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State of Tocantins  
Secretariat of Production (SEPRO -TO)  
Secretariat of Planning and Environment (SEPLAN -TO)

Japan International  
Cooperation Agency  
(JICA)

*ANNEX XX*  
**FORMULATION OF THE SCENERIES  
OF DEVELOPMENT**

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## ANNEX XX

### FORMULATION OF THE SCENERIES OF DEVELOPMENT

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## 1. Objective of the Program

Taking into account inherent factors for the development, such as the conditions of rich natural resources; infrastructure comparatively well habilitated, and the geographical conditions that it gives transport advantages for the exportable products, the following objectives were established:

- Upgrading of the Living Standard, through the Stimulations of the Regional Economies
- Incentives to the Environmental Conservations Activities
- Amenização of the Social Disparities

## 2. Strategies of General Development

The upgrading of the living standard of the rural farmers will be achieved by the strengthening of the farmer's structure in the agricultural production (quality and amount) in a competitive form, being liberated from the present conditions of subsistence production, with the efficient use of the natural and social resources. The incentive of the conservation of the environment seeks to preserve the natural resource, with the promotion of the activities of sustainable economical development, introducing appropriate measures to recover the deteriorated natural resources caused by the disordered development in a past time. The alleviation of the social disparities seeks to improve the living conditions, taking the necessary measures, such as of creating opportunities of jobs, reducing the poverty conditions of one of the areas more poor from Brazil.

Strategies to be applied are as follows;

Development Strategies	
Stimulation of Economy (General)	Maximization of the Natural Resources (Adequate Lands Use) Use of the Infrastructures Promotion of the Competitive Agricultural Activities Promotion of the Industries not to depend only on Livestock
	Diversification of the Agricultural Activities Promotion of the Integrated System of Agriculture and Livestock Promotion of the Intensive Agriculture in form of Association
Environment conservation	Conservation of the Existent Forests
	Promotion of the Forestry
	Conservation of the areas where is necessary to be Conserved (reservations)
Improvement of the Social Disparities	Transformation of Industries in the structures that creates the Jobs Opportunities
	Promotion of the Industrial ones that take use of the Natural Resources

The areas that present topographical advantages, of transport and of rich natural conditions for the agricultural use, are potential areas to be developed. To formulate the development strategies, the social factors and market conditions were considered.

### (1) Alternative Proposals

This Program has basic objective to activate the regional Economies, through the diversifications of the agricultural activities. It will be able to consider that this program is inside of the strategies established the superior programs, such as the Federal Government's PPA that it strengthens the structures of exports with the Corridor's of Export implementation and it motivates the activities of sustainable farming, and State PPA that it puts the areas as a priority area. The coincident points with the lines of policies of the Federal and State Government are the following ones:

- Inside of PPA, the Government has intention of structuring the Economies in the competitive and efficient form. That program seeks to strengthen the agricultural activities inside of the sceneries of the international and national markets.
- Inside of PPA, policies of implementation of the transportation Structures composed

with the implementation of Rio Tocantins's Transported Multimodal and Rio Araguaia, and of Railroad Norte-Sul. This program seeks to take advantage these infrastructures of transport in an efficient way.

- As one of the priority policies, the amenização of the social disparities are prominence points, and the area fit inside of that policies. This program softens the social disparities, through the stimulation of the regional Economies that contribute as guideline of the state and federal policies.
- Inside of the Environmental area, intention exists of taking advantage of the natural resources in an efficient and conservationist way. In this program, the effective use of the natural resources is promoted, could contribute to improvement of the conservation of the environment in the Amazonian Basin.
- The State Government, it is accomplishing several projects in the area of the Study, determining the area as a priority area.
- The Government is promoting the appropriate uses of the resources of lands using as guideline the programs of ZEE.

## (2) Beneficiary

The beneficiaries of the activities are demarcated as:

Alternative	Beneficiary
Diversification of Integrated Agriculture and Livestock/Complex System of Agriculture and Livestock	<ul style="list-style-type: none"> <li>➤ Great Cattle farmers</li> <li>➤ Cattle farmers of Medium size</li> <li>➤ New Incorporates</li> </ul>
Introduction of Intensive Agriculture with formation of Association	<ul style="list-style-type: none"> <li>➤ Small land owner</li> <li>➤ Small Farmers</li> </ul>
Incentive of the Extrativismo	<ul style="list-style-type: none"> <li>➤ Small land owner</li> </ul>
Incentive of the Environment Conservation	<ul style="list-style-type: none"> <li>➤ Lands owner</li> <li>➤ Resident</li> <li>➤ Municipal districts</li> </ul>

## 3. Diversification of Integrated Agriculture and Livestock/Complex System of Agriculture and Livestock

### (1) Priority areas

The priority areas of this alternative are shown in Fig. 20.3.1, with the distributions of the suitable areas in the table below;

Possible Area for the Application of this Alternative (km<sup>2</sup>)

Area	Priority 1	Priority 2	Total
AREA I - ARAGUATINS	1,308.8	368.5	1,677.3 (34.5%)
AREA II - AUGUSTINÓPOLIS	838.0	148.8	986.8(45.9%)
AREA III-TOCANTINOPOLIS	980.0	1,191.3	2,171.3(32.1%)
AREA IV - XAMBIOA	2,643.3	208.0	2,851.3(51.6%)
AREA V - ARAGUAINA	3,176.3	5,050.5	8,226.8(46.3%)
Total	8,946.4	6,967.1	15,913.5(42.9%)

(Does it notice??? ?indicam the percentages of the areas

The possible areas for the application of this alternative account 16.000 km<sup>2</sup>. The areas of priority 1 can be considered as the place with less agricultural inputs.

