional offices serve as the coordinating and facilitating agencies at the state level and at the regional level, respectively. Furthermore, each region is divided into four to thirteen areas and a local office is set up in each area. The total number of local offices in the State is 54, and the extension services carried out by these local offices cover all the 139 municipalities in the state.

(2) Actual Conditions and Constraints of Agricultural Support

The extension agents carry out various works, such as support to farmers in preparing the application for the credit, technical assistance for crop cultivation and animal raising and guidance for farming, courses for women on handicraft, health and sanitation among others, delivering free seeds to farmers, etc. With regard to the support given for the application to credit, extension agents send documents and the application form to about 20% of total farmers, those who can read and write, and visit directly and explain the application forms to the others, filling up the form due to the high illiteracy rate verified among farmers.

The constraints of the extension activities include shortage of qualified man power (college graduate degree) due to low salary, antiquated buildings and facilities, shortage of equipment, shortage of budget, shortage of vehicles and four wheels driven cars

adequate for the existing bad road conditions.

8.3 Other Sources of Agricultural Support

Other than RURALTINS, the following organizations provide agricultural support for farmers.

(1) SAG of the State Government

Sometimes, SAG carries out agricultural support together with RURALTINS. Costs for the support activities are paid by the SAG budget.

(2) LUMIAR PROJECT

The new project LUMIAR of INCRA starts this year (1997). It is a project, financed by FAO, destined to supply technical assistance to the settlers of the INCRA Agrarian Reform projects. Utilizing this resource, professionals will be contracted (agronomists, veterinarians and technicians) who will be trained to give technical assistance and rural extension to the settlers.

(3) Banks (Bank of Brazil, Central Bank, Bank of Amazon, BAMERINDUS)

These banks provide various credits for small farmers in cooperation with the Federal Government, through various programs such as PRONAF, PROCERA, PRORURAL, PRODEPEC, PAI, FNO, etc.

(4) Enterprises (e.g. Consultant companies)

In the loan systems of PRONAF and LUMIAR, private sectors can negotiate with banks to provide agricultural support for farmers who want to receive the credits. Many private enterprises make the credit application for farmers, guiding the farming techniques and supervising the farming three times until harvesting after the supply of funds, and for this service they receive a reward of 1.5 to 2 % of total farmer funds.

(5) Companies of Seeds and Stocks (Domestic Enterprises and Multinational Companies)

There are no companies of seeds and stocks in Tocantins now. Seeds are imported from domestic enterprises and multinational companies of other states, such as CARCIL (Brazil, Goiás State), SELECTA (Brazil), AGROCERES (Brazil), PIONEER (USA), etc. Generally, these companies provide extension services to farmers who purchase their seeds.

Stocks are also imported from other states. SAG of the Tocantins State is providing free stocks of fruits trees and trees to schools, NGOs and municipalities for the promotion of fruit trees cultivation and reforestation. FIETO is also offering free stocks

of fruits trees to farmers and schools to prepare the way for future industrialization of fruits in the State. These imported seeds and stocks should be quarantined by SAG, however the inspection system does not give satisfactory results.

(6) Shops of Farm Materials

In Brazil, it is established by law that the shops of chemicals and fertilizers must keep at least one specialist for agricultural support. However, most shops in Tocantins only explain to their clients about the use of fertilizers. The law is not always obeyed in Tocantins.

(7) NGOs

The FETAET (Federation of Rural Workers of Tocantins State) gathers several associations and syndicates of rural workers in the State. Its main function is to act in the organization of the workers. The CPT (Pastoral Land Commission), an organism of the Catholic Church, also acts in the support of the organization of rural workers. These two organisms are supporting the APA-TO (Alternatives for Small Agriculture in Tocantins State), which is an NGO dedicated to give technical assistance and rural extension to small farmers, giving the guidelines for its actuation. The resources for APA-TO come from international NGOs.

(8) Agricultural Cooperatives

There are fourteen cooperatives in Tocantins, whose members are medium and/or large scale farmers. Among them, COOPERJAVA and COOPERFORMOSO in the large scale paddy area near Formoso do Araguaia, and COVALE and COOPERSAN in the large scale upland area near Pedro Afonso are active. In the case of COOPERJAVA, cooperative provides technical assistance, cleaning, drying, storage and sale of rice, production of rice and soybeans seeds as well as purchase of farm materials to the members.

(9) FAET

Large scale farmers are organized in the CNA, at the national level. At the State level, they are organized in a organization called FAET. This group represents a political force in Tocantins State. Most members of the FAET are livestock raisers. The organization employs many agricultural engineers and provides extension services. Furthermore, FAET reckons on the services of SENAR (National Service of Rural Education).

8.4 Present Conditions of Agricultural Research

Public agricultural research at the national level is organized by EMBRAPA. Attached to the Ministry of Agriculture and Supply, EMBRAPA is a public corporation that manages a national network of 33 research centers, 4 organisms which provide seeds, information, etc., and 4 branches.

The work focus of these research centers varies: 7 centers for specific crops, 4 centers for fruits trees, 5 centers for livestock, one for forestry, 9 centers for agricultural production in particular agronomic conditions, 5 centers for irrigation, mechanization and processing and 2 centers for basic research such as biotechnology (Table 5-8(2)). Besides, some of the Brazilian states have their own agricultural research institutes.

However, there is no agriculture and livestock research center in Tocantins State. Tocantins reckons only on the state university of Tocantins (UNITINS) as the main research organization. However, UNITINS research facilities and equipment are very limited. In order to develop new adapted technologies to agriculture in Tocantins, it is necessary to strengthen UNITINS.

To solve the research problems in Tocantins, it is temporarily planned to carry out the research through a consortium composed of UNITINS, NGOs and others (Project PRODETAB with funding from the World Bank).

9 Agriculture Infrastructure

9.1 Irrigation

The irrigation infrastructure of Tocantins State has a low development level with approximately 53,000 ha of irrigated area in the whole state, mainly concentrated in the Formoso do Araguaia region. A summary of the existing infrastructure development works found in the state of Tocantins is listed as follows.

(1) Rio Formoso Project

The estimated area of this project is 23,500 ha and it is located in the southern region of the Javaés Project. This project was divided in 4 stages, with three stages already finished. The implanted area is 17,293 ha, where 12,234 ha are suitable for agriculture, 3,443 ha are inundated (preservation area) and 1625 ha are not suitable for agriculture activity. At present, there are still some areas where irrigation facilities were not finished.

The employed method for rice and corn is the sub-irrigation system. Rice shall be cultivated in the whole area and, soybean and corn shall be cultivated in half area for each crop due to the available quantity of water. During the rainy period, water of Formoso river shall be used and during the dry period, the water from the two existing reservoirs are utilized.

(2) PRODECER III

This is a Japanese-Brazilian project, with the purpose of increasing the production of Brazilian savanna areas (Cerrado), it was implanted in the State of Tocantins in the region of Pedro Afonso municipality. The total area of the project corresponds to 40,000

ha and due to its location in the region of Legal Amazon, 20,000 ha are available for agriculture and the remaining 20,000 ha are destined for legal reservation. The number of parcels to be implanted is 41, with an average area of 485 ha destined for plantation. Main products to be cultivated are soybean, maize (upland and irrigated), feijão bean and cashew-nuts.

The project also includes the supply of a dryer and storage unit with a drying capacity of 1,200 ton per day, storage capacity of 60,000 ton and dispatching capacity of 120 ton per hour.

Soybean silo belongs to COOPERSAN (Cooperativa Agro-pecuária Mista de São João Ltd.) designed with a capacity of 60,000 ton, 72' x10, feeding capacity of 100 ton/hr, and it is scheduled to be completed by the end of June, 1997. The main portion of the facilities is being operating since last April so that the new crop of soybean could be received. This facilities are installed 150 m far from the river bank in order to facilitate the loading into barges by May, 1998.

9.2 Storage

The Storage capacity of agriculture products in Tocantins state is 70,980 ton distributed in 142 facilities for conventional storage; 29,841 ton in three granary facilities; 280,240 ton in 24 silos; amounting to a total capacity of 1,081,240 ton in 169 warehouses. The CASETINS (Tocantins State General Warehouses and Silos Company) has a capacity for 90,800 ton in 22 conventional facilities which are used by the CONAB (National Supply Company). However, the utilization rate is very low and many facilities are out of operation. These facilities have been built in 1980 after the expectation of an increase in production through the implantation of the agriculture products commercialization development policy.

9.3 Transportation Infrastructure

(1) Road Conditions

Roads are classified into federal, state and transitory (from federal to state) roads. Federal road are managed by the federal government, state ones by the state government (Work and Transportation Secretariat) and the municipal ones are under the care of the municipalities.

The highway network of Tocantins state extends in the north-south direction through the BR-153 Belém-Brasília highway completed in 1978, and in the east-west direction through the state highways. The paved highway is composed of two way roads with a width of 7,0 to 8,0 m and a capacity for heavy trucks (total weight more than 50 ton).

The highway construction index for the state is 0,038 km/km^2 (210,641.44km / 278,420.7 km^2), which represents a very low index. The paving rate is 22,05 (2,346.55km / 10,641.44km).

(2) Fluvial Transportation

1) Waterway Transportation of Araguaia-Tocantins rivers

The waterway transportation in Brazil had been carried out only through the Paraná and Amazon rivers basins. At present, in order to promote the development of the central area of Brazil and decrease the transportation cost, the federal government pretends to promote the utilization of several rivers from different regions such as the Madeira river, affluent of the Amazon river, for transportation of soybean produced in Mato Grosso and Rondônia states, initiated in April, 1997.

In the state of Tocantins, the Araguaia and Tocantins rivers are suitable for use as waterway. At present, there is a project developed for this purpose by AHITAR (Management of Araguaia-Tocantins Waterway). A plan for the utilization of barges in both rivers was not executed yet, but some navigability tests were carried out in the Araguaia river 8 years ago, and at the moment there aren' t any projects for the Tocantins river.

However in Xambioá, at the Araguaia river margin, the CVRD company has a facility (unloading, storage capacity of 3,000 ton, for trucks) with unloading capacity of 120 thousand ton/year (March to June), but due to the elevation of the Tocantins river level in 1997, the plan for the construction of 40,000 ton barges was reduced to 10,000 ton.

The AHITAR projects gave priority to the Araguaia river because the Tocantins river is a local river with small transportation distance and volumes. Therefore, there are not detailed studies for the Tocantins river. In the PRODECER project of Pedro Afonso, it was estimated that the transportation of soybean produced by the project shall be cheaper through the fluvial mean; reason why they implanted a silo at the margin of this river.

AHITAR has already finished the signaling works of Tocantins river between Miracema and Estreito (420 km) although the feasibility study hadn' t been finished yet. In the area of Estreito, there is a section which presents restrains for navigation, therefore a work for repairing the river at that point is being planned. The management of the waterway shall be given to a private company. At present, the NAVIBEL (SP) company is interested in the Araguaia river section, however no company has shown interest about the Tocantins river section.

2) River Crossing through ferry-boats

The most important road of Tocantins State is the Highway BR-153 which connects the north to the south of the state. At the south, there is the border with the Goiás state to which the access is direct, and at the north, at the border with the Maranhão state, the access is made through a bridge located in Estreito, at the Tocantins river. At present,

there is no bridge along the 750 km of the Araguaia river within the Tocantins State. On the other hand, there are three bridges on Tocantins river (Estreito, Porto Nacional and Peixe). In other places, the river crossing is made by ferry-boat.

In important roads river crossing points, there are ferry-boats operating 24 hr/day. These ferry-boats are pulled by small boats, restricting their capacity to small number of cars and trucks.

The ferry-boats located in 13 important places are managed by the company PIPES (Pedro Iram Pereira Espirito Santo, Carolina-Maranhão). There are also smaller ferry-boats in 20 points of main tributaries of both rivers. The ferry-boats capacity in the locations operated by PIPES is 200 ton for each ferry-boat. The waiting time is around 15 to 30 min.

(3) Railway

Presently, there is no railway services available in Tocantins state. However, as part of the Multi Modal Central-Northern region Transportation Corridor, the South-North railway (109 km, Imperatriz to Acailândia) in the neighbor state of Maranhão, and Carajás railway (496 km between Acailândia and São Luis) are already being used to transport soybeans destined for exportation.

The following table shows the present record of transported agricultural and livestock products. In principle, the total amount of soybean is exported from the port of São Luis.

Agricultural and livestock products transported through Carajás Railway (ton)

Description	1990	1991	1992	1993
Timber	376,00	316,000	256,000	358,000
Grains-soybeans	--	3,000	26,700	72,200
Grains-others	12,70	11,100	5,400	4,900

Source: The Carajás Railroad, Companhia Vale do Rio Doce

There is a soybean transhipment facility (truck scale 59t, loader 300t/hr) at Imperatriz. The soybean produced in Tocantins state shall be transhipped to railway together with the soybean transported from Balsas, Maranhão state by trucks. There is also a transhipment facility (track scale, warehouse 600 m^2 and unloader) from barges to truck in Xambioá, along the bank of Araguaia river. However, the waterway is not so active as its full scale utilization is yet to come.

At present, CVRD is running 50 freight cars exclusively for bulk grain (450t/car) through the South-North railway and Carajás railway. During the season from March to May, a cargo train of 25 freight cars makes a round trip every day between Imperatriz/São Luiz. It has a transporting capacity of about 1,000,000 ton in one season. Freight charge is presently 8R$/ton.

The construction works for extending the South-North railway (120 km between Imperatriz and Estreito) has progressed to about 40% as of May 1997 and it is expected to completed by the end of 1998.

South-North railway, Carajás railway, São Luis port, Madeira whalf including transhipment facility are all managed and controlled by CVRD. It makes possible a stable transportation service in a country as Brazil where, generally, transportation services in harbors are unstable.

(4) Exportation Ports

The nearest sea port to Tocantins state is the São Luiz port, in Maranhão state. Railway transportation to this port from Imperatriz is possible.

The São Luiz port consists of Itaqui and Madeira wharves. Soybean loading facility (terminal silos 72,500 ton, conveyor 1,500 t/hr) is located at the Madeira wharf. Both wharves are connected by a conveyor (1,000 m).

The Itaqui wharf facilities were originally constructed for shipping iron ore from Carajás mines. A large ship can anchor with water depth of 23 m.

The record of soybean shipped from Madeira wharf, São Luiz port, is shown in the following Table. The present facility can ship several hundred thousands of tons per year.

Soybean shipped from Madeira wharf, São Luiz port (ton)

	1992	1993	1994	1995	1996	1997(est.)
soybeans	27,000	72,000	152,000	167,000	206,000	320,000
no. of ships	1	3	6	7	8	---

Source: Companhia Vale do Rio Doce

Ocean freight to Europe (Rotterdam) from Paraná port, in the southern region, or from Espírito Santo port, the largest soybean shipment port, costs R$ 18-20 per ton. The ocean freight from the above mentioned São Luiz port, northern Brazil, costs R$ 12-14 per ton. Therefore, the soybean produced in the State is in an advantageous position as far as exports to Europe are concerned.

ANNEX VII

DISTRIBUTION AND MARKETING CONDITIONS

ANNEX VII

DISTRIBUTION AND MARKETING CONDITIONS

1 Outline of Distribution and Marketing Conditions

1.1 Flowing Direction of Distribution

Agricultural produce in Tocantins are mostly generated not only from livestock raising in the central-west and southeast regions of the State, but also from rice, soybean, pineapple cultivation areas. On the other hand, the majority of consuming commodities in the State is imported from other states.

It could be said that developing possibility of agriculture in Tocantins largely depends on the construction of access road to a cultivated area. In the mid 1970s, the highway BR-153 between Brasília (Anápolis) and Belém showed a great contribution to the development along its way. Commodity flow in Tocantins, generally speaking, seems to be along BR-153, and is connected with places outside the State such as Belém, São Luís at the northeast and the southeast via Brasília.

However, merchandise transportation to and from adjacent states are becoming active due to recent construction of railway, specially pavement of existing roads (width 7.0m and shoulder 2.0 m). For instance, state road TO-080 starts from Paraíso do Tocantins to Casera at the riverbank of Araguaia river through Marianópolis do Tocantins and TO-336 leads to Conceição do Araguaia, Pará state at the riverbank of Araguaia from Guaraí. Both roads are used to transport calves to Pará state and bring grown cattle into Tocantins state.

Further, a paved state road from Dianópolis to Mimosa or Barreiras, both in Bahia state, is an established route for transporting soybean and lime. Complementing the conventional south to north cargo transportation in the Tocantins state, east to west cargo transportation has already started.

1.2 Market Quantity of Agricultural and Livestock products

According to the information estimated by ICMS, Department of Finance, Tocantins state, the marketed quantity of agriculture and livestock products in 1996 is as shown in the following table. Depending on the items, marketed quantity exceeds the production quantity because some items are counted twice or more, each time a business transaction is carried out.

Quantity of Agriculture and Livestock Products in 1996 (Period from Jan to Dec/96)

Commodity	Marketed Quantity		
	In State	Out of State	Total
Agriculture			
Rice	23,283,275.6 bags	955,810.7 bags	24,239,086.2 bags
Feijão	106,898.8 bags	21,299.0 bags	128,197.8 bags
Corn	13,915.6 bags	1,116,422.7 bags	1,130,338.4 bags
Soybean	750.0 bags	126.459.9 bags	127,209.9 bags
Powder	690.3 bags	664.7 bags	996.0 bags

Banana	3,391.6 kilo	15,100.0 kilo	18,491.6 kilo
Pineapple	-	4,686.0 units	4,686.0 units
Others	349.0	48,276.7	48,625.7
Livestock			
Fat Ox	47,996.8 heads	265,191.27 heads	313,188.0 heads
Thin Ox	497.0 heads	13,305.0 heads	13,802.0 heads
Pregnant Cow	3,240.0 heads	4,702.0 heads	7,942.0 heads
Slaughter Cow	167,419.5 heads	159,561.6 heads	326,981.2 heads
Single Cow	978.0 heads	9,316.0 heads	10,294.0 heads
Heifer	416.0 heads	27.247.0 heads	27,663.0 heads
Equine	157.0 heads	2,339.0 heads	2,496.0 heads
Male Calf	1,894.0 heads	98,545,0 heads	100,439.0 heads
Female Calf	480.0 heads	21,794.0 heads	22,274.0 heads
Garrote	923.0 heads	19,525.0 heads	20,448.0 heads
Buffalo	26.5 heads	2,987.0 heads	3,013.5 heads
Fat Pork	1,439.7 heads	164.4 heads	1,604.1 heads
Thin Pork	569.6 heads	312.0 heads	881.6 heads
Others	47,900.0 heads	303,539.0 heads	351,439.0 heads

Source: State Secretariat of Finances, GIA - Geral do Estado - 96

1.3 Exports and Imports of Agricultural and Livestock Products from Tocantins State

The actual export figures of agricultural and livestock products from Tocantins state since 1992 are shown in following table. There are only three items, leather, timber and soybean. According to information obtained from the parties concerned, meat is also exported. However, due to the address of exporter, export quantity is statistically included in the record of some other states.

