INTERNATIONAL TECHNICAL COOPERATION PROJECT

PROJECT TITLE:

“SOCIAL INCLUSION BY ENCOURAGING THE PRODUCTION OF CULTURES FOR BIOENERGY GENERATION IN THE WEST REGION OF THE STATE OF RIO GRANDE DO NORTE”

REPORT: 16/09/2008 – 09/10/2008

Study: "SOCIAL INCLUSION BY ENCOURAGEMENT TO THE PRODUCTION OF CULTURES FOR BIOENERGY GENERATION IN THE WEST REGION OF THE STATE OF RIO GRANDE DO NORTE."

PROJECT JUSTIFICATION

The development of agricultural production aiming biodiesel production in Brazil has its essence in two vectors, being one of them the commodities agricultural production, in large properties, and the other the production of oleaginous plants for biodiesel in small scale. The Brazilian Government has been executing the social inclusion program, highlighting the Social Fuel Stamp Program.

On another hand, JICA, as executor of the Japanese technical cooperation, has as priorities the environment conservation and diminishing inequality (struggle against poverty).

Therefore, it becomes necessary to verify the possibility of technical cooperation in the biofuel field aiming to strengthen small scale agriculture, environment conservation and the struggle against poverty.

PROJECT OBJECTIVE

The project objective was based on verifying the agricultural management situation of small scale agriculturists, elements of the project goal, as well as, planning the cooperation contents from the professional point of view starting with the results obtained in the "in loco" research in cooperation with the official mission. For such, there will be necessary to establish, in the meanwhile, models for oleaginous species production for applicable and adequate generation of biodiesel to sustainable agriculture of small scale agriculturists. With the implementation of the project is expected to obtain as result the increasing and stability of income of these small scale agriculturists.

According to the Reference Term attached to the contract signed with JICA, the objectives of this work are:

Study, previous to the official mission arrival (prediction: 15 to 25/09)

- To compile the data obtained on the preliminary study first mission
- Research about the agricultural management situation of small scale agriculturists to be served by the cooperation project.

1-1. Analysis of knowledge and techniques currently available to grow oleaginous plants for biodiesel production.

1-2. Preparation of preliminary models of oleaginous species for biodiesel to each region considering regional conditions.

2-1. Selection of model-producers for demonstration activities.

2-2. Implementation of demonstration on the selected model-producers' properties.

2-3. Analysis of the demonstration activities results.

2-4. Preparation of advices about research, extension and activities for strengthening the organization of agriculturists.

3-1. Review of preliminary models of sustainable production system with oleaginous species for biodiesel production.
3-2. Presentation of the results of the demonstration and advices to relevant institutions.
3-3. Performing of trainings and seminars in order to share the results with counterparts, including national or foreigners participants.

ACCOMPLISHED SCHEDULE

The established schedule was accomplished integrally.