## (2) Programs of the Promotion of the Agriculture Economy

In the Study Area, being considered high potentiality area for the gain cultivation, it is aimed at to introduce an agronomic practice that it integrates the agriculture and livestock. The priority grains for the cultivation in this alternative are the soybean and the corn.

The introduction strategies are the following ones;

1. To install the models farming practices of this alternative. For the location of the model, on where shows great demonstrative effects are disables.
2. To create a Municipal Agricultural Committee that it makes possible the introduction of the diversification of activities, leaning on the contracts of cultivation tertialized and giving necessary information to begin the activities.
3. To establish the cultivation technologies, to have high competitiveness of the produced products.
4. To enable the necessary infrastructures, maximizing the investments of private capital, through the lines of credits specified previously.

## (3) Programs of Promotion of the Livestock

Being to livestock the activity most important of the area, to promote the intensive activities to account the improvement of the regional Economies.

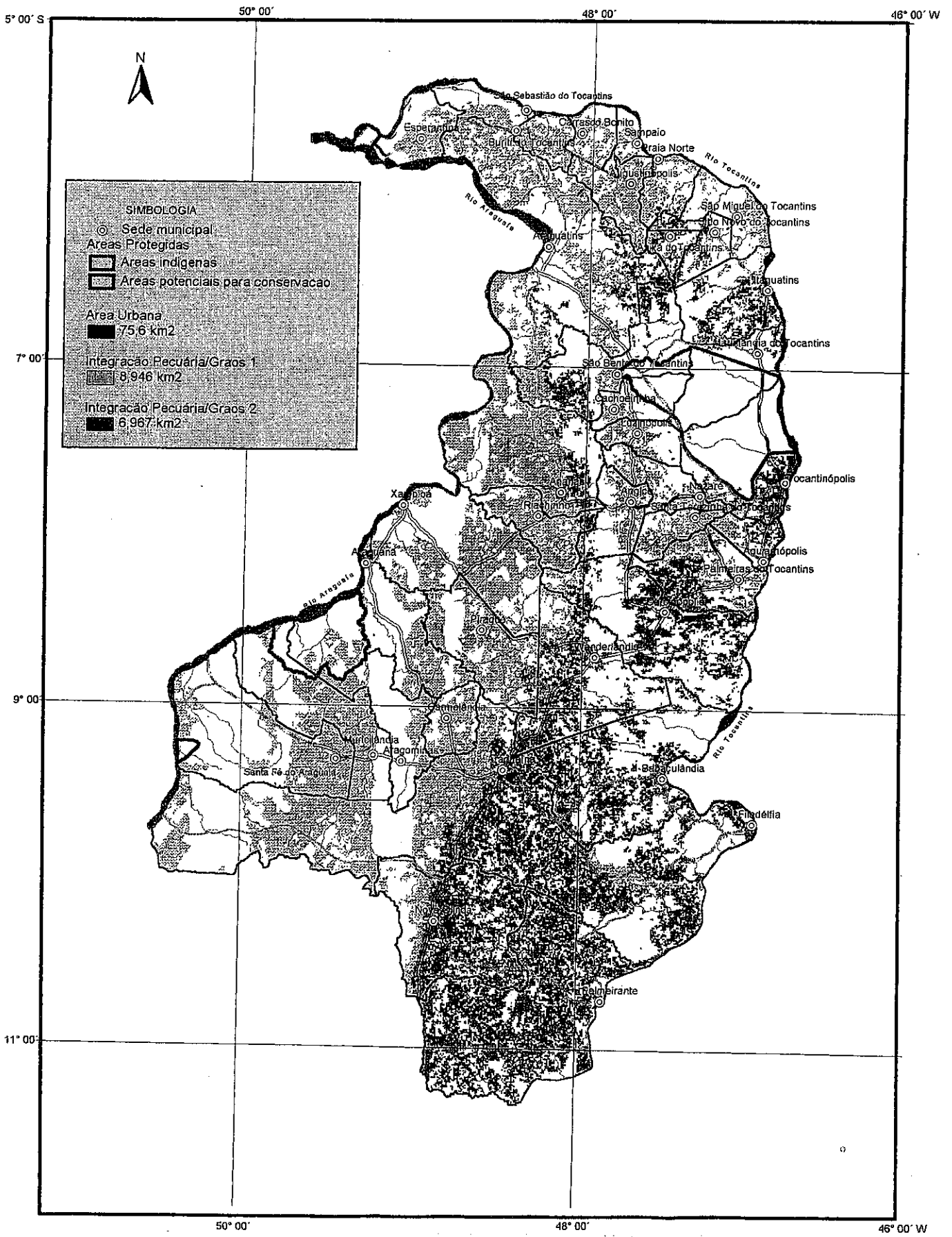


Fig. 20.3.1: Objective Area for the Alternative of Diversification of Integrated Agriculture and Livestock/Complex System of Agriculture and Livestock