Exports of agricultural and livestock products from Tocantins state

unit = kg

Main Exported Products	1992	1993	1994	1995	1996
Soybean grains, lees, soybean oil	---	0	15,070,000	0	2,308,910
Leather	---	---	0	84,500	334,045
Wood floor and wall board	---	---	---	0	76,475
Unprocessed edge leather	---	---	---	0	150,000
Fresh watermelon	---	---	---	0	22,000
Other wood products	0	26,183	---	---	---
Wood bed, drawers, shelves	70,675	26,705	---	---	---
Kitchen wood table, chair, shelves	18,325	10,962	---	---	---
Decorated wood board, plywood,	155,381	38,640	---	---	---
Office wood table, chair, shelves	22,694	11,208	---	---	---
Wood products except log	15	---	129,542	---	---

Source: MICT: Ministry of Industry, Commerce and Tourism
(SECEX: Foreign Trade Secretariat)/ DECEX SERPRO

On the other hand, there are only two records of import of agricultural and livestock products by Tocantins state for the period of 1992-96 such as the ones shown in the next table.

Imports of Agricultural and Livestock Products
by Tocantins State

Year	Item	Quantity
1993	Seed bull for breeding	34 head
1996	Garlic	770,120 kg

Source: SECEX/DECEX SERPRO

1.4 Market Information

Secretary of Agriculture (SAG) establishes and operates the price information system for collecting the farmer's gate-price weekly on 32 items of agricultural produce through 9 regional offices, and reports it to Bank of Brasil, Bank of Amazon and Secretariat of Financial Bureau (SF). This price information called as SIMA (Agricultural Market Information System) is known by the public via Mass-media such as TV, radio, newspapers.

On the other hand, the Ministry of Agriculture publicizes wholesale prices in the form of BOLETIM (Managing Information about Agricultural Market) which compiles wholesale prices on main agricultural products in major production areas and main markets in the country.

2 Infrastructure in the Distribution Sector

The storage installation capacity of agricultural products of Tocantins state is 70,980 ton distributed in 142 facilities for conventional storage; 29,841 ton in three granary facilities; 280,240 ton in 24 silos with a total capacity of 1,081,240 ton in 169 warehouses. The CASETINS (Tocantins State General Warehouses and Silos Company) has a capacity for 90,800 ton in 22 conventional facilities, which are used by the CONAB (National Supply Company), however, the utilization index is very low with many facilities out of operation. These facilities have been built in 1980 after the expectation of increase of production through the implantation of the policy for commercialization development of agricultural products.

Production of grains in Tocantins state as of 1996 was 470,530 ton according to IBGE/LSPA, however the storage capacity is higher. Therefore, the utilization rate of the available facilites has decreased in the last period. As a consequence, there is a project of reutilization of the existing facilities, comprehending the utilization of five warehouses. This project comprehends the rental of these facilities by private companies as well as their alteration.

The storage capacity for different storage facilities types and locations are shown in the following table:

Storage Capacity for Different Facilities Types in different Regions (ton)

Region	Informal	Conventional	Warehouse	Silo	Granary	Total
Extreme-north		3,240				3,240
North		7,322				7,322
Northeast		18,428	1,872	2,860	7,311	30,471
Northwest	2,700	13,275				15.975
East						0
Center-west		127,486	7,487	7,200		142,173
Central		22,668		539		23,207

Southeast		32,338				32,338
Southwest		237,019	430	248,532		485,981
South		296,715		21,109	22,530	340,354
Total	2,700	758,491	9,789	280,290	29,841	1,081,061

Source: CONAB, 07/03/97

Ownership of warehouses and operation status is presented as follows:

Ownership and Operation Status of Warehouses

Status	Capacity (ton.)	%	Dependency (ton.)			
			State	Federal	Private	Total
Guaranteed	360,024	33.3	86,810	50,775	222,439	360,024
Not guaranteed	131,401	12.2	0	0	131,401	131,401
Without Contract	237,342	21.9	8,300	0	229,042	237,342
In Pending Operation	352,294	32.6	4,555	0	347,739	352,294
Total	1,081,061	100.0	99,665	50,775	930,621	1,081,061

Source: CONAB, 07/03/97

According to the conditions of warehouses and their facilities for cereals, CONAB classified half of the warehouses as suitable, named as "guaranteed" and "in pending operation" in the above table. According to the present production of Tocantins State, the available storage facilities are considered sufficient, but not when compared with the potential production.

Storage capacity is sufficient, except in the extreme-north region (Micro-region 1- Bico do Papagaio) and northwest (07-Tapajós). The total capacity raised from 1,105,008 ton in 1989 to 1,505,479 ton in 1992, but for the two regions mentioned before, it is still insufficient. According to CEPA and CONAB data, this situation is caused by the reduction in production from 852,073 ton in 1989 to 511,925 ton in 1993.

3 Distribution and Market System

3.1 Present Situation of Marketing Commodities

(1) Marketing of fruits and vegetables

Most of the fruits and vegetables circulating in the country pass through the way of wholesale markets (CEASA: Supply Center) in the main cities. Very few quantity is delivered directly from producers to large scale venders such as supermarkets.

Laws and regulations for establishment and management of CEASA have been already enacted by the countrywide organization of CEASA. However, at present many state governments manage and operate CEASA by themselves so far, and few CEASA privatization cases can be seen.

Main CEASAs in the country are shown in the Table VII-3.2, however some CEASAs are missing.

Table VII-3.1 Consumption and supply of fruits and vegetables in 5 selected cities (ton)

Municipality	Araguaína		Gurupi		Palmas		Porto Nacional		Paraíso do TO		Total	
Population (IBGE/1996)	97,045		59,080		55,717		46,869		31,256			
Item	Cons.	Produc.	Cons.	Produc.	Cons.	Produc.	Cons.	Produc.	Cons.	Produc.	Cons.	Produc.
Kabutia	2.1	6	0.8	0	2.3	0	0.9	0	0.8	0	6.9	2
Avocado	2.0	0	0.9	0	1.0	5	0.5	0	0.4	0	4.3	1
Zucchini	0.8	50	0.9	6	1.0	0	0.6	29	0.4	21	3.7	19
Garlic	1.3	8	0.4	0	1.0	0	0.6	0	0.8	0	4.2	3
Sweet Potato	0.9	0	1.2	5	1.0	0	0.4	0	0.3	17	3.8	3
Potato	13.8	0	14.4	0	15.1	0	6.9	0	6.3	2	56.3	0.3
Eggplant	0.3	46	0.2	0	0.1	0	0.0	0	0.1	0	0.7	18
Beetroot	4.3	0	3.2	0	2.7	0	2.2	0	1.4	0	13.7	0
Cara	1.3	0	0.5	0	0.6	0	0.4	0	0.3	0	3.2	0
Onion	9.2	0	9.4	0	10.2	0	5.2	0	4.0	0	38.0	0
Carrot	5.2	0	5.8	0	4.0	0	2.7	0	1.7	0	19.5	0
Chayote	2.0	0	0.2	0	1.8	0	1.1	0	0.7	0	5.8	0
Ginger	0.1	0	0.0	0	0.1	0	0.0	0	0.1	0	0.4	0
Yam	0.4	0	0.2	0	0.1	0	0.1	0	0.1	0	0.9	0
Jilo	2.1	90	0.7	0	1.1	65	0.8	71	0.6	29	5.3	63
Watermelon	41.7	95	9.0	40	56.5	90	5.7	100	3.4	95	116.3	89
Melon	1.0	29	0.4	0	1.4	0	0.3	0	0.4	16	3.5	10
Green Corn	3.8	10	0.5	0	0.8	0	0.4	0	0.4	35	5.9	9
Cucumber	3.3	100	1.5	0	1.3	15	1.0	31	0.6	78	7.7	55
Pepper	2.2	90	1.1	4	1.3	3	0.8	20	0.4	75	5.9	44
Okra	1.4	90	0.8	0	1.0	20	0.8	0	0.5	29	4.4	35
Cabbage	4.8	50	2.6	0	3.3	40	2.4	0	1.8	0	14.9	25
Tomato	23.6	90	12.4	1	14.0	10	8.2	10	5.5	10	63.8	38
Green Bean	1.3	85	0.5	0	0.8	5	0.4	0	0.3	12	3.3	36
Lettuce	13.3	100	1.0	35	2.0	100	1.0	100	1.0	100	18.2	96
Cauliflower	0.3	0	1.8	0	0.4	0	0.5	0	0.3	0	3.3	0
Banana Maca	8.2	75	4.3	27	5.2	85	1.3	26	0.8	29	19.3	62
Banana Marmelo	0.7	100	0.3	0	0.5	10	0.5	50	0.4	50	2.4	50
Banana Nanica	7.7	100	2.2	0	2.1	70	4.2	20	0.9	30	17.1	60
Coconut	0.3	21	1.1	11	0.7	0	0.2	0	0.2	0	2.5	7
Orange	61.2	10	4.0	0	24.4	15	18.4	0	6.8	0	114.8	9
Lime	1.1	0	0.8	0	0.9	0	0.5	0	0.3	0	3.7	0
Apple	3.9	0	1.6	0	3.6	0	2.3	0	1.4	0	12.7	0
Mamao Comum	0.6	100	0.7	13	1.2	85	0.4	0	0.2	0	3.1	55
Mamao Papaya	0.9	90	1.0	0	0.5	0	0.4	0	0.3	0	3.2	26
Passion Fruit	1.9	40	2.2	0	1.6	80	0.9	20	0.8	21	7.3	32
Tangerine	0.8	0	1.2	0	0.7	0	0.7	0	0.4	14	3.8	2
Pear	0.7	0	0.4	0	0.6	0	0.6	0	0.2	0	2.5	0
Grape	1.2	0	0.3	0	1.0	0	0.5	0	0.4	0	3.3	0
Pineapple	23.9	95	5.5	42	1.7	97	5.7	100	1.3	100	38.1	88
Egg (dozen)	4.6	90	8.9	28	16.9	0	6.5	10	3.7	95	40.5	26

Source: Tocantins State Secretariat of Agriculture

Table VII-3.2: Main CEASA in Major Cities

	CEASAS		CEASAS	COMMERCIALIZED QUANTITY November 96 (Tn)	COMMERC. VALUE November 96 1.000.00	PRESENT PRICE (RS/M2)		
						BOXES	MODULES	NOT TYPIC
N	CEASA/PI		CEASA/PI	17.052.7	9,459.00	6.26	5.43 to 6.17	4.03
	CEASA/PA		CEASA/PA	13.002.2	6.385.75	5.36	5.36	5.36
	CEASA/CE		CEASA/CE	28.679.9	11,565.15	3.36	1.75	4.57 to 6.10
NE	CEASA/RN		CEASA/RN					
	CEASA/PB		CEASA/PB	4.283.4	1.741.86	1.60 to 3.20	1.00	1.60 to 3.20
	CEASA/PE		CEASA/PB	7.799.7	3.541.69	1.60	0.80	1.60
	CEASA/AL		CEASA/PE	52.761.0	27.562.00	1.24 to 4.22	0.33	1.24 to 4.22
	EBAL/BA		CEASA/AL			1.08 to 2.67	2.80 to 3.20	0.72 to 2.67
C	CEASA/DF		EBAL/BA	21.981.8	10.154.89	7.00	0.20 to 1.25	7.00
	CEASA/MG		CEASA/DF	21.165.1	12.635.61	3.28 to 5.11	23.85 to 27.63/month	5.40 to 9.16
SE	CEASA/MG - Belo Horizonte		CEASA/MG			5.30	2.80	7.44
	CEASA/MG - Uberlandia		CEASA/MG - Belo Horizonte	83,963.1	35,408.54	1.18	1.25	1.18
	CEASA/MG - J. de Fora	6,312.7	2,773.38	0.66 to 3.75	1.49	0.66 to 3.75	153	08:30 to 17:00 h
	CEASA/MG - Gov. Valadares	3,079.9	1,345.08	0.68	0.08 to 0.32	0.68	346	05:00 to 18:00 h
	CEASA/MG - Caratinga	2.103.3	726.82	6.15		6.15	14	09:00 to 14:00 h
	CESA/ES	25,679.4	10,310.69	3.50	1.60/day		108 + 1,200 no perm.	05:00 to 18:00 h
	CESA/RJ - Grande Rio	154,061.4	78,372.94					
	CEAGESP	240,824.2	121,906.47	13.00 to 22.00	4.00 to 26.00		2,500	06:00 to 22:00 h
	CRAISA Sto. Andr	12,228.0	6,356.15	5.60	8.00	8.61	67	02:00 to 14:00 h
	CEASA/Campinas	53,052.6	25,648.50	5.91	7.00	6.95	600 + 305 flowers	07:00 to 18:00 h
S	CEASA/PR - Curitiba	57,573.4	38,286.20	4.50	7.14	5.35	440	05:00 to 15:00 h
	CEASA/PR - Maring	7,802.3	3,258.60	4.50	7.14	5.35	92	06:00 to 13:00 h
	CEASA/PR - Londrina	3,189.1	1,504.40	4.50	7.14	5.35	23	05:00 to 13:00 h
	CEASA/PR - Foz do Iguazu	13,511.0	5,890.50	4.50	7.14	5.35	80	04:00 to 17:00 h
	CEASA/SC	13,204.8	6,021.00	3.78	0.59/day	3.73	1,563	06:00 to 12:00 h
	CEASA/RS	46,047.2	23,349.28	8.00 to 12.00	8.00	8.00 to 12.00	813	05:30 to 11:30 h
	TOTAL PARTIAL	638,669.3	325,750.01					

According to the regulations, only fruits, vegetables and eggs are dealt inside a CEASA. Meat and fish are excepted. The biggest CEASA in São Paulo also deals flowers. Some wholesalers in CEASA install their own cold storage for keeping valuable fruits imported from neighboring countries.

CEASA is generally divided into several sections based on a sort of commodity articles. In the same section, many wholesalers compete in the business. There is no bidding auction to form prices, but face-to-face negotiations between a seller and a buyer. Usually many CEASA have also established retail markets or "feiras", where producers bring in their products directly and sell. This kind of retail markets play also the function of forming retail prices.

Imported valuable fruits are usually graded and packed in a corrugated carton box, however for domestic fruits and vegetables this is only partly done. Wooden-box, cage, net, jute box is selected for packing according to the nature of products after being roughly classified into big or small size. A few corrugated carton boxes and recycled plastic cases have just begun to be utilized.

CEASA in major cities covers not only the area where it is installed, but also the whole country by means of collection and distribution functions. Big wholesaler may accept orders from buyers by long distance fax or phone calls.

Total transaction in weight, as of 1996, at the fruits and vegetables wholesale market of Belém, a typical city in northern Brazil, is 157,699 ton (DETECCEASA/PA). Their main procurement is from Pará state (24%), second (17%) is from São Paulo state which is the center of collection and distribution of the produce in southern Brazil, third (10%) is from Bahia state, 8% from Pernambuco state and 7% from Minas Gerais state. 4,782 ton (3%) is procured from Tocantins state, only a small portion of the whole Brazilian produce. Banana and pineapple are the main items. This market procures all the tomato, carrot and green pepper outside of their state. If Tocantins state produces those vegetables, they would probably procure them from Tocantins state.

A wholesale market (CEASA-DF) in capital Brasília was opened in 1972 and handled 266,332 ton of produce in 1996. The ratio of fruits and vegetables procured outside the national capital region is root crop 78% and fruit 95%. Their buyers are supermarkets 40%, vegetable shops 30%, stall keepers (feira) 10%. Supermarkets are quite developed in Brazil but, at the present, they seldom procure directly from growers.

In CEASA, Japanese-Brazilian wholesalers often manage and operate shops, and as an example it can be said that in Belém CEASA there may be more than 10% of Japanese-Brazilian wholesalers. In their background, there are many Japanese-Brazilian who are engaged in fruit and vegetable cultivation. Some of them make the contract with producers on a commission basis.

The present situation reveals the dynamic movement of fruit and vegetable in the vast country at will. Onion, potato, garlic from Argentina, and some fruits from Chile are competing with the similar domestic products in terms of quality and price.

There is no CEASA in Tocantins yet. Fruit and vegetable production in the State does

not attain self-sufficiency in general. Actual situation of demand and supply in selected cities in the State is shown in Table VII-3.1. Imported fruits and vegetable from outside the State mainly come from CEASA in Goiânia or Anápolis in Goiás. Middlemen from Tocantins go there and purchase them, and sell them in retail shops in the State.

In regard to pineapple, which production has increased in recent years in the State, producers usually sell their products directly to wholesalers in São Paulo and Rio de Janeiro. The means of transportation for pineapple are generally in bulk and by truck.

In main cities in the State, public markets (feira) for food and daily necessaries are established by the municipal office. In Palmas, capital city of the State, the market opens on Saturdays. The market covers an area of 2 ha, the building is light steel structured, no side-wall, floor space 50x50m, no partition wall, approx. 200 shops selling daily goods, food, fruits and vegetables, meat, fish, milk products. Trucks loading banana, pineapple, watermelon, come from distances within 100 km, parking in the surroundings of the building and selling the products directly from the truck.