DATE	Subject
15/09/08 (Monday)	Relocating from Campo Grande to Brasília
16/09/08 (Tuesday)	Meeting at JICA with Mr. Takizawa and Mr. Zara. Relocating from Brasília to Natal.
17/09/08 (Wednesday)	Meeting with Mr. Leonel from SEPLAN, relocating to SAPE. Obtainning pieces of information with Mr. Eribaldo Vasconcelos (Secretary of Agriculture, Cattle Bredding and Fishing).
18/09/08 (Thursday)	Data collecting with Mrs. Jadna and Mrs. Magda from SAPE. Visit to EMATER-Natal. Mrs. Leonice took charge of communicating the unity in Pau dos Ferros (Mrs. Sônia), Mossoró (Mr. Roverval), Alexandria (Mr. Mauro) and Lucrécia (Adeilton) of the preceding visits and of the japanese mission in the week of the 30th of september.
19/09/08 (Friday)	Relocating to Apodi with Mr. Tarcisio (Assistant Secretary of SAPE) to follow Technological Circuit promoted by EMATER and EMPARN.
20/09/08 (Saturday)	Reconnaissance of the areas of the project: Proximities of Umarizal. Stay in Umarizal.
21/09/08 (Sunday)	Reconnaissance of the areas of the project: Martins, Lucrécia, Alexandria, Pau dos Ferros and Apodi. Return to Mossoró. Meeting with Mr. Renato (UFERSA) and Suely (UERN)
22/09/08 (Monday)	Meeting with a SAPE's employee at Mossoró and relocation in a governmental vehicle for technical visits: Emater-Mossoró , visit to COOPERA (Mr. Antônio F. Dantas and Mr. Sandro), visit to EMATER-Apodi
23/09/08 (Tuesday)	Visit to EMATER-Apodi (Mr. José Antônio). Mr. José has escorted the visits to the agriculturists Mr. Francisco Paulo Targino from Soledade Community and Mr. Raimundo M. De Oliveira from Milagres Settlement. Relocation to Pau dos Ferros.
24/09/08 (Wednesday)	Visit to EMATER-Pau dos Ferros. Mrs. Sônia from EMATER escorted the visits to the agriculturists Mr. Domingos A. Soares (médium scale agriculturist) from the town of Marcelino Vieira, Mr. Antônio de Pádua Medeiros (beekeeper).

25/09/08 (Thursday)	Visits: Mrs. Sônia presents the agriculturists Mr. Valdemar F. De Sena, from the municipal district of Rafael Fernandes. Sônia escorts as far as EMATER-Alexandria, having a conference with agriculturists Maurício Mariano, Almir Rogerio F. Souza, Francisco G. Sobrinho and Alfredo F. Da Silva. After lunch, relocation to Lucrécia, meeting with the technician Adeilton. Conference with agriculturists José Quejivaldo de Moraes, Antonio Jessildo de Oliveira and Agostinho Evaristo da Cunha. Visit to Mr. Quejivaldo's property. Return to Natal.
26/09/08 (Friday)	Meeting at SEPLAN with the members of the JICA Mission, Mr. Zara, Mr. Leonel and Mr. Tarcísio with posterior presence of Senator Garibaldi, Mr. Jean Paul (Secretary of Energy – Rio Grande do Norte), and Mr. Ulysses (Petrobrás). At 4 p.m. started the conference of Clarification of the Project with participation of the Japanese Mission, Mr. Zara, Mr. Leonel, Mr. Domingos Savioand Mr. Emanuel (Emater), Head of the Cabinet, Mr. Marcone (EMPARN), Mr. Tarcísio, Mr. Jean Paul (Internationals Secret.) and Mr. Ulysses (coordinator of Biodiesel Project NE). It's established that on September 30th the counterparts shall meet at the Secretary to discuss the project.
27/09/08 (Saturday)	Flight over the project region lasting 1h our and 40 min from Natal to Mossoró. Visit to UERN to discuss the Project. Those who attended: Mr. Renato Silva de Castro (UFERSA), Mrs. Suely Souza Leal de Castro(UERN), Ms. Kelen C. N. Silva (EMATER-Mossoró), Mr. Marcos Romualdo Barbosa (EMATER-Caraúbas), Mr. José Roberval de Lima (EMATER-Mossoró), Mr. Francisco Xavier Ferreira (EMATER-Mossoró), Carlos A. Lopez Ruiz (UERN), Mr. José Domingues F. Neto (UFERSA), Mr. Francisco Jeová de Oliveira (EMATER-RN), Mr. Francisco M. Silva (UFERSA), Mr. Marcos A. Figueira (Vice-Chancellor of UFERSA), Mrs. Olinda F. A. C. Lins (EMATER-Mossoró), Mr. Alberto H.S.Costa (EMATER-Felipe Guerra), Mrs. Sônia M. silva Cabral (EMATER-Pau dos Ferros), Mr.Ricardo Galvão (UFERSA), Mr. Luiz Fabrício Zara (UnB), Mr. Lauro Gurgel de Brito (Head of Cabinet of UERN), Mr. Paulo A. Linhares (District Attorney Office of UERN), Mr. Milton Marques de Medeiros (Chancellor of UERN) and the Japanese Mission. During the meeting, the lack of communication became clear and the project lidership will pass from Mr. Roberval to another yet to be defined. Meeting with EMATER for evaluation of a map of the region of sunflower growing, as well as evaluate the technicians' capacity and the site of implementation of the unity. After lunch, visit to UFERSA with guiding of Professor Francisco. Visit to UERN with guiding of Professor Suely.
28/09/08 (Sunday)	Visit to WG Farm, which produces melons and papayas for export. It has been observed that many small scale agriculturists seek work in this field to take advantage of the between- harvest season and insure an income. Visit to the area with touristic potential on Mossoró Coast.