#### (4) Programs of Improvement of the Public Infrastructure

##### Transport Facility

As the implementation of the transport infrastructure has great influence in the success of the alternatives, inside of the programs of medium and long period, it should settle down the programs of improvement of the infrastructure system. The infrastructure that should be establish in the programs are as follows:

- (1) Facility of Embarkation to the Rail Transport
- (2) Terminal silos of Storage (Drying and Stockpiling)
- (3) Improvements of the Highways of Drainage

##### Storage Facility

The structuring of the commercialization system is an important factor to increase the competitiveness of the production, especially in the Storage Facility. It is necessary t establish the plan of storage infrastructure.

#### (5) Priority areas of Development

The conditions of the cattle farmer that will be done contract with the grain farmer for the tartialized cultivation are the following ones;

- (1) In order to mitigate the risk of dray damage caused Veranico in a rainy season, it is recommended to avoid the sandy lands that have low capacity of humidity contention for the cultivation. Also, it is recommended to take consideration of the EMBRAPA 's recommendation of the agricultural practice for the Veranico damage, if it obrigate to do contract in a sandy land.
- (2) Necessary characteristics of a land, so that it obtains a good use in the cultivation: to possess a smaller steepness than 10%, close to an area of degraded pasture, and that it guarantees an area of 150 there is annually. After the third year, the producing of grains, will have a constancy of 450 there is of area of production of grains. In this case, the 1ºano are planted and cultivated, and in the 2nd and 3rd year, cultivation without the planting.
- (3) A lot of areas exist in the roundness with these plane characteristics, if it is possible to guarantee more than 1000 there are of these areas of degraded pastures, they will facilitate the companies build her/it silos and grocery stores due to scale.
- (4) To increase the production of grains, they should be chosen lands in places of high altitude, avoiding humid and low places.
- (5) In terms of transport of agricultural implements and grains, it is viable to choose a close land to the paved highways.
- (6) Places that can make the maintenance of machines and agricultural implements and of facilities.

These are the conditions of the pasture areas mentioned by the producing of grains, being enough to find cattle farmers to have these characteristics in its land with interest in the recovery of its pasture through implantation of the culture rotation.

In the area of the study, there are not many places with great plane areas; therefore we can mention the places that correspond these characteristics:

- The area between Ananas and Angico;
- Proximities of Carmolândia;
- The area of Aragominas, Muricilândia and Santa Fé of Araguaia.