In Taquaralto ward, 15 km from Palmas, residential area, a public market for daily goods and food is also established, opening every Sunday. It covers an area of 3 ha, light steel building, floor space 800 m^2. Many tent-covered shops are opened outside because the building can not shelter all shops. This market is more characterized for general public than that in Palmas, and has more shops.

(2) Marketing of soybean

Soybean grains produced in Brazil are utilized in domestic oil extraction factories and are also exported, but rice is consumed only inside the country because of its low price competitiveness in the international market. On the other hand, producers price on rice and soybean are at present being pressed down by means of the import of cheap rice and edible oil, which is being carried out under the government low price policy for staple food.

Edible oil, lees, grains are relevant marketable products of soybean. Cotton seed oil shared nearly half of the production till middle of the 1960s. Others were oil from peanuts, soybean, maize, sunflower. From late 1960s on, soybean production increased and soybean oil became the major edible oil producted in Brazil.

About 80% of soybean production is processed for producing crude edible oil and lees, and the remaining 20% is exported in the form of soybean grains. Brazil produces 2,500,000-3,000,000 ton of soybean oil yearly, and approx. 2,000,000 ton is for domestic consumption, and the remainder being for export. Ceval, Ovelra, Cargill are the leading oil extraction companies in the country. There is no soybean processing plant in Tocantins.

The soybean production and processing volume in Brazil is presented in the next table. It is important to understand the soybean processing ratio and rough movement from production area to other areas.

Soybean Production and Processing Volume (ton)

Area	Year	Production	Processed (ratio)	Soybean Lees	Soybean Crude Oil
North	1991	10,842			
	1992	21,107			
	1993	37,358			
	1994	59,559			
Northeast	1991	451,887	225,132 (0.50)	177,589	42,850
	1992	504,748	466,534 (0.92)	363,191	97,468
	1993	682,746	539,202 (0.79)	425,938	102,978
	1994	1,014,021	667,887 (0.66)	529,939	132,332
Southeast	1991	1,955,057	2,380,396 (1.22)	1,877,839	457,073
	1992	1,827,847	2,072,461 (1.13)	1,608,179	420,928
	1993	2,096,804	2,407,042 (1.15)	1,764,009	449,669
	1994	2,499,815	2,496,639 (1.00)	1,964,452	470,458
South	1991	6,001,202	8,257,857 (1.38)	6,384,487	1,447,081
	1992	9,456,582	9,698,308 (1.03)	7,489,955	1,745,312
	1993	11,266,736	9,831,638 (0.87)	7,404,513	1,835,261
	1994	11,209,966	10,758,546 (0.96)	8,590,772	1,794,086
Center-west	1991	6,518,818	2,454,102 (0.38)	1,735,484	473,086
	1992	7,404,421	2,919,029 (0.39)	2,311,680	568,653
	1993	8,507,334	3,657,572 (0.43)	2,876,241	700,180
	1994	10,128,984	4,630,970 (0.46)	3,627,642	883,847
BRAZIL	1991	14,937,806	13,317,487 (0.89)	10,175,399	2,420,090
	1992	19,214,705	15,156,332 (0.79)	11,773,005	2,832,356
	1993	22,590,978	16,435,454 (0.73)	12,470,701	3,088,088
	1994	24,912,345	18,554,042 (0.74)	14,712,805	3,280,721

Source: Brazil Statistics Year book - 1995

Note: The industrial/commercial activity period of the soybean complex starts in February of one year and finishes in January of the following year.

- North region produces the least, and hence no extraction plant exists.
- Northeast produces few, 79% of the production is sent for oil extraction.
- Southeast produces in a good level, but a bigger volume than its grain production is used for oil extraction.
- South produces a good quantity, and almost the same amount is used for oil extraction.
- Center-West also produces a significant quantity, but only 43% of the production is used for oil extraction.
- From Center-West, high amount of soybean grains is sent to Southeast and South regions.
- As for the whole country, about 75% of the production is sent for processing, and the remaining is utilized as seed or exported in the form of grains.

The marketing season of soybean produced in Brazil starts immediately after harvesting in other producing areas, which is around March. It coincides with the off season of soybean grown in the USA. Although there is time needed for transporting to export ports from growing sites, quarterly exports are as shown in the following table.

Soybean Export Season of Brazil

(million ton)

Year	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Total
1995	1.7	6.7	4.8	3.6	16.8
1996	2.0	6.6	5.2	2.4	16.2
Average	11.2	40.3	30.3	18.2	100.0

Note: Includes beans, bran, crude oil and refined oil
Source: Brazilian Central Bank Bulletin, March 1977

Soybean harvesting season in Tocantins state is from March to June (in March 1997, a large quantity was heat damaged due to over 600mm rainfall). As for the water transportation in Araguaia river and Tocantins river, barges cannot efficiently navigate the rivers after July due to insufficient depth of water. According to the above list, about half is exported after July which means that by water transportation, the total quantity has to be transported before the end of June.

(3) Marketing of Babaçú

Babaçu palm - palmácea babaçu (*Orbignya speciosa*) grows naturally in a large quantity in Minas Gerais, Bahia, Tocantins, Maranhão, and Piauí. Many rural people utilize it traditionally, trunk and leaves as house-materials, edible oil and detergent from kernel which contains 50% of oil. The residues, after the extraction of oil, are utilized for animal feed, and husk for fuel. Kernel weights 10% of the fruit. Generally women crush and pick up kernel dropped on the ground, with a work efficiency of 10 kg/day (2.50 R$). A crushing tool has been anticipated for a long time.

UNITINS through its Department of Food Processing is proceeding the Babaçu research project under the name of "Self-sustainable Production of Electric Energy in Rural Zone". The project plans to install a pilot plant consisted of oil extraction machine (expeller) and electric generator by utilizing husk as fuel for a boiler, reckoning on a budget of R$ 220,000. Pilot plant is to be installed in São Miguel do Tocantins, Extreme-north Region (Bico do Papagaio).

(4) Rice marketing

Cereal cultivation occupies about 90% of the cultivated land in Tocantins, out of which more than 60% is rice field. Main production fields are located in Formoso do Araguaia, Lagoa da Confusão, and especially the Project of Rio Formoso which yields a high productivity.

Wet paddy just after harvesting is sold to rice miller or cooperative directly by the producer, then rice mills process wet paddy for cleaning, drying, milling, grading and packing. After that, milled rice is delivered to retail shops through wholesalers or directly.

Markets for Tocantins rice are mostly within the State and cities in Northeast of Brazil. With a 35 million population and an increasing income, there is a big demand for rice. It is said that the Tocantins is in a good position to supply rice to the Northeast in comparison with southern states where the biggest rice production areas are located.

COPERJAVA (Formoso do Araguaia) yields No.2 (type 2) rice, and 97% of their

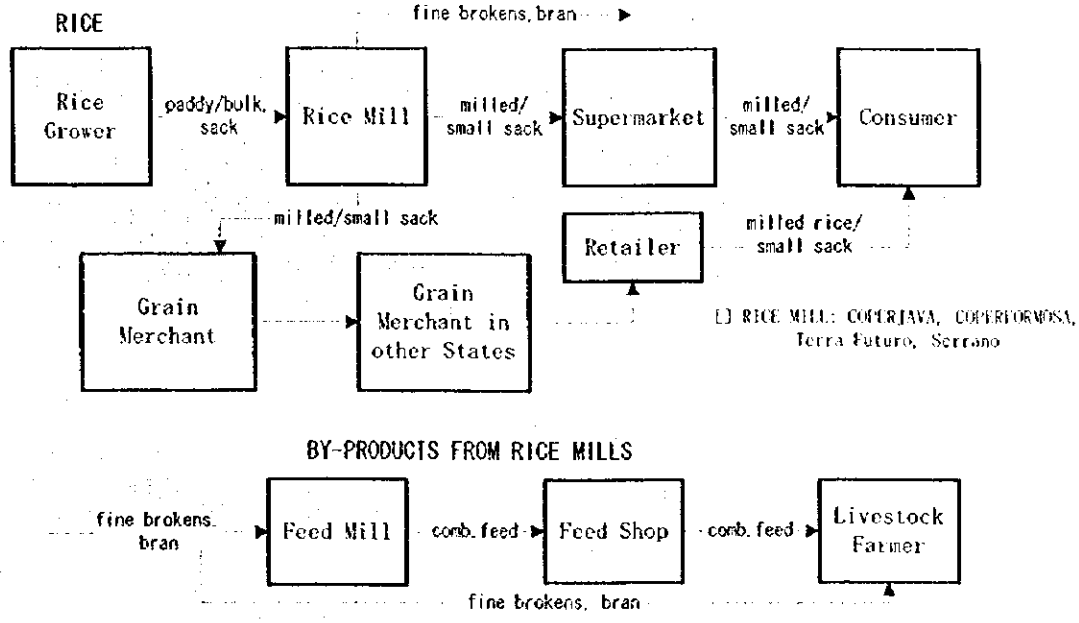
milled rice is destined for the Northeast market which mainly demands low and medium class rice. Southern rice is also supplied to the Northeast region, but Tocantins has plenty conditions to compete with it. In the case of COPERJAVA, by-products from rice mill such as fine broken rice and rice bran can be sold to a feed mill in Anápolis, Goiás.

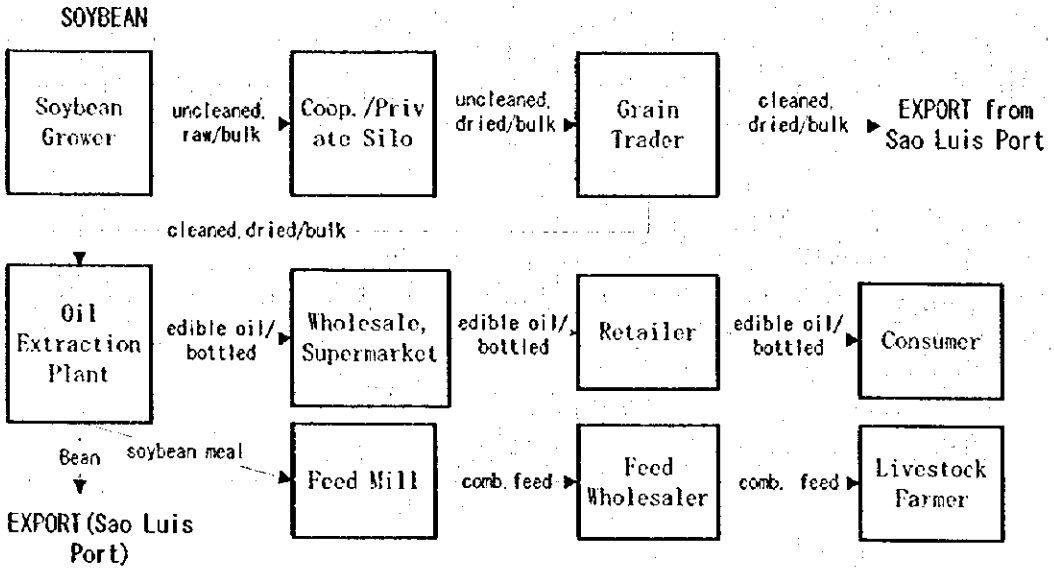
Transportation charge from Paraíso to Belém by heavy truck (3 axes, 30 ton) is R$1.50/30 kg (0.028 R$/ton/km). Type 2 rice price of R$16.50/30 kg (ex-rice mill) becomes CIF Belém R$18.00/30kg. Transportation charge shares 8.3% against CIF price that is quite lower than soybean.

(5) Marketing flow of Agricultural product

Marketing flow was already explained in previous items. Its illustration is shown in the Figure below.

Marketing Flow Chart of Agricultural Products in Tocantins





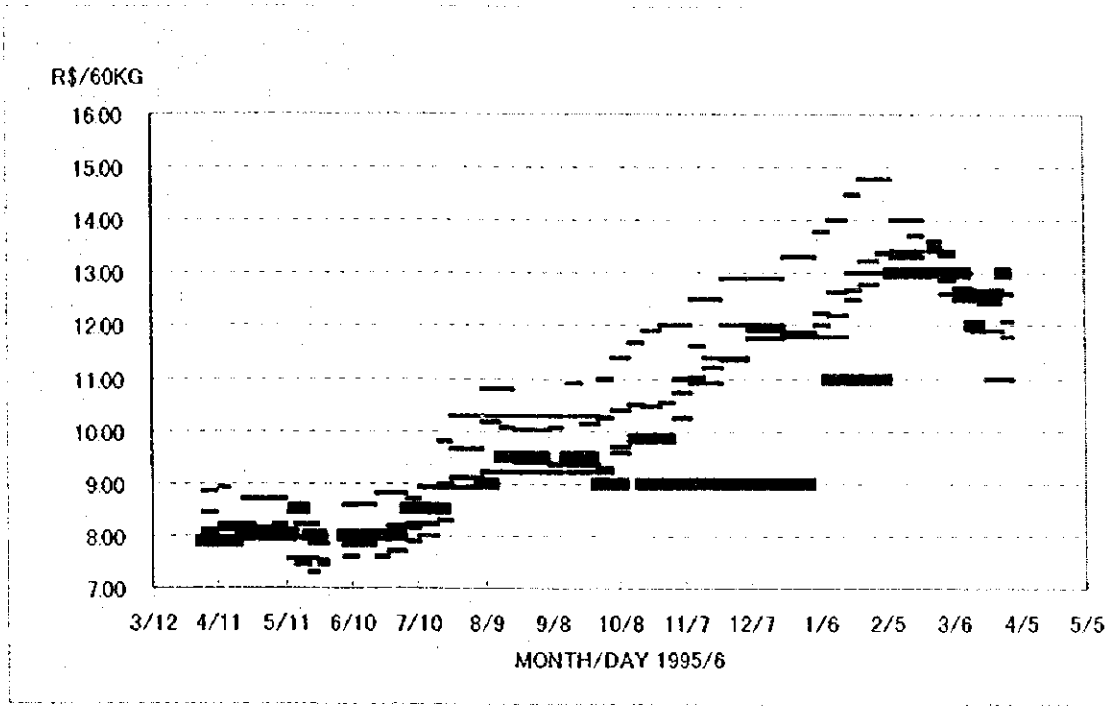
(6) Price of agricultural produce

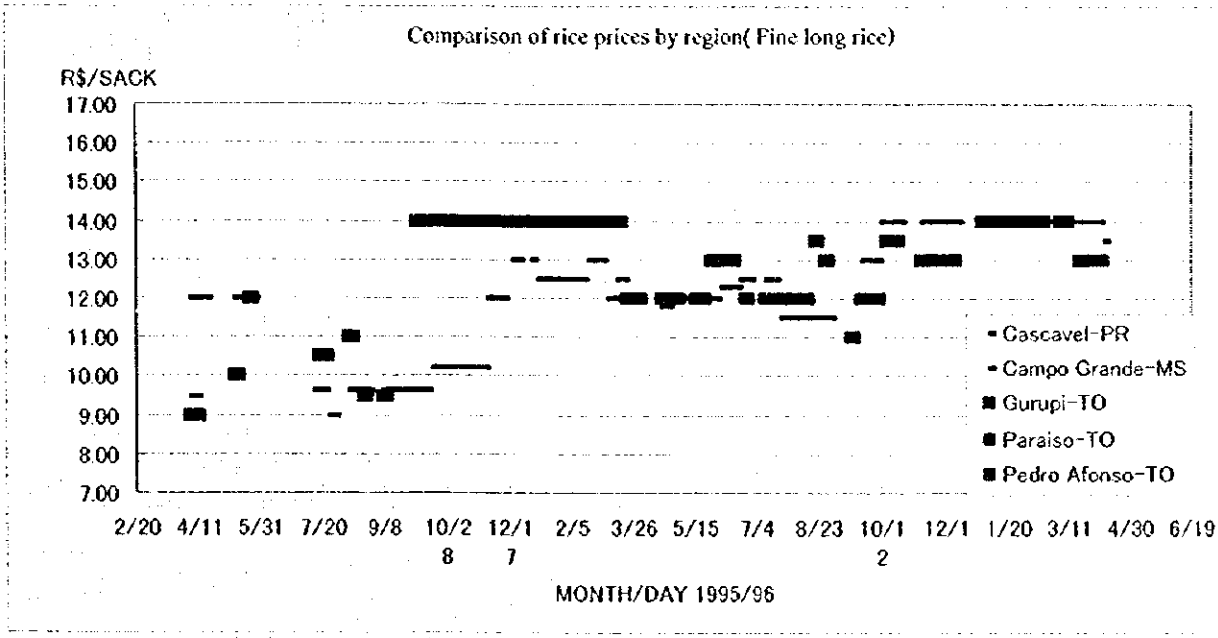
Federal government of Brazil sets floor prices (Minimum Prices Approved for the Harvest) for agricultural produce every year. Those floor prices for rice, maize and soybean are different according to the production area. Those produced in Tocantins are placed in the middle of the range. In producing areas near the consumption sites such as south, southeast and northeast of Brazil, the floor prices are set higher than the prices for inland areas. The difference is about 11% in 1996/97. For instance, soybean produced in Tocantins state is ranked 5.3% lower (R$ 7.50) when compared with the one produced in the south, southeast and center-west (except Mato Grosso state) of Brazil.