29/09/08 (Monday)	Visit to EMPARN (Apodi) to evaluate the experimental field and the developed research, as well as, evaluate the conditions of sunflower production. Receive the inform that the Project Coordinator was defined as MARCOS ROMUALDO BARBOSA from EMATER - Caraúbas. Visit to COOPERA. Visit to agriculturists Francisco Chagas (Town of Felipe Guerra), Mr. Alzimar from the Settlement Nova descoberta and Mr. Jausair. Relocation to Pau dos Ferros.
30/09/08 (Tuesday)	Meeting technicians of Emater from the proximities of Pau dos Ferros, having as Modelator Mrs. Sônia. Visit to agriculturists Mr. José Souza, Mrs. Dilma with 100 people in the family, Mr. Antonio N. Da Silva (Town of Francisco Dantas), Mr. Assis, Mr. Benedito and Mr. Domingos. The extentionist from EMATER, Marcos Romualdo, initiates the escorting from this date. At the end of the afternoon there was a meeting to discuss the project. Relocation to Martins.
01/10/08 (Wednesday)	Visits to the properties of Alexandria: Mr. Antônio from Riacho do Meio Community, Mr. Gregório Gonçalves da Silva (Tobacco Producer), Mr. Ivaldo Melo from Poltros Mortos Region, Mr. Francisco Deusamar de Oliveira, Mr. Raimundo (works for the boss), Mr. Helio Paiva (Glória Small Farm), Mr. João Batista (Juazeirinho) model-agriculturist for sunflower production in the region of Alexandria, Mr. Antônio Justino (Quexaba region), Mr. José de anchieta (mason), Mr. Geraldo, Mr. Alvamario Soriano de Paiva (irrigation in the Small Farm Riachão), Mr. Antonio Gadilho ("meeiro" – agricultural worker who shares the crops equally with the owner of the land), Mr. Francisco Arnold de Oliveira (cheese producer).
02/10/08 (Thursday)	Visit to EMATER Umarizal. Those who attended: Mr. Rogério (Umarizal Regional Manager), Paulo Sérgio (Agronomist from Patu), Mr. Derban (Messias Targino), Mr. Edimilson (Technician Janduí), Zootechnician from UFRN, Agricultural Technician from Olho dagua dos Borges, Mr. Adeilton (Lucrécia), Mr. César (Umarizal) and Mr. Gutemberg (Umarizal). It's cogitated that the extractor unities will be concentrated in the region of Umarizal and Pau dos Ferros, being coordinated through EMATER-Mossoró. Visits to agriculturists: Mr. Ricardo (Small Farm Araújo), Mr. Quejivaldo (model-agriculturist for sunflower growing in Lucrécia), Mr. Jessivaldo (rapadura – dried sugarcane juice in brick form - producer), Exum Community couple, Mr. Ilton (Serrote do leito). Relocation to Mossoró.
03/10/08 (Friday)	Relocation to Natal. Meeting for Minute writing.
04/10/08 (Saturday)	Mission's private meeting
05/10/08 (Sunday)	Mission's private meeting
06/10/08 (Monday)	Technical meeting at SAPE with representatives of the State's Government (SEPLAN, SAPE), EMPARN, EMATER and the Japanese mission. Definition of extraction unities for Pau dos Ferros e Umarizal.
07/10/08 (Tuesday)	Technical meeting at SAPE with representatives of the State's Government (SEPLAN, SAPE), EMPARN, EMATER and the Japanese mission.