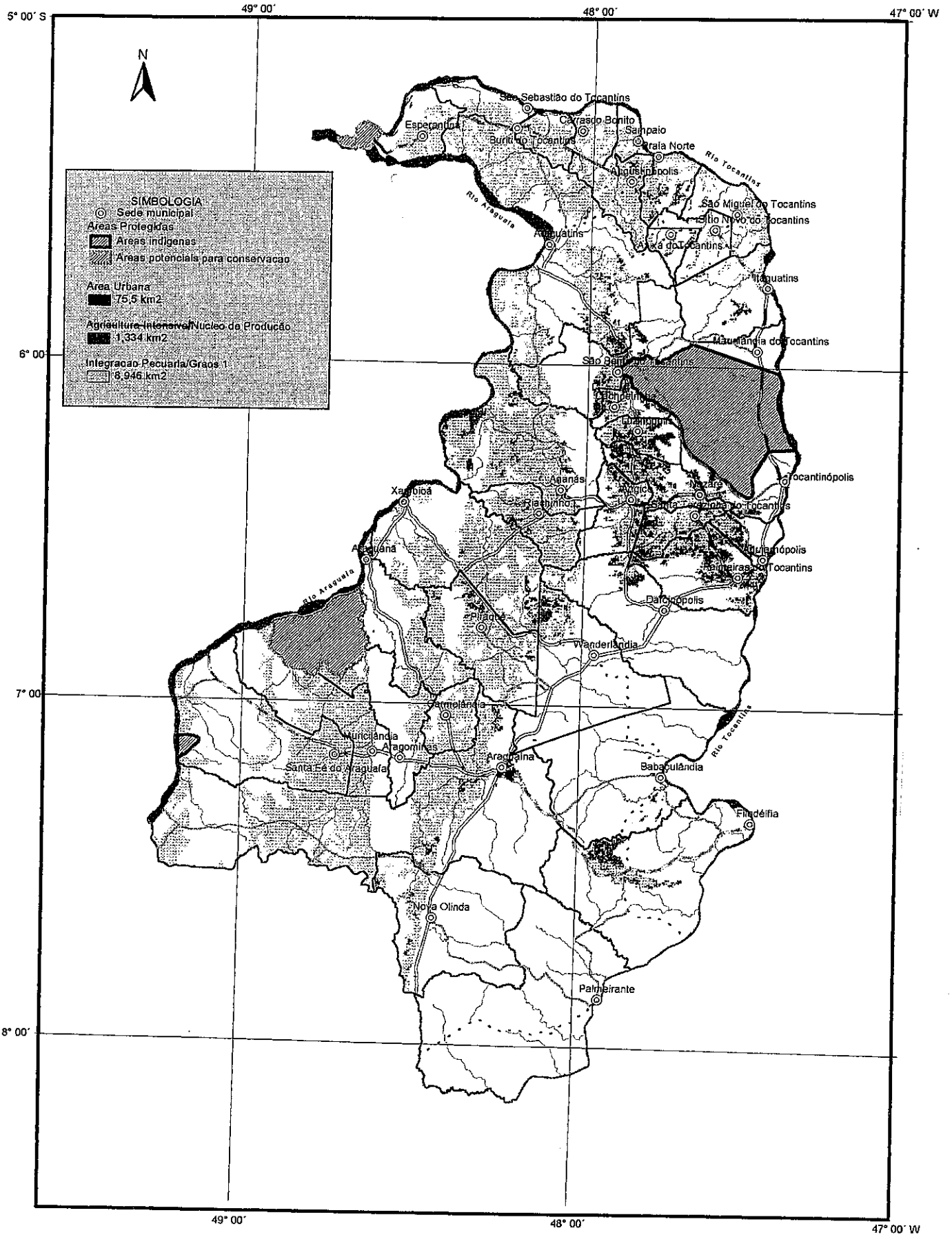


Fig. 20.4.1: Potential areas of Introduction of Intensive Agriculture



### (1) Selection of Associations and Groups for Implementation of Model

Selection of groups and associations that are framed to the models, are an important factor for the success of the project. It will be seen some necessary requirement for it made a careful selection of these groups.

- In groups, it doesn't matter new or existent, those should be formed by own will of the group;
- A leader that has popularity and leadership;
- To have farmers in the group, with technical experiences for the aid of the other members.

### (2) Establishment of Supporting Structures for Groups and Associations

To support activities of those groups and the associations, in a formulation of the organization, following point will be considered ;

- RURALTINS will play principal roles to organize and implement those model case. The support of SEPRO, NATURATINS and IBAMA should also be taken into consideration.
- To learn agricultural practice, use the data base which contains innovative farmer's experiences and previous experiences in this state regarding to models of agricultural invigoration.
- To obtain information from institutions, companies, groups, universities, such as EMBRAPA, UNTINS and making the maximum of possible use of information.

### (3) Agronomic Technical Supports for the Groups and Associations

After choice of the model, farmers and selection of support group, they should be studied the items below to begin the orientation of the agricultural administration:

- The administration form that should be considered the ideas of the group;
- The support group should give the orientation with an easy vocabulary to explain about the financing system which is complicated to farmers and the penalties of IBAMA;
- According to the choices of cultivation and farming practice, support group must show previous data and information from companies and institutions to the group. The final decision should prevail the will of the group;
- As for using machines, implements and facilities, purchase of materials, and commercialization, the support group should present the data for innovation and development, give lectures of experienced farmers. However the final decision should be made by the group.
- Through these conditions, important thing is to make members of the group to understand that they are the main elements of this activity.

### (4) Transfers of Models for Other Areas

Once implanted and stabilized the model and the group in the movement, the support group should make a work revision. Feed back obtained experiences after organize to use in the following model. Repeating these cycles, it will account for an innovative form of technique and quality of united production.

### (3) Priority areas for the Development

The areas of importance for the production model in community are presented in the map 832-1. These are the areas proposed for the choice.

### Grain Production Model

The municipal of Filadelfia, Nova Olinda and Palmeirante, are proposed as priority areas, for the following reasons:

- The sandy soil which is inappropriate to growing cattle, and those areas depend on self sufficiency agricultural and novilhas creation;
- The farmers of the area are interested in the production of grains;
- When the system of rotation of cultures enters in the middle of the activity, those places are close to Araguaína where necessary facilities should be built for the commercialization of grains. It will be easy to access to use.

### Vegetable Production Model

Araguaína and its environs are proposed as propriety areas of the model, for the following reasons:

- Being close to the industrial compound which includes tomato processing factory and starch factory of caccava, It is possible to supply them as ingredients.
- Being close to the consumption place;
- Obtain information of producing tomato in Aragominas, and experiences of associations.

### Fruit Production Model

Southeastern region of extreme northern part is proposed for priority area by the following reasons:

- The municipal of Wanderlândia and Darcinópolis possess sandy soil and already having the plantations of coconuts.
- Plenty of inclination in municipal Angico and Nazare. In Angico it already plants oranges, and in Nazareth, it is already in process the cookie production with derived of fruits;
- The movement of association of apiculture is very strong. In the future, it is must be considered collaboration management between fruits and bee;
- Thinking about distribution of production, the location is easy to access for Estrait.

### Milk Production Model

The nucleus of municipal, Augustinópolis is proposed for priority area, for the following reasons:

- Existence of a dairy processing plant in Augustinópolis, built in 1996, and there are great number of dairy farmers.
- In Itaguatins, groups that produce within community using the financing of PRODIVINO exist, then can use the experiences of this group.
- Thinking about distribution of production, the location is easy to access for Imperatriz.