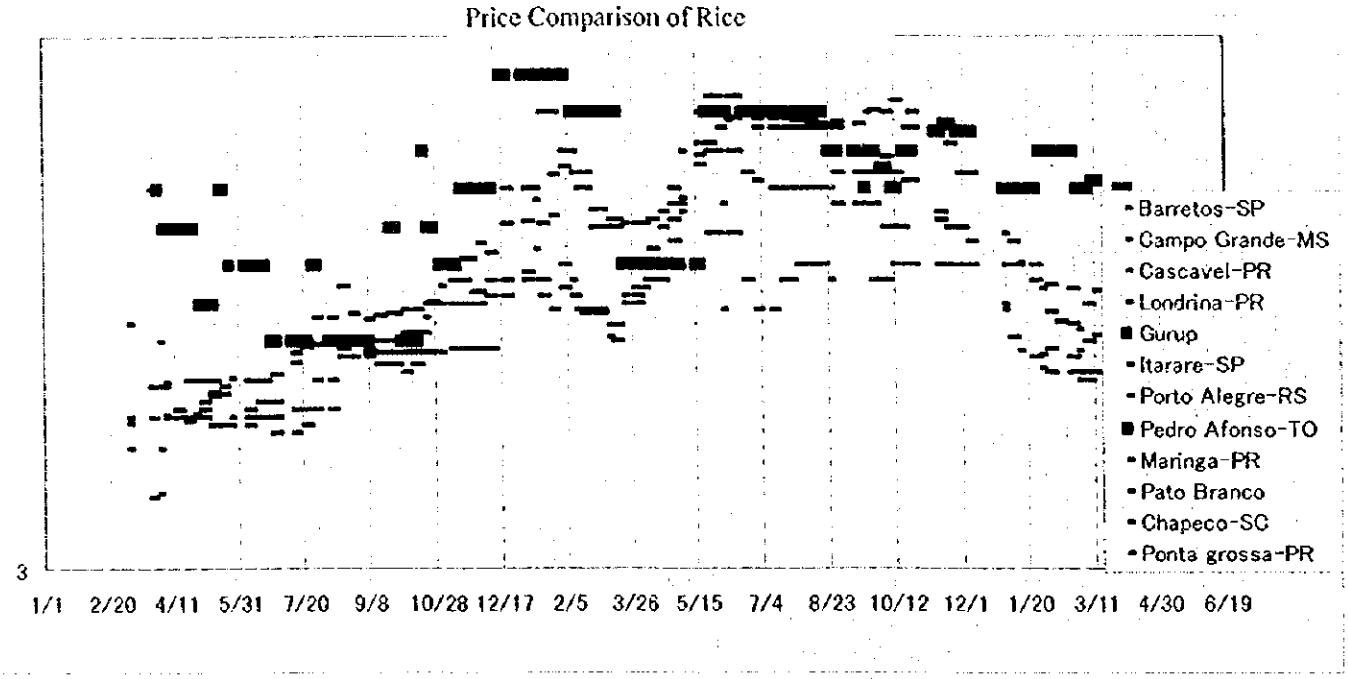
Price ranking of agricultural crops produced in Tocantins state and its competitiveness can be known by comparing the prices of prime crops (soybean) in wholesale markets or main producing areas of the whole Brazil based on the price information collected by federal government and SAG, state government.

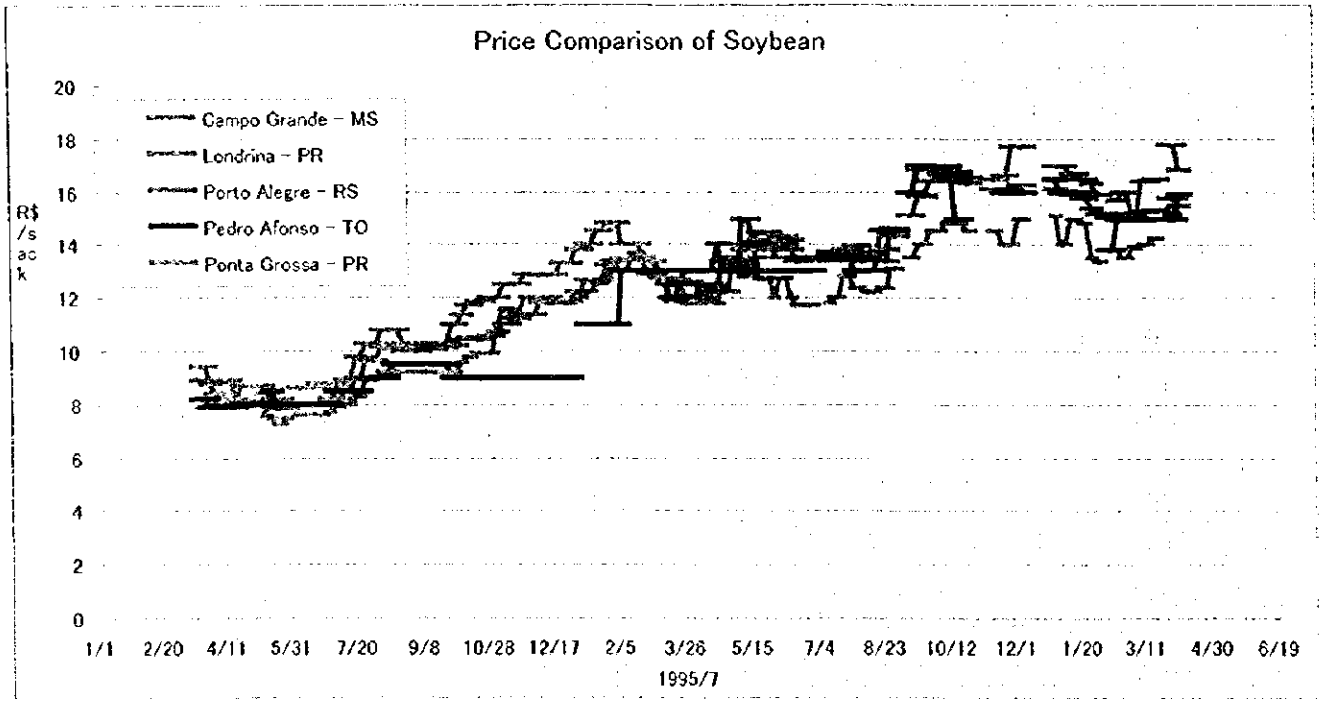
As an example, soybean (Pedro Afonso) produced in Tocantins state is less advantageous in price due to its inland production site and high transportation cost owing to rather poor transportation infrastructure. The next figure shows comparison of soybean prices (R$ per 60kg bag) 1995/96.

Comparison of soybean prices by region (R$ per 60kg bag) 1995/96









3.2 Food Storage and Management by CONAB

CONAB (National Supply Company) was established as a public organization that functioned under the minimum price policy created by Federal Government. CONAB needs to purchase cereals when their prices become lower than minimum price, and discharge it when prices rise in order to cool a heated market. Purchasing volume is decided every year by the government in accordance with the production and market circumstances.

The procurement resulted in 200,000 ton of paddy in 1996, out of which 120,000 ton by AGF (Federal Government Acquisitions) and 80,000 ton by EGF (Federal Government Loan). Almost all the production in 1996 was procured by CONAB because market price was below the minimum price.

The minimum price on paddy rice has changed as follows: R$10.02/(96), R$10.53(97), R$11.50(98) per sack (50 kg). The resulting 200,000 ton mentioned before was far below the target of 400,000 ton in 1996. No soybean was procured so far by CONAB.

The minimum safety storage in Tocantins is 200,000 ton equivalent to the demand for 8 months, however this includes the storage amount necessary for the safety supply to Northeast region.

CONAB pays a storage charge of R$ 0.46/ton/15 days + 0.15% for management fee. In case of storage in bulk, the electricity charge or generator cost can be added to the storage charge.

3.3 Plant-Animal Quarantine and Inspection

Agricultural products inspection regulations and plant quarantine laws were enacted under the Acts No.6305 dated 15/12/1975, and amended under Acts No.82110 in 1975. Regarding to the international market, a guideline for pest risk analysis was made and compiled as an international standard for plant quarantine which shall form a part of WTO agreement. In view of this action, member countries of MERCOSUL continue to confer in order to establish united laws among member countries.

Agricultural products inspection activities in Tocantins are defined to 5 crops, i.e. rice, beans (feijão), maize, sorghum, soybean, and SAG is the responsible organization in its implementation. At present, implementation organization is composed of 29 staff members, with 13 inspection offices installed in the State. In the past, every year about 400,000 ton were inspected by SAG, but in 1996 only 302,347.260 ton were inspected, and 13,464 certificates were issued, resulting from the reduction of production in recent years. Some portions of the marketed cereals may not be inspected because of the inspection fee (paddy R$ 0.87/ton, milled rice R$1.47/ton), being illegally commercialized.

Plant protection agreement in South-America under WTO is already implemented. In Tocantins, hoppers are generated in huge amounts every other year. In 1996, 16,000 ha of rice, maize, pasture fields were damaged by this plague.

Seed production is controlled and inspected by SAG also according to the federal law. SAG inspected 1,695ha of seed production fields in 1996, as well as about 4,000 ton of seeds together with the seeds imported from other states.

The Federal Government has also established the agro-chemical residue acts for agricultural products, but there is no organization established in the State to execute it so far. According to the act, dealers of agricultural chemicals are obliged to be registered for selling and to obtain a selling permission from the State government.

Legislation and ordinances for animal quarantine is established under Act No.206-90 of

1990. Methodologies and treatment for each disease are given as a rule. Implementation organization consists of 21 veterinarian in SAG, 33 in RURALTINS, and also about 300 consigned private veterinarians are engaged in the activities. Quarantine offices are set up in 3 places near the state border-line in Aguiarnópolis-Estreito, Couto Magalhaes, and Barreiras do Talismã. Officers in quarantine offices mainly check and confirm the certificates. Temporary offices open sometimes on the road BR-153. Laboratories are located in Araguaína and Gurupí.

At Talismã quarantine office, near the border to Goiás state, 2 inspectors are in charge of agricultural and animal products, each of them in a 24 hours shift. They inspect agricultural products in accordance with classification specifications of rice, maize, sorghum, soybean, feijão bean, and specified vegetables. They check classification certificates usually together with products when transported, and in case when there is no certificate, it is issued after sampling and analyzing the product within one hour. Seed and seedling, to cross the state border, are required to go through a plant quarantine inspection as a rule. At present, however, only the certificates issued by SAG or Ministry of Agriculture are checked, which are usually issued at their original place. No quarantine certificate means that the seed or seedling can not cross the border and have to return to its original place.

4 Transportation Infrastructure

4.1 Transportation Sector

Transportation business is not yet developed in the State, and no transportation companies are registered in the chamber of commerce. Therefore transportation companies from other states normally undertake the transportation of agricultural products in Tocantins.

The ferry boat operation at more than 20 river ports is undertaken only by PIPES Company from Carolina, Maranhão State. Under these circumstances, the transporting charge is not fixed in a charge list, and as a result usually the buyers in another state (destination) provides transportation.

On the other hand, the Secretariat of Treasure has prepared a freight table which is lower than a substantial rate for calculation of ICMS.

4.2 Present Conditions of Roads and Construction Plan

Roads are classified in federal, state and transitory (from federal to state). Federal roads are managed by the federal government, states roads by the state government (Work and Transportation Secretariat) and the municipal roads are under the care of the municipalities.

The highway network of Tocantins state goes in the north-south direction through the BR-153 Belém-Brasília highway, which was completed in 1978, and in the east-west direction through the state highways. The paved highway is a two ways road with a width of 7,0 to 8,0 m and a capacity for heavy trucks (total weight more than 50 ton).

Highway conditions in Tocantins State as of 1997 are described in the following table. The highway construction index for the state is 0.038 km/ km^2 (210,641.44km /

278,420.7 km^2), which represents a very low index. The pavement rate is 22.05 (2,346.55km / 10,641.44km).

Extension of the Highway Network (Feb/97)

unit:km

Highways	Paved	Not Paved(*)		
		EOI	LEN	EOP
Federal	801.80	109.60	689.80	200.71
State	1,437.45	488.96	5,520.82	1,033.30
Transitory State	107.30	77.80	101.60	72.30
TOTAL	2,346.55	676.36	6,312.22	1,306.31

Source: ASTEP - Transportation and Works Secretariat of Tocantins State
(*) EOI = Under implantation works / LEN = Natural road. / EOP = Under pavement works.

The following table shows the road construction plan in the state for the period between 1988 and 2008. According to information given by the Secretariat of Transportation and Works (STO), the total length of roads will not change during this period, and the plan means the improvement of existing roads (pavement).

The detailed plan for repairing works of existing paved roads is not specified, and finance by BIRD is scheduled as same as present.

Pavement not only means pavement of existing roads, but also widening of them and make them straight. Once there are no problems concerning to land owners, it is the useful practice in Tocantins state.

Road Construction Plan in the State of Tocantins

Year	Paved (km)	Not paved (km)	Total length (km)	Paved (%)	Density (km/km^2)
1988/1990	1,129.54	9,511.90	10,641.44	9.67	0.038
1991/1994	1,805.18	8,836.26	10,641.44	16.96	0.038
1995/1996	2,346.55	8,294.89	10,641.44	22.05	0.038
1997/1998	4,289.69	6,351.75	10,641.44	40.31	0.038
1999/2000	5,690.29	4,951.15	10,641.44	53.47	0.038
2001/2002	6,505.29	4,136.15	10,641.44	61.13	0.038
2003/2004	7,742.29	2,899.15	10,641.44	72.75	0.038
2005/2006	8,284.29	2,357.15	10,641.44	77.81	0.038
2007/2008	9,114.29	1,527.15	10,641.44	85.64	0.038

Sources: Secretariat of Transportation and Works, 04/1997

4.3 Fluvial Transportation

(1) Waterway Transportation of Araguaia-Tocantins Rivers

The waterway transportation through Brazilian rivers was executed mainly through the Paraná and Amazonas rivers. At present, in order to promote the development of the center area of Brazil and to decrease transportation costs, the federal government pretends to promote the utilization of several rivers in different regions such as the Madeira river, affluent of the Amazon river, for transportation of soybean produced in Mato Grosso and Rondônia, initiated in April, 1997.

In the state of Tocantins, the Araguaia and Tocantins rivers are suitable as waterways, at present, with the AHITAR (Management of Araguaia-Tocantins Waterway) project elaborated for this purpose. Utilization plan of barges for both rivers was not executed yet, but some navigability tests in the Araguaia river were carried out 8 years ago, however, at the moment, there is no project for the Tocantins river.

Nevertheless, in Xambioá, at the margin of the Araguaia river, the CVRD company has a facility (unloading, storage capacity of 3.000 tons, for trucks) with unloading capacity of 120 thousand annual tons (March to June), however due to the raising of the Tocantins river level in 1997, the plan for the construction of 40,000 tons capacity barges was reduced to 10,000 tons.

The AHITAR projects gave priority to the Araguaia river because the Tocantins river is considered a local river with small navigable distances and transportation volumes. Therefore, there are not detailed studies for the Tocantins river. In the PRODECER project of Pedro Afonso, it was estimated that transportation of soybean produced by the project shall be cheaper through the fluvial mean; reason why they implanted a silo at the border of this river.

AHITAR has already finished the signaling of the Araguaia river between Miracema and Estreito (420 km), but for the section of Tocantins river, no feasibility study was elaborated yet. In the area of Estreito, there is a section with difficult navigation for boats, thus a repairing work of this stretch of the river is under planning. The management of the waterway shall be given to a private company. At present, the NAVIBEL (SP) company is interested in the Araguaia river section, but no one is interested for the Tocantins river section.

(2) Crossing Ferry Boats

The most important road of Tocantins State is the Highway BR-153 which communicates the north with the south. At the south, there is the border line with the state of Goiás to which there is direct access, and at the north, in the state of Maranhão, the access is made through a bridge located in Estreito on the Tocantins river. At present, there is no bridge along the 750 km of the Araguaia river within Tocantins state, although there are three bridges on Tocantins river (Estreito, Porto Nacional and Peixe). In other points, crossing is made through barges.

For important sections where roads have to cross rivers and there are no bridges available, there are ferry boats functioning 24 hours. This ferry boats are conducted by smaller boats and their capacity are restricted to small number of cars and trucks.

Ferryboats located in 13 important places are managed by the PIPES (Pedro Iram Pereira Espirito Santo, Carolina-Maranhão) company. There are also smaller ferryboats in 20 points of the main affluents of both rivers. Location points of ferryboats with a capacity of 200 tons each one, which are managed by PIPES, are shown in the following table. The operation frequency is between 15 to 30 minutes.

Main Location Points of Ferryboats

Port	River	No. de Ferryboats	Maximum Capacity
Palmas	Tocantins	2	200
Miracema do Tocantins	Tocantins	3	200
Pedro Afonso	Tocantins	1	200
Rio Sono	Tocantins	1	60
Tupirantins	Tocantins	1	100
Barra do Ouro	Tocantins	1	100
Filadelfia (Carolina)	Tocantins	1	130
Bela Vista (Imperatriz)	Tocantins	2	200

Araguatins	Araguanã	2	100
Antonino	Araguanã	1	130
Xambioá	Araguanã	2	150
Araguanã	Araguanã	1	100
Pau d'arco	Araguanã	1	130

Source: PIPES1997.04.30

4.4 Railway

Presently, there is no railway services available in Tocantins state. However, as a part of the Multi-Modal Central-Northern Transportation Corridor, South-North railway (109 km, Imperatriz to Acailândia) in adjacent state of Maranhão, and Carajás railway (496 km between Acailândia and São Luis) are already being used to transport soybeans for export purposes.

The following table shows the record of transporting of agricultural and livestock products. In principle, total quantity of soybean is exported from the port of São Luis.

Agricultural and livestock products transported by Carajás Railway (ton)

unit: ton

Description	1990	1991	1992	1993
Timber	376,000	316,000	256,000	358,000
Grains-soybeans	---	3,000	26,700	72,200
Grains-others	12,700	11,100	5,400	4,900

Source: The Carajás Railroad, Companhia Vale do Rio Doce

There is a soybean transhipment facility (truck scale 59t, loader 300t/hr) at Imperatriz. The soybean produced in Tocantins state shall be transhipped to railway together with the soybean transported from Balsas, Maranhão state by trucks. There are also transshipment facilities (track scale, warehouse 600 m^2 and unloader) from barges to truck in Xambioá, along the bank of the Araguaia river. However, the waterway is not so active as its full scale utilization is yet to come.