08/10/08 (Wednesday)	Meeting including the presence of the Governor of Rio Grande do Norte and signing of the Meeting Minute. Relocation to Brasília.
09/10/08 (Thursday)	Visit to JICA in Brasília, Embassy of Japan and ABC for notification of the project definitions. Relocation to Campo Grande.

The following items were researched objectively:

(1) CULTIVATED PRODUCTS

Based on data from IBGE, EMATER and CONAB the farming area at the State of Rio Grande do Norte (2004 and 2005) has been kept around 280000 hectares, being that the subsistence cultures such as corn and beans were predominant and, adding, it would reach a number higher than 80% of the total of farming areas. Besides these cultures, cotton, manioc, rice, sugarcane has been produced and, currently castor beans and sunflower has taken space in a experimental form for biodiesel production. In a general way, the association of local characteristics such as soil, climate and other factors influence directly on agricultural production and on the socio-economic development of the region.

(2) QUANTITY PRODUCED BY PRODUCT

In a general way, the productivity in Rio Grande do Norte is quite inferior when compared with the national index. According to data from LSPA (2008), the main subsistence product, corn, has been 729 kg/ha in 2008 and 550 kg/ha in 2007. But the productivity of beans was 469 kg/ha in 2008 and 387 kg/ha in 2007. Another source of income, cotton, was at about 761 kg/ha in 2008. However, the results obtained with the “in loco” research has shown that the productivity varies according to each region and the agriculturists’ conditions. Taking beans as a base, in the region of Alexandria the productivity was 240 kg/ha, while another agriculturist has reached 700 kg/ha, in the same region. In Lucrécia, however, the agriculturist Queijivaldo has hot a productivity of 2400 kg/ha using the same irrigation system. As for sunflower productivity, it has also varied a lot being that the minimum has been obtained on data from COOPERA, in Apodi, where the average productivity was of 300 kg/ha. In sequence, Jessivaldo (Lucrécia) with 500 kg/ha, Francisco C. Costa (Municipal district of Felipe Guerra) with 600 kg/ha, Francisco Targino (Apodi- Soledade Community) with 667 kg/ha and João Batista (Alexandria) with 1000 kg/ha can be mentioned. On Mr. Queijivaldo’s case, who used the irrigation system, it was reached a productivity of 1300 kg/ha.

(3) SITUATION OF LAND USE INCLUDING NON-CULTIVATED AREAS

The possession of land, in the Northeast region, in 1996, according to dada from INCRA/FAO (2000), approximately 65% of small scale agriculturists were land owners (occupying about 92% of the area), 6.9% tenants(1% of the area), 8.4% partners (1.6% of the area) and 19.3% settlers (5.6% of the area). Most small scale agriculturists from the region possess a land area smaller than enough to generate excess of production for commercialization. Most small

scale agricultural establishments characterized itself for being of a small size. Since the agriculture is little intensive and technified among these producers, the access to land becomes determinant for production and income. Among the accomplished interviews, most agriculturists have informed that they possessed non-cultivated areas which vary from 10 to 90% due to geographic conditions, as well as, narrowed by the available resource for farming. Some cases like Mrs. Dilma's, more than 50% of the area is destined to woods where it has been observed that, on a area of 75 ha, 20 to 30 ha are used for corn, beans sorghum, watermelon and sesame farming, exclusively for consumption.

When the agriculturist owns 100 ha, usually 10% of the area is used for subsistence culture and the rest 90% are subdivided in smaller areas for cattle breeding, once that they do not possess resources to invest in agricultural expansion. In the Apodi region, it's been said that a 100 ha property would be capable of providing for only one family, while that, in settlement areas, a 500 ha area would be enough to take in 25 families, each receiving a area of 20 ha. Beans are one of the main cultures of the region for subsistence and it is also used to integrate the rotation of cultures, breaking the cycle of monoculture. In the town of Apodi there are 22 settlements (data from Emater) that receive benefits such as: House, water and electricity, basic provisions, loan (PRONAF), participation on the Direct Purchase Program, Harvest-Insurance, among others. The performance of the settlements varies according to the local administrative system, physical characteristics and, above all, to the dedication of the small scale agriculturists.