### Buffalos Production Model

The priority area for buffalos production model are neighboring municipal districts of Araguatins in extreme northern part, and Xambioá, Nova Olinda and Filadelfia in northern part. The reasons are the following ones:

- In Araguatins, EAFA motivates the project of united project of Buffalos, and can give orientation for the interested farmers;
- In municipal Nova Olinda and Filadelfia, they place close to Brasilândia do Tocantins where has dairy product plant that understands the high commercial value of the milk of Buffalo, buying with higher price of 40% of the cattle milk.

## Swine Production associated with the Grain & Cassava Cultivation

Swine production can be introduced in anywhere in the areas. They can be recommended at the areas of Araguatins, Nova Olinda, and Filadelfia, where they exist abundance of cassava productions and grains. Especially in Araguatins, EABA support technically to grow swine.

### 5. Environmental Conservation

The area is of high potential due to abundance of precipitation resources and temperature, but in the reality it presents the deteriorations of the natural resources. For the activity of conservation of the environment and the stimulation of the economy in the long period, the use of the potentiality of forest resources is an indispensable factor. The potentiality of the earth for the forest resource varies depending on the conditions of the earth and climate, being an area of high potential, but on the other side areas that should be taken the conservation measures exist so that in the future it doesn't swallow the problems of the strong degradation of natural resources.

In this alternative the following strategies will be promoted in the context of wide conservation, including both activities: of conservation and of production.

- Incentives to forestation in potential areas
- Incentives to reforestation in necessary areas of conservation
- Incentives to Silvicultura
- Conservation of forest resources from fires

Forestation for production purpose, in economical terms, it should be done with trees of commercial value. In the areas of conservation for environment, it should be planted species native or fruitful. In the activity Silvicultura, is planted trees in pastures with inclination, seeking the improvement and the united use of the land, for the obtaining of an extra profit.

The reforestation in the conservation areas is made with these objectives, and the areas objects are the places that it has strong steepness, suitable areas for ZEE, and also in the suitable areas for the conservation laws. As this project accounts not only the proprietors, but the community in general, the promotion should be made with the help of public entities.