At present, CVRD is running 50 freight cars exclusive for bulk grain (450t/car) through South-North railway and Carajás railway. During the season from March to May, a cargo train of 25 freight cars makes a round trip every day between Imperatriz/São Luis. It has a transporting capacity of about 1,000,000 ton in one season. Freight charge is presently R$8/ton.

Construction work for extending South-North railway (120 km between Imperatriz and Estreito) has progressed to about 40% as of May 1997, and is expected to be completed by the end of 1998.

South-North railway, Carajás railway, São Luis port, Madeira whalf including transhipment facilities are all managed and controlled by CVRD. It makes stable transportation possible in Brazil where transportation services in harbors are generally unstable.

At Estreito, the bridge on the Tocantins river has already been completed for route BR-010. From Tocantins state, Estreito is easily accessible. Therefore, transportation cost should be calculated from Estreito for the time being.

Further extension of South-North railway has not been decided yet, although because

bridge girders on the Tocantins river have been already constructed, the railway could be extended to Colinas do Tocantins at the south in the future. And if a bridge was constructed at Pedro Afonso, soybean transportation cost in PRODECER III area would be greatly reduced. It is obvious that the soybean produced in Tocantins state will be in advantage compared with the one produced in other states.

4.5 Multi-modal Central-Northern Transportation Corridor Plan

The project for the waterway on the Araguaia and Tocantins rivers is part of the Multi-modal Central-Northern Transportation Corridor contemplated in the PPA of the federal government. The full function of this transport system will enlarge the agricultural boundary lines for the states of Mato Grosso, Pará, Tocantins and Maranhão. As the first phase, the waterway reaches from the Mortes river (navigable reach: 580 km) upper stream of the Araguaia (navigable reach: 1,230 km) to the port of Itaqui, Maranhão via the Araguaia river, roads TO-164 (115 km) and BR-226 (62 km), South-North railway (230 km) and Carajás railway (496 km). As a final stage, the Araguaia waterway is expected to reach Belém Port from the Mortes river directly after the repairing of St. Isabel rapids, Pará, then via Tucuruí dam.

The Tocantins river (navigable 420 km) waterway is planned to establish the route from Miracema do Tocantins to Estreito and to connect with South-North railway at Estreito as the first phase. After all, it will pass through the same route after running together with the Araguaia river.

At present, on the way of Multidodal Central-Northern Transportation Corridor, some private companies are planning to establish a vegetable oil extraction plant at Itaqui, and warehouses or silos at Imperatriz and Xambioá. Also a barge construction facility is supposed to be put into implementation by BNDES finance.

Agricultural products from the states of Mato Grosso, Pará, Tocantins and Maranhão may be destined to the international market from the port of Itaquí, as the most viable and least expensive-alternative concerning to the loading place after the multi-modal system of hydro-highway-railway transportation is implanted.

5 Research on Market and Commercialization Conditions of Tocantins State

5.1 Introduction

The general objective of the present work is an evaluation of the market and conditions of commercialization of the state of Tocantins, while one of the integral aspects of the Master Plan of Integrated Development of the State of Tocantins.

For the products selected by the coordination of the Master Plan, that are the rice, the bean, the corn, the soy, the banana, the pineapple, beyond the meat and milk, the relative aspects were analyzed to the international and national markets, analysis of the storage infrastructure, of the prices received by the producers, the identification of the commercialization flows and routes of transport and the system of transport intermode for these products. The main focus gives him around the channels, flows and of the respective routes of commercialization, as well as the modal of more usual transport.

In the section two, a panorama of the production is traced and of the international market of the selected products. Such panorama had for base the reading of basic data of the IBGE and other sources, as well as researches bibliographical technique and journalistic on the subject.

In the section three, it is the analysis of the storage infrastructure in the state, according to the modality and the ownership of the warehouse - official or private. Secondary data of the Vegetable Classification Services of the Secretariat of Agriculture of Tocantins and of the IBGE were used.

In the section four, it is made an analysis of the prices received by the rural producers of the selected products, being established a comparison among the prices received in it Tocantins, in São Paulo and in the others main producing regions. The used data were collected of the Secretariats of Tocantins State close to, of São Paulo, Rio Grande do Sul and Goiás. Parallelly, with the data of field research, it was looked to identify the variation of the prices received in the state of Tocantins along the year.

In the section five, it is the identification of the channels and flows of commercialization of the selected products and of the main routes of used transport. The analyzed data are originating from of field research accomplished in three stages. The two first, they consisted of visits and interviews accomplished in the state, where they were researched the public institutions and some commercialization agents, giving base to the elaboration of the third field stage, of research to technicians, commercialization agents, transporters, stores and rural producers in 12 municipal districts.

The sixth section brings some referring information to the system transport intermode in planned operation and to be implemented in the region of influence of runner Center-North, formed by the railroads Carajás and North-south, for the hidrovia Araguaia-Tocantins and for the ports of Ponta da Madeira and Itaqui. The information were

complemented with an analysis of the cost of the freights road, based on field research, that indicates the need of road alternative of lower cost.

In the seventh section the main conclusions of the analyses of the data secondary, of the information obtained in field research are traced.

5.2 International and National Panorama of the Main Cultivated Products Markets in the State of Tocantins

The main products cultivated in the state of Tocantins are the rice, the bean, the corn, the soy, the banana and the pineapple. Beyond of those products it was also approached activity bovine cattle raising with the meat production and milk.

It was to analyze, of a general way, the production situation and market of each product, in international and national levels, in the last ten years. It was used for so much the available data in the IBGE and other sources as Companhia Nacional de Abastecimento (CONAB) and Instituto de Economia Agrícola (IEA), besides the consultation to technical and journalistic, available in specialized magazines (Agroanalysis, Informações Econômicas, Agrianual) and of the press (Gazeta Mercantil, Estado de Minas, Folha de São Paulo and others).

(1) Rice

In the world the main producing of rice are China and India. Together, these countries answer, historically, for half of the picked area and of the world production. However, this production is practically consumed internally. The largest country exporter is Thailand that, in 1996, it participated with 30.36% of the volume of the rice exported internationally. The world balance of rice in the period 1995/96 is described in the Table VII-5.2(1).

Brazil occupied, in 1996, the tenth place in the world ranking in the production of rice and the eighth place in terms of picked area. On that same year, the consumption intern was superior the to produced amount, and the equivalent imports at 15.15% of the consumed total, they placed the country in first place in the ranking of the imports of the product. The *per capita* consumption in the country locates in the strip of 74 kg/year, superior to the average of world consumption, that is of 64.7 kg/ year.

The international market of the rice, in 1996, was in discharge in relation to the previous year, what hindered the Brazilian imports. The maintenance of the obligation of the cash payment in the operations with the external, inclusive with the Mercosul, it was more a obstacle.

The Brazilian production of rice concentrates, mainly, in the South region that answered, in 1996, for 51.11% of the produced total and for 27.80% of the region picked at the country. In its group, the Brazilian production decreased in the period 1988/96, presenting a fall of 14.22% in the production, and of 35.03% in the picked

area. This decrease was more significant in the regions Southeast and Center-west, with reduction around 50%. The medium productivity in the year of 1996 was of 2.597 kg/ha, and in the South region it located in 4,774 kg/ha. The referring information the Brazilian production picked area and productivity of the rice in rind, for the period 1988/96 is described in the Table VII-5.2(2).

The crop of rice in 1996 was reduced in relation to the previous year, due to the low profitability of the production the year and a great banking indebtedness of the producers. CONAB calculated a reduction of 11% of the rice in rind picked in 1996, in relation to the crop of 1994/95. The tendency points for a new reduction of the plantation area in the crop 1996/97. The national production should be about of 9.5 million tons, 500 thousand unless in the last crop and the smallest volume of the last ten years.

A new fact in the Center-west region is represented by mixtures of the rice traditional 'agulhinha" with it "agulhinha de Sequeiro" (50%), variety developed by Embrapa, resulting in a blend type 2, of good acceptance in the market, with prices about 20% cheaper. Even so, the "Sequeiro" rice stays with the relative difficulties in credit for costing and commercialization and with the traditional hindrance to the draining of the production that discourages the expansion of the farming in the region.

In the region Center-west it is possible that Goiás presents new area reduction, that comes dropping systematically to every year. In Mato Grosso, the variety "agulhinha de Sequeiro" comes in expansion, with good acceptance in the market. In the crop 1995/96, 300 thousand ha. they were planted with this variety, representing 41% of the total area of rice cultivated in the State.

The difficulties originating from of the increase of the prices of the imports, result in a more optimistic panorama for the commercialization of the product, giving encouragement to the national productive section, resented with low revenues the last years and high degree of bank indebtedness.

Since the opening of the Brazilian market, an almost recurrent behavior is observed in the production, with direct effect on the imports. Each cycle seems to last about two years and it is characterized by production it interns in fall and exports in high; to follow the production it arises again, the imports decrease and the production drops in the two following years again, to the step that the external purchases increase to provision the national market.

The prices to every year accompany the cycle, arising as the production decreases. This increase, however, it has not been in great proportions, for the influence of the external market. In 96 the prices were above the medium values of the last five years, in a medium proportion of 12%. The expectation of prices for 97 is also superior to the medium values of the last five years but, also, in proportions relatively small, from 5% to 10%, since there is always possibility of imports to contain the prices and some

stocks in the form of EGF – Empréstimo do Governo Federal and AGF – Aquisição pelo Governo Federal, that can help to beacon the prices.

In 1996, in the state of Tocantins 122,386ha of rice were cultivated, being 77,710ha of "Sequeiro" rice (63.5%), and 44,676ha of "Irrigado" rice.

The "Sequeiro" rice is a culture disseminated in whole the State, standing out so much in production terms, as of picked area, the regions Center-west and Central. In the period 1989/97, the productivity came growing; even so the reduction of the picked area resulted in a fall of the state production. The state medium revenue in the crop 96/97 was of 1.296 kg/ha, and the largest profitability was verified in the areas Southwest and South. These informations are described in the Table VII-5.2(3).

The culture of the "Irrigado" rice concentrates on the Southwest region of the State, where it is located 92.9% of the total picked area in the crop 96/97. In this region the reached revenue was of 4,259 kg/ha, being superior to the state average that was of 4,216 kg/ha in the same year. These informations are systematized in the Table VII-5.2(4).

In the accomplished field research information were supplied of about 20,000 hectares of "Irrigado" rice, about 50% of the 44,676ha of picked area of the product informed by the IBGE. It was researched the region formed by the municipal districts of Formoso do Araguaia and Lagoa da Confusão, where the irrigation infrastructure is located for the rice. They were informed revenues among 2.7 t/ha to 5.7 t/ha, being applied a complete technological package. The information obtained by the research about the production of "Irrigado" rice is described in the Table VII-5.2 (5).

The "Sequeiro" rice, for its time, is more disseminated in the state, and the researched most important areas were to area of inclusion of Cooperalva and PRODECER III, in the municipal district of Pedro Afonso, as it is described in the Table VII-5.2(6). In all the researched areas the revenue of the "sequeiro" rice locates in 1.8 t/ha.

Emphasize it self, regarding the rice, the structure of processing of the product, with structures of cleaning, drying, peeling, sacking (sacks of 1 kg and 5 kg, bales of 30 kg and sacks of 60 kg) and sell, in Gurupi (capacity 150,000 sacks), in Formoso do Araguaia (capacity of 40,000 t) and Paraíso do Tocantins (capacity of 150 t/day), supplying to the local market and the North and the Northeast of Brazil.

Table VII-5.2(1) - World-wide balance of rice (brunido), 1995/96

unit = thousand metric tons

Country	Production		Consumption			Exportation			Importation	
	t	%	t	%	%1	t	%	%1	t	%
China	125,019	33.67	131,000	35.02	104.78	200	1.10	0.16		
India	81,980	22.08	80,960	21.64	98.76	3,000	16.56	3.66		-
Indonesia	34,477	9.29	35,000	9.36	101.52				1,250	6.90
Bangladesh	17,899	4.82	18,326	4.90	102.39					
Vietnam	16,978	4.57	14,400	3.85	84.82	2,200	12.14	12.96		
Thailand	14,727	3.97	8,500	2.27	57.72	5,500	30.36	37.35		
Burma	11,638	3.13	9,175	2.45	78.84	500	2.76	4.30		
Japan	9,069	2.44	9,300	2.49	102.55					
Philippine	7,269	1.96	7,500	2.01	103.18					
Brazil	6,651	1.79	8,250	2.21	124.04				1,250	6.90
United States	5,323	1.43	3,410	0.91	64.06	2,700	14.90	50.72	250	1.38
Southern Korea	4,311	1.16	5,200	1.39	120.62					
Pakistan	3,848	1.04								
Europe Union	1,346	0.36	1,822	0.49	135.36	175	0.97	13.00	600	3.31
FSU	312	0.08	425	0.11	136.22					
Egypt			2,100	0.56		50	0.28			
Ira			2,900	0.78					1,000	5.52
Northern Korea			1,450	0.39						
Uzbekistan			300	0.08						
Argentina						395	2.18			
Australia						615	3.39			
Pakistan						1,400	7.73			
Taiwan						150	0.83			
Guyana						225	1.24			
Uruguay						500	2.76			
Canada									210	1.16
Cuba									400	2.21
Ivory Coast									300	1.66
Iraq									500	2.76
Malaysia									400	2.21
Mexico									350	1.93
Niger									300	1.66
Peru									300	1.66
Russian Federation									125	0.69
Saudi Arabia									800	4.42
Senegal									450	2.48
Southern Africa									400	2.21
Sri Lanka									300	1.66
Turkey									250	1.38
Yemen									150	0.83
Eastern Europe									195	1.08
Others	30,434	8.20	34,019	9.10	111.78	505	2.79	1.66	8,335	46.01
Total	371,281	100.00	374,037	100.00	100.74	18,115	100.00	4.88	18,115	100.00

Source: FNP Consultoria & Comércio - Agrianual 97 – Anuário de Agricultura Brasileira

% - relative participation in the world-wide total

% 1- relative participation in the production of the country

Table VII-5.2(2) – Brazilian Production Brazilian, Harvested Area and Productivity of rice in the regions, 1988-1996

a-Production (t)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/1988 %	Distribution % 1988	Distribution % 1996
North	1,117,669	1,172,134	605,638	721,428	744,180	761,000	977,343	1,108,300	1,015,500	-9.14	9.51	10.08
Northeast	2,017,600	1,666,200	839,100	1,683,400	884,100	817,527	1,628,700	1,709,400	1,689,000	-16.29	17.17	16.76
Southeast	1,600,100	1,483,200	1,058,700	1,369,700	1,234,300	1,229,500	1,063,200	947,500	811,200	-49.30	13.62	8.05
South	4,852,432	4,964,598	4,498,801	4,935,112	5,498,600	5,679,900	5,177,600	6,016,500	5,150,900	6.15	41.30	51.11
Center-west	2,160,200	1,797,500	963,800	1,281,900	1,741,200	1,343,100	1,675,000	1,459,000	1,410,600	-34.70	18.39	14.00
Brazil	11,748,001	11,083,632	7,966,039	9,991,540	10,102,380	9,831,027	10,521,843	11,240,700	10,077,200	-14.22	100.00	100.00

b – Harvested Area (ha)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/1988 %	Distribution % 1988	Distribution % 1996
North	776,286	742,152	460,300	438,474	471,750	466,900	542,425	603,000	551,200	-29.00	13.00	14.20
Northeast	1,401,300	1383900	1,069,500	1,196,900	1,183,400	1,050,800	1,097,400	1,113,600	1,080,200	-22.91	23.46	27.83
Southeast	897,800	811,200	720,700	702,000	694,100	654,600	576,200	544,000	452,000	-49.65	15.03	11.65
South	1,156,725	1,145,033	1,054,203	1,098,897	1,161,000	1,220,500	1,248,500	1,237,100	1,079,000	-6.72	19.36	27.80
Center-west	1,741,500	1,267,500	874,300	776,800	1,103,100	971,000	924,900	767,000	718,500	-58.74	29.15	18.51
Brazil	5,973,611	5,349,785	4,179,003	4,213,071	4,613,350	4,363,800	4,389,425	4,264,700	3,880,900	-35.03	100.00	100.00

c – Productivity (kg/ha)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996
North	1,439.76	1,579.37	1,315.75	1,645.32	1,577.49	1,629.90	1,801.80	1,837.98	1,842.34
Northeast	1,439.81	1,203.99	784.57	1,406.47	747.08	778.00	1,484.14	1,535.02	1,563.60
Southeast	1,782.25	1,828.40	1,468.99	1,951.14	1,778.27	1,878.25	1,845.19	1,741.73	1,794.69
South	4,194.97	4,335.77	4,267.49	4,490.97	4,736.09	4,653.75	4,147.06	4,863.39	4,773.77
Center-west	1,240.42	1,418.15	1,102.37	1,650.23	1,578.46	1,383.21	1,811.01	1,902.22	1,963.26
Brazil	1,966.65	2,071.79	1,906.21	2,371.56	2,189.81	2,252.86	2,397.09	2,635.75	2,596.61

Source: FNP Consultoria & Comércio - Agrianual 97 - Anuário de Agricultura Brasileira

Table VII-5.2(3) - Harvested area. Production and income of "sequeiro" rice, in the state of the Tocantins, according to the regions, in harvest 1989/90 –1996/97.