(4) PLANTING SEASON

According to data from CONAB, the beginning of rain season at the State of Rio Grande do Norte occurs in mid February and it extends up till May, excepting in some regions where the first rains start in January where planting is commenced. However, pluviometric predictions are hard to be taken being that, depending on the year, the volume of rain are under average, affecting directly the agricultural productivity index.

As for sunflower growing, in Lucrécia, planting was done in March 20th and in Apodi on March 18th, 2008. Harvest happened in June and August, respectively. For sunflower farming 150,000 seeds were used for cultivating 3.3 ha. In Mr. Antônio Gonzaga Lima's (Apodi) case, 11.4 kg of seeds have been used for cultivating 3 ha. According to information from some agriculturists and from Coopera, the Cultivar CATISSOL hasn't been ideal for the region, being advised hybrids like Helio and Down.

(5) WAYS FOR OBTAINING SEEDS

The State Government, along with EMATER/RN, distributes annually seeds of beans, corn, sorghum, among others, serving towns zoned for such cultivation. In the State, it has also been established the Communitary Seeds Bank with th intent to make the producers' self-sufficiency possible avoiding dependence on the State government for future crops. The seeds of oleaginous plants are being

distributed by Petrobrás and COOPERA and sunflower seeds from Petrobrás are hybrids with high potential of productivity, while that, the seeds distributed by COOPERA are from the variety CATISSOL. Petrobrás distributes free of charge but, in case it's acquired by large producers, the package would cost R$270,00 while that Catissol would cost R$60,00.

(6) USE OF CHEMICAL AND ORGANIC MANURE

Little has the use of chemical manure been observed in small scale agriculture. The chemical manure is one of the factors that overcharge the production costs, once that, increasing in price has been observed annually. According to statistics, the use of manure and corrective has been limited to 16.8% while that the use of techniques for soil conservation has been restricted to 6.8% of agricultural establishments. However, the results from the interview accomplished during the mission, it's been verified that most small scale agriculturists don't use chemical manure limiting themselves to the use of organic manure, when available. According to information from Mr. Francisco Chagas (Felipe Guerra), 600 kg/ha of chemical manure should be used for sunflower farming. However, due to its unavailability on the market, it hasn't been used. According to local information, manuring is indicated at least once every two years.

(7) SITUATION OF AGRICULTURAL MACHINERY USE

Access to this type of service is highly heterogeneous among agriculturists, reflecting in great diversity when referring to production and income generated by its establishments. According to data from INCRA (2000), in 1996, the number of agriculturists with access to technical assistance was very reduced in the Northeast Region (2.7%) and more than 80% of these establishments used animal (20.6%) or manual (61.1%) work force. Agriculturists of medium standard maintain their own fleet of agricultural equipment fulfilling the part of service provider in certain times of the year. Some settlements where associations worked, it was observed the acquisition of tractors for preferential use of the associates. However, when there is time available, the same are used for third party jobs, transforming itself into a way of obtaining resources to maintain the association. As for the harvest, according to information from Coopera, inside the state of Rio Grande do Norte there are only 5 combine harvesters like the New Holland and the Massey Fergusson, with corn platform which is used also for sunflower harvesting in others states.

It was observed that, most municipal districts provide service with tractors from one hour to one hour and a half along a year, which is insufficient time for small scale agriculturists. The use of equipments for irrigation was observed in the proximities of large dams from which was obtained, most of the time, through partnership with companies that purchase tobacco. Fuel is available only in the main cities and the price is 5 to 10 % higher than on stations at the capital.