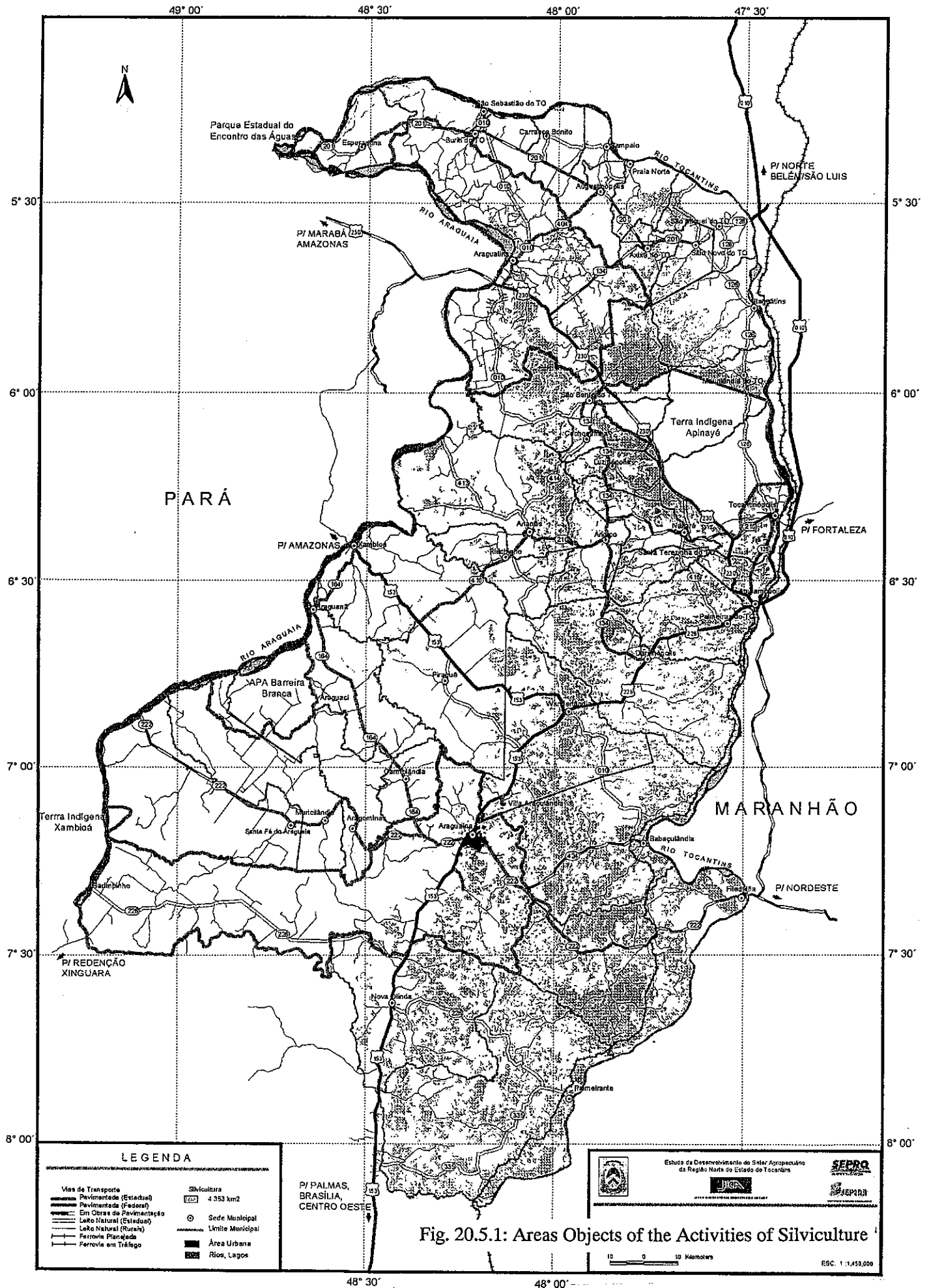
#### (1) Objective Areas

The objective areas of the project consists in Fig. 20.5.1, as the following :

Possible area for implantation (km <sup>2</sup> )				
Area	Silviculture activities	Silvicultura	Areas of risks	Areas of Conservation
AREA I - ARAGUATINS	817.0	20.0	928.0	1,082.5
AREA II - AUGUSTINOPOLIS	201.5	234.0	131.3	555.3
AREA III-TOCANTINOPOLIS	1,598.0	91.8	1,508.5	518.0
AREA IV - XAMBIOA	280.5	294.3	731.3	1,111.8
AREA V - ARAGUAINA	3,188.0	1,676.5	812.5	3,446.3
Total	6,085.0	2,316.5	4,111.5	6,713.8

(It notices, Areas of Legal Reservation will be dear later)

The objective area is indicated in the Table above. They are not suitable for the agricultural production and stock raising, but possible places for the implantation of the forest activity. The areas objects for the activity Silvicultura, should have as characteristic a strong steepness. These areas mostly locate in the margins of the river Araguaia. The risky areas are considered by SEPLAN/ZEE. The conservation areas, they should have the strongest steepness than that of area of Silvicultura.