(it continues)

REGION OF PLANNING	1989/90			1990/91			1991/92			1992/93		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	21.400	20.600	962,62	21.800	22.250	1020,64	18.400	22.458	1220,54	20.150	23.010	1141,94
B-NORTH	7.030	6.220	884,78	7.800	8.870	1137,18	8.800	5.918	672,50	4.910	4.555	927,70
C-NORTHEAST	17.000	13.000	764,71	12.600	12.800	1015,87	15.100	7.820	517,88	5.205	4.220	810,76
D-NORTHWEST	13.730	16.230	1182,08	12.000	13.180	1098,33	9.490	6.660	701,79	6.390	6.520	1020,34
E-EAST	5.920	3.920	662,16	4.600	3.910	850,00	4.730	3.317	701,27	8.170	7.238	885,92
F-CENTER-WEST	22.810	26.020	1140,73	17.730	21.410	1207,56	20.150	21.773	1080,55	22.500	29.631	1316,93
G-CENTRAL	13.230	9.850	744,52	11.660	15.280	1310,46	16.455	13.235	804,31	13.275	15.500	1167,61
H-SOUTHEAST	1.100	4.380	3981,82	8.450	10.980	1299,41	13.120	8.685	661,97	11.125	8.422	757,03
I-SOUTHWEST	8.900	4.710	529,21	5.500	8.200	1490,91	8.100	9.630	1188,89	5.880	5.083	864,46
J-SOUTH	12.670	7.780	614,05	13.700	17.880	1305,11	34.160	37.406	1095,02	21.100	13.388	634,50
TOTAL	123.790	112.710	910,49	115.840	134.760	1163,33	148.505	136.902	921,87	118.705	117.567	990,41

(Conclusion)

REGION OF PLANNING	1993/94			1994/95			1995/96			1996/97		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	20.550	23.380	1137,71	...	...	...	7.490	8.081	1078,91	7.660	8.643	1128,33
B-NORTH	5.145	5.407	1050,92	5.920	5.621	949,49	5.670	6.280	1107,58	4.990	5.681	1138,48
C-NORTHEAST	5.200	5.374	1033,46	6.470	8.795	1359,35	4.650	5.840	1255,91	9.220	10.826	1174,19
D-NORTHWEST	7.170	7.680	1071,13	8.090	9.949	1229,79	5.850	7.330	1252,99	6.150	7.365	1197,56
E-EAST	4.180	4.104	981,82	3.970	4.190	1055,42	3.590	3.821	1064,35	3.420	4.130	1207,60
F-CENTER-WEST	19.160	24.140	1259,92	19.060	23.861	1251,89	16.540	20.640	1247,88	14.710	18.320	1245,41
G-CENTRAL	15.461	19.589	1266,99	14.595	19.542	1338,95	9.680	12.592	1300,83	10.120	13.992	1382,61
H-SOUTHEAST	9.660	13.545	1402,17	8.310	11.216	1349,70	7.470	10.060	1346,72	7.150	9.655	1350,35
I-SOUTHWEST	5.388	7.613	1412,95	6.430	9.326	1450,39	4.700	6.810	1448,94	6.340	9.651	1522,24
J-SOUTH	17.490	27.444	1569,13	12.110	19.002	1569,12	8.920	13.730	1539,24	7.950	12.472	1568,81
TOTAL	109.404	138.276	1263,90	84.955	111.502	1312,48	74.560	95.184	1276,61	77.710	100.735	1296,29

Source: IBGE / Levantamento Sistemático da Produção Agrícola (LSPA)

Table VII-5.2(4) - Harvested area. Production and income of "irrigado" rice, in the state of the Tocantins, according to the regions, in harvest 1989/90 – 1996/97.

(It continues)

REGION OF PLANNING	1989/90			1990/91			1991/92			1992/93		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	...	...	...	...	...	...	...	...	...	...	...	...
B-NORTH	...	...	...	...	...	...	...	...	...	...	...	...
C-NORTHEAST	...	...	...	...	...	...	290	350	1206,90	...	...	...
D-NORTHWEST	280	1.300	4642,86	660	858	1300,00	433	1.650	3810,62	350	1.680	4800,00
E-EAST	...	...	...	...	...	...	...	...	...	...	...	...
F-CENTER-WEST	2.250	6.300	2800,00	500	1.400	2800,00	1.472	4.120	2798,91	595	2.090	3512,61
G-CENTRAL	200	360	1800,00	90	210	2333,33	327	820	2507,65	587	807	1374,79
H-SOUTHEAST	770	3.220	4181,82	600	2.200	3666,67	485	1.755	3618,56	485	1.590	3278,35
I-SOUTHWEST	35.490	130.280	3670,89	44.589	167.657	3760,05	48.542	212.794	4383,71	42.771	173.556	4057,80
J-SOUTH	2.580	9.180	3558,14	1.100	4.070	3700,00	2.060	7.837	3804,37	2.652	8.886	3350,68
TOTAL	41.570	150.640	3623,77	47.539	176.395	3710,53	52.886	229.326	4336,23	47.440	188.609	3975,74

(Conclusion)

REGION OF PLANNING	1993/94			1994/95			1995/96			1996/97		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	...	...	...	...	...	...	...	...	...	...	...	...
B-NORTH	...	...	...	...	...	...	...	...	...	...	...	...
C-NORTHEAST	...	...	...	...	...	...	...	...	...	...	...	...
D-NORTHWEST	380	1.590	4184,21	380	1.570	4131,58	270	480	1777,78	326	1.300	3987,73
E-EAST	...	...	...	...	...	...	...	...	...	...	...	...
F-CENTER-WEST	1.506	6.344	4212,48	1.724	6.206	3599,77	150	600	4000,00	2.000	7.200	3600,00
G-CENTRAL	135	540	4000,00	300	1.200	4000,00	90	360	4000,00	...	...	...
H-SOUTHEAST	138	552	4000,00	25	45	1800,00	52	190	3653,85	...	...	...
I-SOUTHWEST	51.871	237.784	4584,14	58.501	264.774	4525,97	49.182	206.534	4199,38	41.500	176.750	4259,04
J-SOUTH	2.430	8.585	3532,92	2.038	7.747	3801,28	2.085	7.570	3630,70	850	3.140	3694,12
TOTAL	56.460	255.395	4523,47	62.968	281.542	4471,19	51.829	215.734	4162,42	44.676	188.390	4216,81

Source: IBGE / Levantamento Sistemático da Produção Agrícola (LSPA)

Table VII-5.2(5) - Characteristic main of the culture of the "irrigado" rice in the searched cities, state of the Tocantins, June 1997

City	Area total (ha)	Production (t)	Income (t/ha)	Cultivated varieties	Cost of production (R$/ha)	Price received for the producer (R$/saca60kg)	Adopted technology
Formoso do Araguaia	4.200	17.640	4,2	Metica 1 and Javaé	550,00	12,00	Selected seed, treatment of seed, medicament for weeds removal, fertilization NPK (350Kg/ha), micron-elements and mechanized harvest.
Formoso do Araguaia	10.247	58.000	5,7	Metica 1 and Javaé; Rio Formoso.	...	13,50	....
Lagoa da Confusão	...	...	4,5	Metica 1 and Javaé.	500,00	12,00 a 15,60	Treatment of seed, combat the plagues, application of medicament for weeds remove before and after, correction with calcareous rock, fertilization with NPK, harvest mechanics
Dueré, and Lagoa da Confusão	4.500	...	2,7	Metica 1 and Javaé.	...	12,00	...

Source: Research of field

....Not available Information

Table VII-5.2(6) - Characteristic main of the culture of rice of "Sequeiro" in the searched cities, state of the Tocantins, June 1997

City	Total Area (ha)	Production (t)	Income (t/ha)	Cultivated varieties	Cost of production (R$/ha)	Price received for the producer (R$/saca60kg)	Adopted technology
Alvorada, Talismã e, Figueirópolis.	10.000	18.000	1,8	...	260,00	12,00 a 13,00	Selected seed, treatment of seed, mechanized plantation, manual cultural treatments, harvest mechanics, fertilization NPK of plantation (200/250kg/ha) and covering - ammonia sulfate (100/150kg/ha) sulfate of zinc (10kg/ha)
Pedro Afonso	6,011 PRODECER:4,766 OTHERS: 1,245	10.800	1,8	...	...	11,00 a 13,00 long type.	...
Paraíso, Marianópolis, Caseara, Barrolândia, Divinópolis do Tocantins	...	...	1,8	Caiapó e Maravilha.	300,00	12,00	Selected seed, fertilization NPK low, without covering, manual and mechanics harvest

Source: Research of field

.... Not available Information

(2) Beans

Destined to the internal market, the prices of the bean are not market by the quotations of international bags. The variations of the prices are resulted of the offer forces and domestic demands maidservants, with minimum influence of the imported product. Brazil doesn't export it and the imports, only to complement eventually the supplying, they are not expressive, being, on the average, among 3 and 5% of the total consumption.

In the international market there is not producing country that has outstanding comparative advantages, although some producing countries are studying strategies to explore the brazilian market. The largest imported volume is of common black bean of Argentina.

The following table presents the swinging of the offer and it demands Brazilian bean in the period 1989/96. So much the production, as the consumption, they came growing in the period, also implying in an increase of the imports of the product.

Beans - National Suppliment Picture, 1988-1996

Year / harvest	Initial supply (01/11)	National production	Importation	Supply	Apparent consumption	Exportation	Supply ticket (31/10)
89/90	76.7	2,339.9	70.3	2,486.9	2,370.8	-	116.1
90/91	116.1	2,806.2	88.6	3,010.9	2,638.1	-	372.8
91/92	372.8	2,902.4	57.7	3,332.9	2,795.6	-	537.3
92/93	537.3	2,379.1	54.9	2,971.3	2,771.8	-	199.5
93/94	199.5	3,244.1	156.4	3,600.0	3,200.0	-	400.0
94/95	400.0	3,191.5	130.0	3,721.5	3,290.0	-	431.5
95/96[1]	431.5	3,127.0	169.0	3,688.5	3,250.0	-	438.5

Source: CONAB/DPLA/DEPAE Manchete Rural, nº 106, April of 1996

(1) Supply, subject to the alteration

The brazilian production of the bean in the period 1988/96, for geographical region, considering the produced volume, the picked area and the productivity, it is systematized in the Table VII-5.2(7). The production came growing, increasing 8,55% in the period. In relative terms, the regions that increased its production were the North, the Northeast and the Center-west.

The areas of culture of the bean are concentrated in the Northeast region that answered, in 1996, for 41.53% of the produced volume and for 56.05% of the picked area. Though, the medium productivity verified in this area (427.18 kg/ha) it is inferior the national average (576.54 kg/ha).

The largest medium productivity, of the order of 1,059.46 kg/ha is met in the area Center-west, that is also the area that presented the largest gain in profitability in the

period, evidencing that the region has been absorbing the technological innovations of the product.

The market of the bean comes to the few ones has been modifying, with a wide spreading of the cultivation in non traditional areas, so much "Irrigado" as of "Sequeiro"; and progresses in the research of the product, with won of productivity and in the quality of the grains.

The modifications in the culture of the bean can been explained by three great factors. Firstval, there is a reduction in the seasonal of the production, due to the scatter of the crop periods, due to the incorporation of countless "islands" production in the whole national territory.

Secondary, a new technological reality is presented, where progresses of the research facilitated the reduction of the cultural cycle, with a precocity highly strategic, with bean varieties that produce in 70 days, in addition the grains of irrigated farmings present better quality. The genetic potential of the species also enlarged its threshold and irrigated varieties can reach superior productivities to 50 bags for hectare (3,000 kg/ha), and the researchers' goal is to reach the productivity of 5,000 kg/ha.

Third, the invigoration of the managerial agriculture is observed for the product, especially in the quadrilateral formed by the poles of Guaíra (SP), Jussara (GO), Barreiras (BA) and Paracatu (MG), that has been maintaining the market fully provisioned in the period of the old off season period.

These factors point for difficulties for the traditional producers of the product, without conditions of adapting to the new production conditions.

Considering that the production is distributed practically in the whole year and that the government has stocks to regularize the provisioning, the opportunity of the prices it should be low. However it is not. There are years of great picks of prices, even in full crop. These elevations are attributed to the sensibility of the prices of the product to the that happens in the wholesale of the city of São Paulo, where there is a true monopoly tax for the "Bolsinha". The state of São Paulo, although it produces, is importer and great bean consumer. Any unsupply possibility rebounds strongly in the prices.

But, in general, the producer doesn't remove advantage of those highs speculative. To the opposite, its profitability chances increase with the regularity of the prices, that allows to plan it better the investments in technology, in way to obtain won in productivity and efficiency and not to the maybe.

The perspectives for the culture of the bean are favorable, once the market doesn't present saturation signs and most of the producers bill with great potential for won of productivity and reduction of the effective costs of production.

In the state of Tocantins the production of the bean comes decreasing in the period 1989-96, maintaining a certain stability so much in terms of picked area, as of production, just in the Northwest region of the State, as it can be seen in the Table VII-5.2(8). The profitability, also, is decreasing in the period.

With relation to the bean, it was observed to be of a production without a significant concentration, being practiced in a diffuse way, in several regions of the state.

Table VII-5.2(7) Brazilian Production, harvested area and productivity of beans, 1988-1996

a - Production (t)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/88 %	Distribution % 1988	Distribution % 1996
North	92.391	116.114	115.040	122.592	112.704	146.471	147.043	145.700	141.500	53,15	3,29	4,65
Northeast	968.101	750.563	580.037	1.070.495	829.639	479.576	1.138.000	1.147.500	1.264.500	30,62	34,51	41,53
Southeast	763.332	652.793	647.602	701.004	689.556	734.911	741.400	731.300	637.800	-16,45	27,21	20,95
South	863.096	635.366	700.464	645.276	1.022.189	908.552	992.900	930.551	844.243	-2,18	30,77	27,73
Center-west	118.103	143.343	191.322	202.404	177.546	186.869	201.800	201.800	156.800	32,77	4,21	5,15
Brazil	2.805.023	2.298.179	2.234.465	2.741.771	2.831.634	2.456.379	3.221.143	3.156.851	3.044.843	8,55	100,00	100,00

b - Harvested Area (ha)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/88 %	Distribution % 1988	Distribution % 1996
North	159.075	197.265	195.632	219.110	232.819	256.307	297.675	240.100	243.900	53,32	2,75	4,62
Northeast	2.911.308	2.648.526	1.995.039	2.732.164	2.542.842	1.369.207	2.971.242	2.907.300	2.960.100	1,68	50,42	56,05
Southeast	1.100.527	1.001.410	1.000.328	992.836	942.597	919.822	950.470	858.700	732.300	-33,46	19,06	13,87
South	1.318.799	1.074.357	1.169.138	1.216.845	1.205.088	1.131.085	1.156.800	1.097.109	1.196.934	-9,24	22,84	22,66
Center-west	284.419	254.290	319.957	301.865	252.535	235.330	251.600	223.400	148.000	-47,96	4,93	2,80
Brazil	5.774.128	5.175.848	4.680.094	5.462.820	5.175.881	3.911.751	5.627.787	5.326.609	5.281.234	-8,54	100,00	100,00

c - Productivity (kg/ha)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996
North	580,80	588,62	588,04	559,50	484,08	571,47	493,97	606,83	580,16
Northeast	332,53	283,39	290,74	391,81	326,26	350,26	383,00	394,70	427,18
Southeast	693,61	651,87	647,39	706,06	731,55	798,97	780,04	851,64	870,95
South	654,46	591,39	599,13	530,29	848,23	803,26	858,32	848,18	705,34
Center-west	415,24	563,70	597,96	670,51	703,06	794,07	802,07	903,31	1059,46
Brazil	485,79	444,02	477,44	501,90	547,08	627,95	572,36	592,66	576,54

Source: FNP Consultoria & Comércio - Agrianual 97 – Anuário de Agricultura Brasileira

Table VII-5.2(8) Beans production and income, in the state of the Tocantins, according to the regions, in harvests 1989/90 -1996/97.

(It continues)

REGION OF PLANNING	1989/90			1990/91			1991/92			1992/93		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	2.990	837	279,93	1.540	480	311,69	3.340	1.090	326,35	4.320	1.287	0,30
B-NORTH	2.990	837	279,93	1.000	364	364,00	1.030	389	377,67	460	138	300,00
C-NORTHEAST	600	140	233,33	1.100	280	254,55	350	80	228,57	591	690	1167,51
D-NORTHWEST	2.570	548	213,23	1.270	350	275,59	940	215	228,72	1.100	343	311,82
E-EAST	70	19	271,43	75	23	306,67	70	23	328,57	50	17	340,00
F-CENTER-WEST	385	110	285,71	330	97	293,94	230	204	886,96	250	76	304,00
G-CENTRAL	725	426	587,59	825	444	538,18	830	374	450,60	824	389	472,09
H-SOUTHEAST	2.245	1.047	466,37	2.110	918	435,07	1.505	675	448,50	1.897	1.405	740,64
I-SOUTHWEST	10	3	300,00	60	42	700,00	690	998	1446,38	1.070	1.284	1200,00
J-SOUTH	50	15	300,00	40	12	300,00	...	...	...	170	148	870,59
TOTAL	12.635	3.982	315,16	8.350	3.010	360,48	8.985	4.048	450,53	10.732	4.491	418,49

(Conclusion)

REGION OF PLANNING	1993/94			1994/95			1995/96			1996/97		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	4.280	3.905	912,38	...	...	...	1334	439	329,09	696	214	307,47
B-NORTH	425	136	320,00	720	201	279,17	520	193	371,15	486	124	255,14
C-NORTHEAST	800	745	931,25	430	93	216,28	420	93	221,43	480	114	237,50
D-NORTHWEST	1.370	325	237,23	1.125	268	238,22	1250	296	236,80	1290	306	237,21
E-EAST	60	20	333,33	65	20	307,69	65	20	307,69	60	18	300,00
F-CENTER-WEST	260	82	315,38	285	96	336,84	275	101	367,27	30	10	333,33
G-CENTRAL	1.003	573	571,29	1.184	683	576,86	720	232	322,22	100	32	320,00
H-SOUTHEAST	720	677	940,28	1.252	528	421,73	1.080	367	339,81	90	30	333,33
I-SOUTHWEST	...	...	...	...	...	...	...	...	...	...	...	...
J-SOUTH	4.280	1.347	314,72	30	26	866,67	20	10	500,00	...	...	...
TOTAL	12.196	7.810	640,37	2.784	1.915	687,78	5.684	1.751	308,06	3.232	848	262,38

Source: IBGE / Levantamento Sistemático da Produção Agrícola (LSPA)

(3) Corn

The world production of corn in the crop 1995/96 was esteemed in 511,514 thousand tons, in which United States and China are the responsible persons for 55% of the production. United States, besides being the main producer, are the main exporter of the product, being responsible for 82,7% of the corn total exported in the world. A world balance of the production, consumption, imports and exports of the corn, for the crop of 1995/96 are demonstrated in the Table VII-5.2(9).