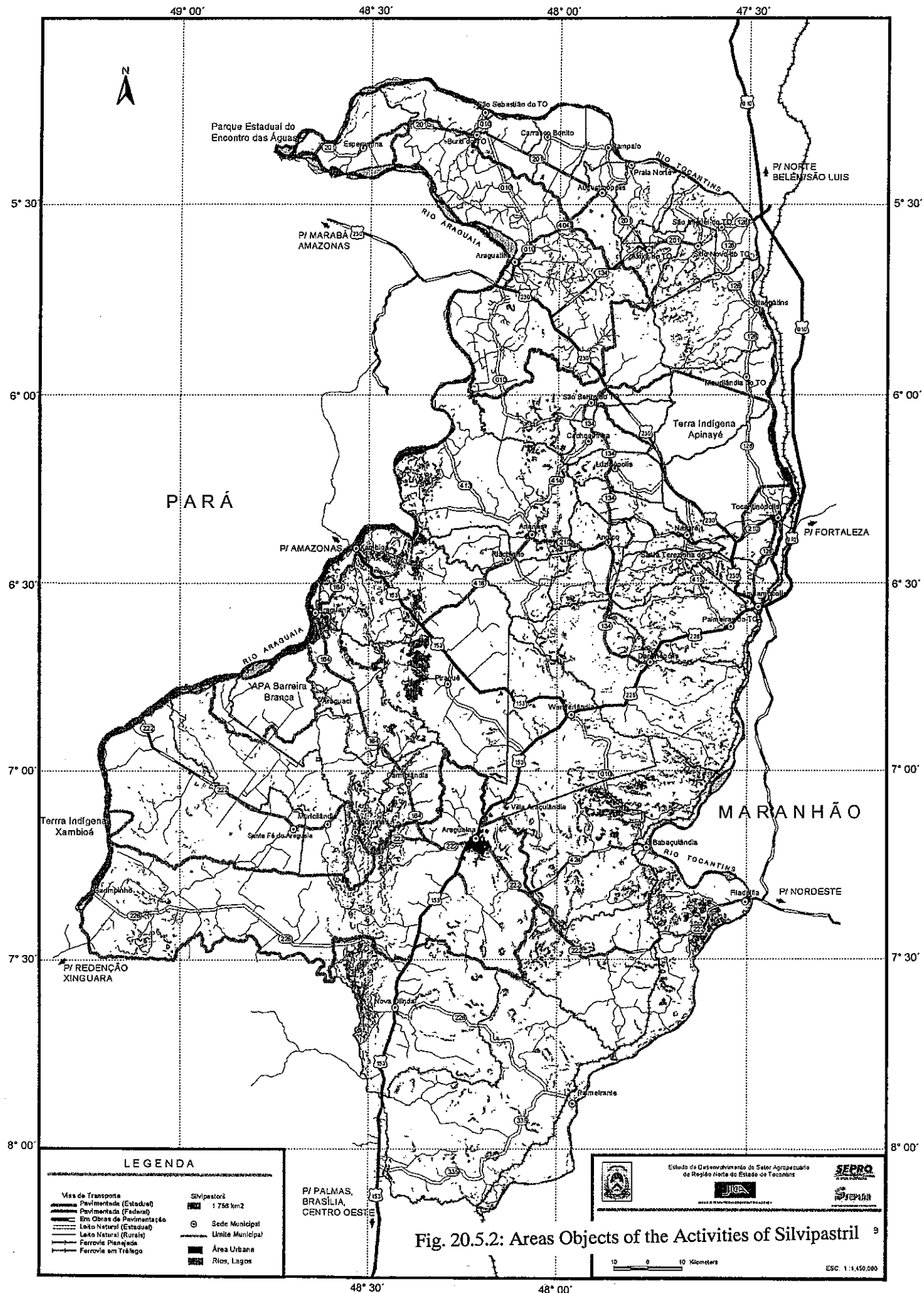
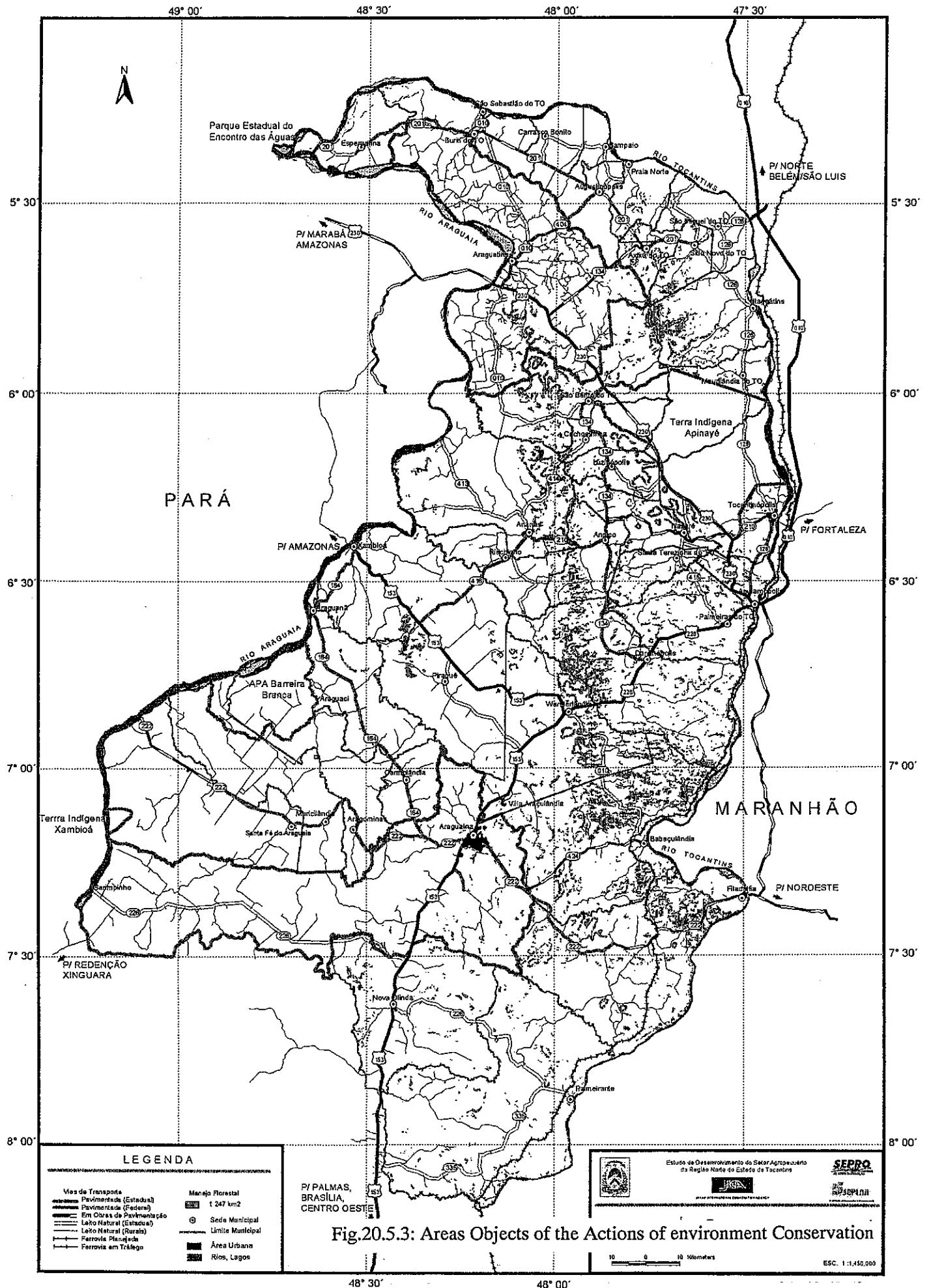


Fig. 20.5.2: Areas Objects of the Activities of Silvipastril



## (2) Strategies of Introduction

### Alternatives of Promotion of Forestry

The promotion of the Forestry should be made with financings for the producer, promoting support as the distribution of seedlings, technical support and to obtain data of the market.