The international market of the corn is conditioned directly by its use in rations for the feeding of animals and, consequently, for the consumption of meats and dairy products. Indirectly, therefore, the corn consumption is tied up to the evolution of the levels of income of the population, because meats and dairy products are products with elasticity relieve positive - the consumption of meat and milk grows more than proportionally to the increase of the income.

The Asian countries are the main importers, and they acquire around 50% of the cereal imported in the world, presenting growing demand. In this continent, Japan is the main importer, proceeded by Taiwan and Philippines.

Brazil, third larger producing of corn in the world, had a production esteemed in 32,000 thousand tons in 1995/96, representing 6,2% of the world total. Such amount was, however, insufficient for its consumption, having happened imports. The countries that transacting the product to Brazil is traditionally Argentina, United States and Paraguay, among others.

Brazil comes presenting an increment of the production of the corn in the last ten years. There was a positive variation among the extreme years - 1996/88 - of the order of 31%, therefore the stable maintenance of the total of the picked area. The Table VII-5.2(10) demonstrates the acting of the corn in Brazil in the last ten years. The largest profit of this acting went of to bird breeding and of the Hog raising, that obtained a production of 5,6 million tons of the two meats in 1995, larger result 3% than of the bovine meat.

Some factors that condition, even so, they represent difficulties for the good performance of the corn. A competition is observed on the part of the soybean in the largest properties, where this product is favored by the disorganization of the market of the corn. The uncertainty stays with relationship to the liberation of government resources for the costing of the farmings, increased of the high prices of the input - there were nominal increases of 20% for the fertilizers, and of 50% for the ammonia sulphate.

In the South region, it happens the interference of the retaking of the farming of the wheat in 1996 on the first plantation of the corn, because the ascension of the international prices propitiated that the wheat sowing were extended besides the normal period. The latest crop will be can induce to the abandonment of the corn as option of summer plantation, opening space for the soybean.

The internal need of the cereal is absorbed in 80% by the production of rations, and 60% of this ration are destined to the aviculture. A growth of the production of rations of the order of 9% a year is observed, consuming more than 12 million tons to the year of corn. Even so, a cautious behavior can be observed on the part of the poultry keepers, with reduction of the you plant. It is calculated for 1997 a progress of 4% in the industrial consumption of rations for the corn.

In the state of Tocantins it happened a reduction of the planted area of the corn in the beginning of the decade of 90 and, ever since, it comes maintaining a stability around sixty thousand hectares of cultivated area. The culture is disseminated by whole the State. The area North End presents the largest cultivated area. Even so the South region obtains the largest production volume, with larger profitabilities. The Table VII-5.2(11) presents the state production of the corn.

The field research obtained information of a total of 11.626 hectares, about 20% of the total of the picked area of the product informed by the IBGE for 1996/97. They were obtained information on four areas, of the region of Alvorada do Tocantins, of Formoso do Araguaia, of Lagoa da Confusão and of Dianópolis, as it is seen in the Table VII-5.2(12). The productivity of the corn varies among 3,2 t/ha in the region of Alvorada and 5,4 t/ha, informed by Cooperjava, in Formoso do Araguaia. In Lagoa da Confusão the irrigation of the culture implies in a high production cost, not compensated by the productivity. In Dianópolis, the culture of the corn is combined with soybean cultures, both products addressed to the agroindustry placed in Mimoso do Oeste and Barreiras - BA.

Table VII-5.2(9) World-wide balance of the corn - 1995/96, a thousand metric tons

Country / Block	Production		Consumption			Exportation		Importation	
	(t)	%	(t)	%	%1	(t)	%	(t)	%
EEUU	187.350	36,63	160.027	29,44	85,42	55.500	82,79		
China	108.000	21,11	110.000	20,24	101,85	500	0,75	2.000	2,98
Brazil	32.000	6,26	36.750	6,76	114,84			750	1,12
Europe Union	24.550	4,80						250	0,37
Eastern Europe	16.000	3,13						250	0,37
Mexico	16.000	3,13	21.500	3,96	134,38			5.500	8,20
Argentina	10.500	2,05				5.300	7,91		
Southern Africa	10.500	2,05	7.800	1,44	74,29	1.250	1,86	500	0,75
Romania	9.900	1,94	9.000	1,66	90,91	750	1,12		
India	9.800	1,92	9.800	1,80	100,00				
Yugoslavia	5.300	1,04	7.270	1,34	137,17				
FSU	7.290	1,43	2.000	0,37	27,43			300	0,45
Canada	7.251	1,42	7.255	1,33	100,06			500	0,75
Egypt	5.738	1,12	8.700	1,60	151,62			7.250	10,82
Indonesia	5.300	1,04	7.270	1,34	137,17				
Zimbabwe	2.500	0,49						300	0,45
Japan			16.350	3,01				16.250	24,24
Southern Korea			9.200	1,69				9.000	13,43
Hungry			4.100	0,75		500	0,75		
Taiwan								6.000	8,95
Malaysia								2.300	3,43
Venezuela								1.100	1,64
Ira								700	1,04
Algeria								550	0,82
Poland								200	0,30
Others	53.535	10,47	127.196	23,40	237,59	2.935	4,38	15.485	23,10
Total	511.514	100,00	543.488	100,00	106,25	67.035	100,00	67.035	100,00

Source: FNP Consultoria & Comércio - Agrianual 97. Anuário da Agricultura Brasileira
% - relative participation in the world-wide total
% 1- relative participation in the production of the country

Table VII-5.2(10) - Brazil Production, harvested area and productivity of corn, 1989-1996

a – Production (t)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/88 %	Distribution % 1988	Distribution % 1996
North	692.273	751.140	521.530	623.994	642.080	695.107	809.566	971.800	989.800	42,98	2,76	3,00
Northeast	1.975.700	1.795.200	954.300	2.030.800	1.218.700	592.600	2.612.600	2.679.900	2.877.300	45,63	7,87	8,71
Southeast	7.296.500	7.365.400	5.657.100	8.197.400	8.317.100	8.276.200	7.594.300	8.412.300	7.793.500	6,81	29,06	23,60
South	10.667.705	11.264.280	11.853.523	8.596.412	15.413.000	15.799.300	16.415.900	18.782.900	14.381.200	34,81	42,49	43,55
Center-west	4.473.200	5.100.100	3.340.200	4.505.900	4.588.000	4.241.800	5.722.100	6.375.400	6.978.800	56,01	17,82	21,13
Brazil	25.105.378	26.276.120	22.326.653	23.954.506	30.178.880	29.605.007	33.154.466	37.222.300	33.020.600	31,53	100,00	100,00

b - Harvested Area (ha)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/88 %	Distribution % 1988	Distribution % 1996
North	500.894	520.646	394.740	425.642	439.400	459.814	513.890	619.300	620.500	23,88	3,76	4,51
Northeast	3.363.000	3.122.000	2.615.400	3.002.500	3.095.200	2.156.100	3.185.700	3.221.000	3.330.900	-0,95	25,23	24,21
Southeast	2.903.300	2.983.200	2.814.700	3.170.100	3.297.300	3.091.700	2.949.600	2.893.200	2.651.400	-8,68	21,78	19,27
South	4.920.562	4.699.234	4.675.784	5.285.197	5.364.100	5.302.300	5.265.800	5.677.400	5.204.800	5,78	36,92	37,83
Center-west	1.641.200	1.678.300	1.549.800	1.564.000	1.521.300	1.440.700	1.879.900	1.849.100	1.951.700	18,92	12,31	14,18
Brazil	13.328.956	13.003.380	12.050.424	13.447.439	13.717.300	12.450.614	13.794.890	14.260.000	13.759.300	3,23	100,00	100,00

c – Productivity (kg/ha)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996
North	1.382	1.443	1.321	1.466	1.461	1.512	1.575	1.569	1.595
Northeast	587	575	365	676	394	275	820	832	864
Southeast	2.513	2.469	2.010	2.586	2.522	2.677	2.575	2.908	2.939
South	2.168	2.397	2.535	1.627	2.873	2.980	3.117	3.308	2.763
Center-west	2.726	3.039	2.155	2.881	3.016	2.944	3.044	3.448	3.576
Brazil	1.884	2.021	1.853	1.781	2.200	2.378	2.403	2.610	2.400

Source: FNP Consultoria & Comércio - Agrianual 97 - Anuário da Agricultura Brasileira

Table VII-5.2(11) - Harvested area. Production and income of corn, in the state of the Tocantins, according to the regions, in harvests 1989/90 - 1996/97.

(It continues)

REGION OF PLANNING	1989/90			1990/91			1991/92			1992/93		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	16.300	16.150	990,80	16.900	17.600	1.041,42	18.400	21.500	1.168,48	22.900	23.800	1.039,30
B-NORTH	8.020	7.610	948,88	8.850	8.280	935,59	10.400	9.020	867,31	8.064	8.885	1.101,81
C-NORTHEAST	3.300	3.120	945,45	2.700	3.270	1.211,11	3.100	2.490	803,23	2.050	2.164	1.055,61
D-NORTHWEST	10.850	12.040	1.109,68	7.590	9.950	1.310,94	7.660	8.240	1.075,72	7.100	8.340	1.174,65
E-EAST	1.630	880	539,88	1.510	1.110	735,10	1.840	1.410	766,30	1.840	1.841	1.000,54
F-CENTER-WEST	5.690	7.040	1.237,26	5.510	6.600	1.197,82	5.310	6.696	1.261,02	5.220	6.571	1.258,81
G-CENTRAL	7.160	4.530	632,68	5.680	7.545	1.328,35	6.730	8.040	1.194,65	5.485	6.459	1.177,58
H-SOUTHEAST	6.000	7.380	1.230,00	5.710	7.580	1.327,50	7.050	9.410	1.334,75	7.210	9.896	1.372,54
I-SOUTHWEST	4.200	3.640	866,67	3.700	5.390	1.456,76	3.700	5.620	1.518,92	3.730	5.062	1.357,10
J-SOUTH	8.500	7.200	847,06	10.200	16.350	1.602,94	10.800	19.410	1.797,22	7.570	9.133	1.206,47
TOTAL	71.650	69.590	971,25	68.350	83.675	1.224,21	74.990	91.836	1.224,64	71.169	82.151	1.154,31

(Conclusion)

REGION OF PLANNING	1993/94			1994/95			1995/96			1996/97		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	16.900	17.500	1.035,50	...	...	...	12462	14995	1.203,26	10880	12889	1.184,65
B-NORTH	7.440	82.100	11.034,95	10.275	11.726	1.141,22	9340	10967	1.174,20	8382	9771	1.165,71
C-NORTHEAST	2.330	3.910	1.678,11	2.840	4.213	1.483,45	2546	2920	1.146,90	2805	2978	1.061,68
D-NORTHWEST	6.310	7.030	1.114,10	6.538	8.111	1.240,59	6140	7510	1.223,13	6560	8061	1.228,81
E-EAST	1.800	1.644	913,33	1.725	1.657	960,58	1600	2417	1.510,63	1625	2201	1.354,46
F-CENTER-WEST	5.220	6.752	1.293,49	4.905	7.093	1.446,08	4185	6609	1.579,21	3620	5755	1.589,78
G-CENTRAL	6.179	7.375	1.193,56	6.935	8.667	1.249,75	6387	10700	1.675,28	6070	10847	1.786,99
H-SOUTHEAST	7.165	10.361	1.446,06	7.970	13.144	1.649,18	7595	12970	1.707,70	7150	12000	1.678,32
I-SOUTHWEST	3.550	5.379	1.515,21	6.151	17.281	2.809,46	13230	60.580	4.578,99	4.300	7.460	1.734,88
J-SOUTH	8.510	17.924	2.106,23	8.455	17.511	2.071,08	10020	25.530	2.547,90	8.290	18.331	2.211,22
TOTAL	65.404	159.975	2.445,95	55.794	89.403	1.602,38	73.505	155.198	2.111,39	59.682	90.293	1.512,90

Source: IBGE / Levantamento Sistemático da Produção Agrícola (LSPA)

Table VII-5.2(12) - Characteristic main of the culture of the corn in the searched cities, state of the Tocantins, June of 1997

City	Area total (ha)	Production (t)	Income (t/ha)	Cultivated varieties	Cost of production (R$/ha)	Price received for the producer (R$/sack 60kg)	Adopted technology
Alvorada, Talismã e Figueirópolis	5.000	16.000	3,2	BR-205; BR-201; BR-106; C125	270,00	7,00	Selected seed, treatment of seed, mechanized, medicament for weeds remove plantation, combat the plagues, fertilization of plantation and covering and mechanized harvest.
Formoso do Araguaia	3.124	16.800	5,4	G800; C901; P30-41; AG-9012; AG-5011.	....	6,00	...
Lagoa da Confusão	2.500	10.500	4,2	Pioner; Cargil and Brascal.	480,00	6,00	Treatment of seed, correction, fertilization with NPK, combat the plagues and illnesses, fertilization of covering, harvest mechanics and irrigation for infiltration.
Pedro Afonso	...	...	2,4	...	...	...	Selected seed, planing, railing, combat of plagues, fertilization of plantation and covering and harvest mechanics.
Dianópolis	1.000 (rotation with the soy)	4.800	4,8	Hybrids	300,00	6,70 a 8,00 (for the CEVAL)	Planing, railing, hybrid seed, fertilization of plantation and covering and harvest mechanics.

Source: Research of field

...not available Information.

(4) Soybean

The world market of the soybean in grain moved, in 1996, more than 31 million tons (exportation/importation), in the face of a superior world production at 120 million tons. The four larger countries producing of soybean are United States, that answered for 47,35% of the world production in 1996; Brazil (18,76%); China (10,92%); and Argentina (10,19%).

United States are also the main exporter of the product, being responsible for 70,86% of the total volume of production exported in 1996. The main importer is the European Union, with participation of Germany, Holland, Spain, Italy and Belgium, that it imports 45,19% of the total done busines in the market.

Traditionally in Brazil, most of the production, about 90% in the year of 1996, it is directed for the national industry of crushing, for production of soybean bran and soybean oil that, later on, they will provision the internal market and they will also be directed for the exportation. The main consuming country of the soybean oil produced in Brazil is China that, in 1996, it absorbed about 67% of the exported volume. The soybean bran is directed, mainly, for Netherlands that absorbed, in 1996, about 41,7% of the exported total. Maintained the current conditions of shortage of international stocks and the growing bran consumption and oil in the internal market, the tendency is larger profitability in the production.

The referring informations to the world balance of the soybean in the period 1995/96 are systematized in the Table VII-5.2(13).

To Brazil, considering the Mercosul, it deserves to be outstanding the production of soybean of Argentina, that developed about 80% in the last ten years. Considering that this country possesses good environmental conditions for the cultivation of that vegetable, it is realistic to wait for an increase of the competition of the Argentinean soybean and of its by-products in the international market and, even in special situations, in the internal market.

The situation of the product in Brazil, considering the production, the picked area and the productivity for the period 1988/96 is presented in the Table VII-5.2(14). The cultivation is concentrated in the areas South and Center-west, that you join they answer for 86,3% of the production and for 84,8% of the area picked in the year of 1996. The productivity came, also, growing in the period, evidencing technological improvements in this cultivation.

There is to highlight a fall in the Brazilian crop of soybean of 1995 for 1996, when the production decreased of about 26 million tons to 23.4 million.

The appearance of the "nematóide-do-cisto" (NCS) and its fast sowing for an area of a million hectares cultivated in Goiás, Mato Grosso do Sul, Mato Grosso, Minas Gerais, São Paulo and Rio Grande do Sul, starting from the crop of 1994, provoked damages

accumulated in all the affected regions. The damages can multiply next years, if the producers don't take the providences recommended to stop the progress of the disease still not for areas affected.

It stand out that, in beginning, all the brazilian regions producing of soybean are favorable to the development of NCS, although the climate and the soil of each one should influence in way differentiated in that development. Of the period of 1994 to the days today, they come being developed new technologies to make possible the soybean farming and, with that, the performance begins to acquire a new profile. It is already had news of a new soybean variety, resistant to NCS, for MG/BR-54, denominated Renascença, obtained by EMBRAPA and EPAMIG.

The perspectives of medium period for the culture are favorable for those producers that, being been worth of the best available technology, reach high productivity. A high productivity, when knocking down the cost for produced bag and to increase the gain for hectare, will allow to arrive the levels of satisfactory profitability.

Being analyzed the structure of the section, the coexistence of four producing areas is observed:

- Traditional region: formed by the states of Rio Grande do Sul, Santa Catarina, Paraná and São Paulo;
- Region of consolidated expansion: it embraces the states of Minas Gerais, Goiás, Mato Grosso, Mato Grosso do Sul and Distrito Federal;
- Area of recent expansion: it embraces Bahia, Piauí and Maranhão;
- Area of potential expansion: Rondônia, south of Amazonas, east of Pará and west of Tocantins and Maranhão.

An aspect that deserves attention in the expansion of the culture is that its progress in a region doesn't elapse of the recoil in another culture.

The state of Tocantins comes as a region of potential expansion for the soybean. Though, in the last years, the distribution of the culture in the State it has been presenting sufficiently floating. With base in the data of FIBGE is not possible the identification of a Region with potential adult for the product. The area that comes stable it is the Southwest of the State. The Table VII-5.2(15) describes the situation of the soybean production in Tocantins, in the period 1989/97.

The informations collected in field research, described in the Table VII-5.2(16), and are conflicting with the information of IBGE about the culture of the soybean. Information was supplied on a total area of 31.668 there is of soybean, configured in five regions of the state. The largest concentration gives in Pedro Afonso, through PRODECER III's actions.

The revenue of the culture varies among 1,8 t/ha among them cooperated of Cooperformoso, in Formoso do Araguaia, until 3,0 t/ha in Pedro Afonso and enter them

cooperated of Cooperjava, in Beautiful of Araguaia. Highlight that enters these last ones it is cultivated so much the grain as the soybean seed, that reaches a much more advantageous price.