- (1) To establish the supply of seedlings;
- (2) Help techniques;
- (3) Obtaining of data of the market;
- (4) To define the margin of the financing of the activity of development of the Forestry.

According to supply seedlings for the small producer, it should be done gratuitously, and sold for the great farmers. To provide free seedlings for long term is difficult, it should be distributed until that the activity enters in the right track.

As for technical support, cultivation methods and method for obtaining the license to cut with information of the market. To define the financing margin, they should be studied carefully so that the producer gets to administer without difficulties, and so that the financing doesn't become the main factor of the activity. The summary of the items is the following :

### Establishment systems of seedlings distribution

Strengthening the system of current distribution of seedlings, establishing distribution places at each municipal and towns. The size of each establishment should be calculated by the potential of natural resources, area, probability of changes of each municipal district. In these establishments, it should have seedlings of trees not only for commercial value but also for conservation areas.

To establishments for distribution of seedlings, they should have the following requirements:

- Nurseries of seedlings;
- Facility to produce soil for seedling's nursery;
- Irrigation;
- Places for packing seedling;
- Material, equipment for the transport of seedlings;
- Management facility.

### Establishment of technical supports

The technical supports should be made through the establishments of distribution of seedlings, and the forms of the technical support should be in the following way:

- To inform the varieties for the interested farmers;
- Planting methods and cares;
- Methods to obtain the cut license;
- Measures for forest fire.

The varieties of seedlings should be chosen based on map of the potential of forest resources, verifying the aptitude and objective of each species.

### Referring information the commercialization and of Market

The information regarding the market is important, obtaining information on wood in the market, always verifying its viability, and to publish these results.

## Margin of Credit to Promote the Activities of Forestry

The forestry activity is an activity of slow return so that without the government's aid, it is very difficult to accomplish. The financing interests the long term will very large amount so that it should be well studied the definition of the interest rates.

### 6 Invigoration of the activities of research and technical supports

For the development of the farming in this study area, it is necessary to transfer of technical methods of production lacks in the farmers, and also in the part of creation of animals, and for this, the part of researches and support they are important factors, but nowadays, this system is still insufficient, the technological teaching for the farmers is not being made in a correct way.

The subject of researches and support invigoration, is difficult to solve only in the study area, being a general subject for the State, and these problems, they were already debated in Master Plan, and they were lifted up ideas equal the improvement, and some parts are already in course process.

#### (1) Programs for Invigoration of the human resources

For the support invigoration and researches, the most important is the people recruitment. In this phase of the project, it will be made challenge of this factor of Master Plan, revising and increasing new ideas.

## Creation of agricultural schools in northern part of the State (Araguaina)

Extreme northern area possesses an agricultural school in Araguatins and influencing agricultural technological development of the area. Northern part that possesses the largest livestock area in the State, doesn't possess a n agricultural school and that cause delaying agricultural development.

## Promote specialist: staff of department of produce, RURALTINS

Master Plan suggests building a center for researches in this State and training specialist from RURALTINS. But with the difficulty of the creation of this center and now with the creation of a headquarters of EMBRAPA in Palmas, the plan should be changed so that it is made these specialists' promotion and also demonstrative projects tend as a nucleus this headquarters of EMBRAPA.

#### (2) Invigoration of the Agricultural Extension

In the State of Tocantins, prevailing them practices agronomic traditional of growing bovine concentrated in Norole and of the pastures in extensive form, the farmers are feeling needs to innovate them practice farmings that are more lucrative to improve economies. As well as the activities of livestock that are main economical activities in the area, it also exists needs to innovate the activities. Feeling the needs to innovate the old technologies, some farmers began the improvements of the races created in the farm through hybridization with the European races, and improvements of the pastures. But those introductions of the technological innovations are limited only to the producing of large and medium scale farmers.

To introduce the new technologies proposed in this study, such as the diversifications of the activities of farming introduced the grain cultures, intensive cultures as of green vegetables and fruits, and the activities of forestry, needs exist of strengthening the activities of agricultural extension. To diffuse the new technologies, doing demonstrations to the farmers, and should be shown the possibilities of those agronomic activities and improvements of the economies of farmers.

In this study, we proposes the following alternatives to strengthen the agricultural extension.

To use, train the specialists through demonstrations. The methodologies are the following;



- Gathering information of farmers and associations that are applying the new technologies through technicians of RURALTINS, ADAPEC, and NATURATINS.
- Making a list of the specialists who live inside of this study area, such as: retired of EMBRAPA, universities and technological schools, or the specialists of private companies.
- This collection of data accomplished through the technicians of RURALITINS and other organizations collaborate with them. Those collected information can get through RURALTINS information network.
- The demonstrative projects will be researched evaluating their effects and the strategies carefully used. The selected projects will be financed by the budget of the State making possible their accomplishment.
- Demonstrations will be executed by EMBRAPA, UNITINS, and other private and public entities with technical support.
- Demonstrations must operated by the selected specialists who are nominated by governor.