Table VII-5.2(13) - World-wide balance of soybeanbean,1995/96 (thousand metric tons)

Country	Production		Exportation			Importation		Crushing	
	t	%	T	%	%1	t	%	t	%
United States	58,56	47,35	22,45	70,86	38,34	-	-	36,88	36,40
Brazil	23,20	18,76	3,20	10,10	13,79	0,60	1,88	20,90	20,63
China	13,50	10,92	0,30	0,95	2,22	0,60	1,88	7,05	6,96
Argentina	12,60	10,19	2,80	8,84	22,22	-	-	9,70	9,57
India	4,47	3,61	-	-	-	-	-	-	-
Paraguay	2,30	1,86	1,50	4,73	65,22	-	-	-	-
Canada	2,28	1,84	-	-	-	-	-	-	-
Indonesia	1,70	1,37	-	-	-	-	-	-	-
European Union	0,96	0,78	-	-	-	14,42	45,19	13,74	13,56
Bolivia	0,76	0,61	-	-	-				
FSU-12	0,54	0,44	-	-	-	0,11	0,34	0,48	0,47
Thailand	0,45	0,36	-	-	-	-	-	-	-
Northern Korea	0,41	0,33	-	-	-	1,40	4,39	-	-
Eastern Europe	0,31	0,25	-	-	-	0,30	0,94	0,49	0,48
Mexico	0,27	0,22	-	-	-	2,20	6,89	2,41	2,38
Southern Korea	0,16	0,13	-	-	-	-	-	-	-
Japan	0,12	0,10	-	-	-	4,80	15,04	3,70	3,65
Colombia	0,07	0,06	-	-	-	-	-	-	-
Europe Occidental	-	-	-	-	-	0,38	1,19	0,38	0,38
Taiwan	-	-	-	-	-	2,55	7,99	2,25	2,22
Others	1,01	0,82	1,43	4,51	141,58	4,55	14,26	3,33	3,29
Total	123,67	100,00	31,68	100,00	25,62	31,91	100,00	101,31	100,00

Source: FNP Consultoria & Comércio – Agrianual 97 – Anuário da Agricultura Brasileira

% - relative participation in the world-wide total

%1 - relative participation in the production of the country

Table 5.2(14) - Brazil Production, harvested area and productivity of the soybean, 1988-1996

a – Production (t)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/88 %	Distribution % 1988	Distribution % 1996
North	54.700	135.600	53.200	11.500	19.400	36.400	59.000	45.500	14.200	-74,04	0,30	0,06
Northeast	375.111	638.700	267.800	564.300	520.300	682.100	1.018.400	1.267.800	921.900	145,77	2,07	3,94
Southeast	1.985.500	2.556.300	1.843.500	1.930.400	1.844.400	2.314.200	2.499.400	2.365.900	2.274.500	14,56	10,95	9,71
South	8.972.764	11.922.997	11.688.952	6.135.116	9.656.700	11.622.100	11.645.992	12.259.840	11.370.600	26,72	49,50	48,54
Center-west	6.739.600	8.652.400	6.325.600	6.667.000	7.313.200	8.484.200	9.907.000	10.084.700	8.846.400	31,26	37,18	37,76
Brazil	18.127.675	23.905.997	20.179.052	15.308.316	19.354.000	23.139.000	25.129.792	26.023.740	23.427.600	29,24	100,00	100,00

b – Harvested Area (ha)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/88 %	Distribution % 1988	Distribution % 1996
North	32.300	74.600	42.000	6.300	12.100	20.000	28.700	21.400	6.700	-79,26	0,30	0,06
Northeast	246.854	410100	385.400	282.600	351.100	422.700	503.600	575.900	532.300	115,63	2,31	4,96
Southeast	1.010.500	1.189.000	1.165.000	972.000	921.500	1.084.300	1.175.100	1.163.600	1.091.600	8,03	9,46	10,17
South	6.012.379	6.517.693	6.234.638	5.541.938	5.013.000	5.457.400	5.605.123	5.437.120	5.408.400	-10,05	56,29	50,39
Center-west	3.379.100	4.054.500	3.706.000	2.946.200	3.283.500	3.808.600	4.244.300	4.559.800	3.694.700	9,34	31,64	34,42
Brazil	10.681.133	12.245.893	11.533.038	9.749.038	9.581.200	10.793.000	11.556.823	11.757.820	10.733.700	0,49	100,00	100,00

c – Productivity (t/ha)

Region	1988	1989	1990	1991	1992	1993	1994	1995	1996
North	1693,50	1817,69	1266,67	1825,40	1603,31	1820,00	2055,75	2126,17	2119,40
Northeast	1519,57	1557,43	694,86	1996,82	1481,91	1613,67	2022,24	2201,42	1731,92
Southeast	1964,87	2149,96	1582,40	1986,01	2001,52	2134,28	2126,97	2033,26	2083,64
South	1492,38	1829,33	1874,84	1107,03	1926,33	2129,60	2077,74	2254,84	2102,40
Center-west	1994,50	2134,02	1706,85	2262,91	2227,26	2227,64	2334,19	2211,65	2394,35
Brazil	1697,17	1952,16	1749,67	1570,24	2020,00	2143,89	2174,46	2213,31	2182,62

Source: FNP Consultoria & Comércio - Agrianual 97 - Anuário da Agricultura Brasileira

Table VII-5.2 (15) - Harvested area. Production and income of soy, in the state of the Tocantins, according to the regions in harvests 1989/90 -1996/97.

(It continues)

REGION OF PLANNING	1989/90			1990/91			1991/92			1992/93		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	...	...	...	...	...	...	...	...	...	...	...	...
B-NORTH	...	...	...	...	...	...	...	...	...	...	...	...
C-NORTHEAST	2.400	3.800	1583,33	400	720	1800,00	920	1.660	1804,35	609	1.280	366,87
D-NORTHWEST	800	1.680	2100,00	750	1.860	2480,00	370	810	2189,19	160	362	197,53
E-EAST	...	...	...	...	...	...	1.320	1.320	1000,00	1.650	2.470	1250,00
F-CENTER-WEST	...	...	...	...	...	...	...	...	...	...	...	...
G-CENTRAL	1.400	1.240	885,71	550	810	1472,73	378	435	1150,79	3.465	5.315	7965,52
H-SOUTHEAST	...	...	...	...	...	...	370	90	243,24	630	820	7000,00
I-SOUTHWEST	10.530	18.420	1749,29	480	750	1562,50	7.650	15.300	2000,00	6.960	12.521	454,90
J-SOUTH	11.150	10.000	896,86	2.320	4.950	2133,62	3.460	6.850	1979,77	2.471	3.738	360,73
TOTAL	26.280	35.140	1.337,14	4.500	9.090	2.020,00	14.468	26.465	1.829,21	15.945	26.506	1.662,34

(Conclusion)

REGION OF PLANNING	1993/94			1994/95			1995/96			1996/97		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	...	...	...	...	...	...	...	...	...	58	70	1206,90
B-NORTH	...	...	...	...	...	...	...	...	...	...	...	...
C-NORTHEAST	4.750	10.400	2189,47	6.130	11.336	1849,27	1.502	2.700	1797,60	17.240	33.478	1941,88
D-NORTHWEST	270	540	2000,00	390	763	1956,41	160	320	2000,00	174	350	2011,49
E-EAST	1.815	2.722	1499,72	200	300	1500,00	200	300	1500,00	3.500	5.250	1500,00
F-CENTER-WEST	...	...	...	...	...	...	...	...	...	...	...	...
G-CENTRAL	3.300	4.950	1500,00	2.010	2.461	1224,38	400	840	2100,00	200	420	2100,00
H-SOUTHEAST	880	1.760	2000,00	1.720	2.739	1592,44	500	1.000	2000,00	500	1.000	2000,00
I-SOUTHWEST	11.750	20.161	1715,83	1.637	3.264	1993,89	2.740	5.480	2000,00	...	...	...
J-SOUTH	8.345	17.052	2043,38	7.890	15.328	1942,71	1.790	3.390	1893,85	270	513	1900,00
TOTAL	31.110	57.585	1.851,01	19.977	36.191	1.811,63	7.292	14.030	1.924,03	21.942	41.081	1.872,25

Source: IBGE / Levantamento Sistemático da Produção Agrícola (LSPA)

Picture VII-5.2(16) Characteristic main of the culture of the soy in the searched cities, state of the Tocantins, June 1997

City	Total area (ha)	Production (t)	Income (t/ha)	Cultivated varieties	Cost of production (R$/ha)	Price received for the producer (R$/bag 60kg)	Adopted technology
Alvorada, Talismã e Figueirópolis	2.000	7.200	3,6	Doco	280,00	13,00	Selected seed, treatment of seed, mechanized, medicament for weeds remove plantation, combat the plagues, fertilization of plantation and covering.
Formoso do Araguaia (Cooperformoso)	3.900	7.200	1,8	Mirador; FT-106; FT-104 e Garça Branca	330,00	15,00	...
Formoso do Araguaia (Cooperjava)	5.136	15.408	3,0	Conquista e Mirador	...	grain: 16,00 seed: 25.00/ sack 50kg	...
Lagoa da Confusão	1.000	2.000	2,0	DOC-RC; Embrapa31; Engopa305.	300,00	13,00	Treatment of seed, correction, fertilization with NPK, combat the Plagues, application of medicament for weeds remove and harvest mechanics Irrigation for infiltration.
Pedro Afonso	16.632 PRODECER 13.762 OUTROS.: 2.870	29.937	3,0	...	350,00	13,80	Selected seed, planing, railing, combat of plagues, fertilization of plantation and covering and harvest mechanics.
Dianópolis	3.000	6.300	2,1	Deco RC	350,00	13,80 in the property and 14,50 in the industry	Selected seed supplied for the industry, planing, railing,, and fertilization of plantation - 400kg/ha, combat the plagues, medicament for weeds remove plantation and harvest mechanics.

Source: Research of field
... not available Information

(5) Pineapple

In agreement with the Brazilian Institute of Fruits the world production of pineapple it has been maintaining stable in the last five years. In 1993, it was of 11,740 tons, being the main producers Thailand, Philippines and Brazil, participating with about 10% of this production.

Brazil exports the pineapple in natura so much, as industrialized him, in juice form. In 1994, it was exported 22,623 tons in natura, being the main buyers Belgium, Argentina and Germany. On that same year 4.821 tons of juice were exported, mainly for Netherlands and Argentina.

They are three the most well-known varieties and planted in Brazil: the pearl or white-of-pernambuco, the jupi, and the smooth cayenne. The cultures of the two first are especially destined to the consumption in natura in the internal market. The smooth cayenne is the favorite in the external market, being indicated, also, for the industrialization, mainly for the canning (slices in broth).

For its degree of adaptability to the most several climate conditions and soil, varieties, possibility of use of several technological resources, and acceptance in the market, its cultivation can be disseminated in all the regions of the country.

The referring information to the brazilian production in the period 1987/96, are presented in the Table VII-5.2(17). The cultivation of the pineapple stayed stable in the period, so much in terms of production volume, as in picked area. In relation to the space distribution, its production concentrates on the regions Northeast and Southeast that join they answered, in 1996, for 95% of the brazilian production of pineapple.

The found medium revenue was of 32.27 tons/ha, and the largest productivities are observed in the areas Northeast and Southeast.

In the state of Tocantins, the culture comes obtaining a growth caused by its increment in the municipal district of Miracema do Tocantins, located in the central region of the State. However, the obtained profitability is, still, very low, in the average of 13,4 tons/ha, well below the national average. It is a farming in expansion in the State depending for its consolidation of the use of varieties adapted to the Region and the market. The evolution of the product in the State, in the period 1989/96, considering the picked area, the production and the revenue, it is presented in the Table VII-5.2(18).

The field research collected information of the culture of the pineapple in Tocantins, described in the Table VII-5.2(19). Two areas of plantation informed; a main one, in Miracema do Tocantins and Miranorte, presents a revenue of 22,000 fruits for hectare, representing about 33 t/ha. it still Happens the production, in smaller scale, in Araguaina and Region.

Table VII-5.2(17) - Production Brazilian, harvested area and productivity of pineapple, 1987-1996

a - Production (t)

Region	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/1987 %	Distribution % 1987	Distribution % 1996
North	26.014	26.315	42.117	38.550	37.420	26.740	26.150	75.679	111.401	878	-96,62	1,94	0,06
Northeast	755.097	879.329	668.699	597.730	655.880	642.980	920.960	572.381	549.035	616.515	-18,35	56,34	45,00
Southeast	501.805	456.545	412.472	350.650	371.880	397.560	203.880	663.413	563.548	694.238	38,35	37,44	50,68
South	10.882	10.751	9.510	8.750	9.060	4.890	6.380	6.607	8.603	7.638	-29,81	0,81	0,56
Center-west	46.562	44.988	41.474	34.600	32.720	47.750	51.620	46.304	47.334	50.701	8,89	3,47	3,70
Brazil	1.340.360	1.417.928	1.174.272	1.030.280	1.106.960	1.119.920	1.208.990	1.364.384	1.279.921	1.369.970	2,21	100,00	100,00

b - Harvested Area (ha)

Region	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1996/1987 %	Distribution % 1987	Distribution % 1996
North	1.817	1.428	1.836	1.955	2.462	1.039	2.101	2.600	3.681	120	-93,40	3,98	0,28
Northeast	23.419	24.857	18983	16.477	18.697	18.692	17.053	16.735	17.153	17.971	-23,26	51,23	42,33
Southeast	18.060	17.356	14.971	12.754	12.785	13.357	16.323	21.995	19.723	21.981	21,71	39,51	51,77
South	569	574	588	579	602	437	443	444	495	440	-22,67	1,24	1,04
Center-west	1.845	1.864	1.624	1.402	1.358	1.999	2.158	1.843	1.895	1.944	5,37	4,04	4,58
Brazil	45.710	46.079	38.002	33.167	35.904	35.524	38.078	43.617	42.947	42.456	-7,12	100,00	100,00

c - Productivity (t/ha)

Region	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
North	14,32	18,43	22,94	19,72	15,20	25,74	12,45	29,11	30,26	7,32
Northeast	32,24	35,38	35,23	36,28	35,08	34,40	54,01	34,20	32,01	34,31
Southeast	27,79	26,30	27,55	27,49	29,09	29,76	12,49	30,16	28,57	31,58
South	19,12	18,73	16,17	15,11	15,05	11,19	14,40	14,88	17,38	17,36
Center-west	25,24	24,14	25,54	24,68	24,09	23,89	23,92	25,12	24,98	26,08
Brazil	29,32	30,77	30,90	31,06	30,83	31,53	31,75	31,28	29,80	32,27

Source: FNP Consultoria & Comércio - Agrianual 97 – Anuário da Agricultura Brasileira

Table VII-5.2(18) - Harvested area. Production and income of pineapple, in the state of the Tocantins, according to the regions, in harvests 1989/90 - 1996/97.

(It Continues)

REGION OF PLANNING	1989/90			1990/91			1991/92			1992/93		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	...	...	...	...	...	...	...	...	...	...	...	...
B-NORTH	50	1.000	20.000,00	54	870	16.111,11	65	780	12.000,00	60	1.200	20.000,00
C-NORTHEAST	...	...	...	...	...	...	...	...	...	...	...	...
D-NORTHWEST	...	...	...	...	...	...	...	...	...	...	...	...
E-EAST	...	...	...	...	...	...	...	...	...	...	...	...
F-CENTER-WEST	30	180	6.000,00	30	550	18.333,33	35	650	18.571,43	10	200	20.000,00
G-CENTRAL	70	980	14.000,00	80	1.120	14.000,00	100	824	8.240,00	120	2.400	20.000,00
H-SOUTHEAST	82	2.050	25.000,00	48	1.200	25.000,00	63	650	10.317,46	...	...	...
I-SOUTHWEST	...	...	...	...	...	...	...	...	...	...	...	...
J-SOUTH	...	...	...	...	...	...	...	...	...	...	...	...
TOTAL	232	4.210	18.146,55	212	3.740	17.641,51	263	2.904	11.041,83	190	3.800	20.000,00

(Conclusion)

REGION OF PLANNING	1993/94			1994/95			1995/96		
	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)	Harvested Area (ha)	Production (t)	Income (Kg/ha)
A-EXTREME NORTH	...	...	...	...	...	...	5	70	14.000,00
B-NORTH	80	1.630	20.375,00	8	112	14.000,00	82	1.650	20.121,95
C-NORTHEAST	...	...	...	...	...	...	8	240	30.000,00
D-NORTHWEST	...	...	...	...	...	...	2	30	15.000,00
E-EAST	...	...	...	...	...	...	...	...	...
F-CENTER-WEST	48	610	12.708,33	163	2.847	17.466,26	123	2.460	20.000,00
G-CENTRAL	135	2.512	18.607,41	192	3.415	17.786,46	360	3.340	9.277,78
H-SOUTHEAST	...	...	...	...	...	...	...	...	...
I-SOUTHWEST	...	...	...	...	...	...	2	40	20.000,00
J-SOUTH	...	...	...	...	...	...	...	...	...
TOTAL	263	4.752	18.068,44	363	6.374	17.559,23	582	7.830	13.453,61

Table VII-5.2(19) - Characteristic main of the culture of the pineapple in the searched cities, state of the Tocantins, June of 1997

Cities	Total Area (ha)	Production (t)	Income (fruits /ha)	Cultivated varieties	Cost of production (R$/ha)	Price received for the producer (R$/kg)	Adopted technology
Miracema e Miranorte	3.000	100.000	22.000 (1,5 a 1,7 Kg/fruit) 33 t/ha	Pérola	8.000	0,50 a 0,60 / fruit tree	Planing, railing, correction (calagem), fertilization NPK, combat the plagues and illnesses, some irrigation, protection of the fruit against sun, with straw of rice and periodical.
Araguaína and region	....	3.000.000 feet	...	Pérola	7.000	0,50/ fruit tree	...

Source: Research of field

...not available Information.