(8) SITUATION OF ANIMAL BREEDING

Small scale agriculture in the northeast region is of productive capacity, mostly destined to self-consumption. Some productions are destined to feeding animals. It's common to reuse the leftovers (remainders of corn, grain sorghum, etc.) to feed animals, as well as, pigs and hens breeding in the backyard. At the region of Apodi, the capacity of stocking rate is 0.1 A.U. (Animal Unity=360kg living weight)/ha under grazing and, 0.4 A.U./ha in remainders of beans. A cow in production requires a minimum area of 5 ha and, when possess a production of irrigated sorghum, the same can possibly provide for 4 A.U., while that the sorghum grown out to dry provides for 2 A.U./ha. Some agriculturists grow fields of grass such Grass Buffel (hay) and Forage Sorghum (silage) for feeding during the drought season but, most of them maintain their stockbreeding with native pasture like Pororó, Jucá, Catingueira, Juazeiro e Jurema (consumed mostly by caprines). The cattle is considered as a "saving account", selling one animal for unusual expenses, but serves also the purpose of providing financial resources along the year. Stockbreeding is constituted mostly of bovines, ovines, caprines and swine. Besides those, equines and asinines are kept for rural work. The supplementation in the drought season is quite restrict being that most animals repeat the cycle of gain and loss of weight. The agriculturists that possess the grass growing make their silage e complement with cotton tort acquired at cooperatives like COOPERMIL.

In the region, there is great search for the residue of the cotton pit for feeding animals during the drought season and there has been comments from the people in charge of the cooperative that, if there is an implementation of the oil extractor by JICA, there will be great benefits for local stockbreeders once the cotton residue is commercialized at R$30,00 (Sep, 22nd 2008) the 50 kg sack.

FOOT-AND-MOUTH DISEASE CONTROL: the periods for vaccination are:

1st Stage: from the 1st to the 30th of April

2nd Stage: from the 1st to the 30th of October

The states of Rio Grande do Norte, Pernambuco and Ceará are considered stopper areas, thus, being prevented of exporting bovine, ovine, caprine and swine meat. However, the state has worked to consider the area as medium level, once that the area covered by vaccination is at 80%.

(9) INCOME OBTAINED BY AGRICULTURISTS

According to the results of the interview accomplished during visitation, the income of small scale agriculturists is limited, once that the agricultural production isn't enough to generate resources and investment, turning it into subsistence agriculture. Low income is obtained by commercialization of the agricultural production when it results from a good crop, selling animals, tobacco, honey, vegetables, cashew nut and other produces. In the year of 2008, the corn sack was commercialized at R$20-25,00/ 60 kg sack, reaching higher prices at the between crops season which reaches R$40,00. Beans, though, allow an income of R$35,00 to 40,00 the 60kg sack. However, it's been rather clear that, most of the youth in the between crops season, seek

temporary work in large farms of melon and papaya, fruit of great commercial value for exports. It has also been observed, cases where the family is provided for by retirement benefits. Cases such as Mrs. Dilma's are often observed where the main source of income becomes the retirement pension where the matriarch provides for the 60 people that can be found in 3 houses, besides the 40 children and grandchildren that are absent during the between crops season, totalizing approximately 100 people. One of the governmental projects that has shown good acceptance by agriculturists and that has presented good results has been the DIRECT-PURCHASE PROGRAM in which a fair price is paid for the agricultural products, benefiting the agriculturist as much as the consumer.

(10) UTILIZING THE AGRICULTURAL FINANCING

According to INCRA, in average only 26.8% has access to official agricultural credit. However, the government has been encouraging with financings and, currently, it has made available the Harvest-Insurance Program besides the current PRONAFs. Some producers don't have access to financing due to former default and others due to debts already drawn. More accurate information of the target regions of the project should be collected and analyzed.

(11) ASSOCIATIONS AND COOPERATIVES

According to INCRA, in average only about 6% of small scale agriculturists from this region are associated to cooperatives. It hasn't been found official data referring to cooperativism and trade unions in Rio Grande do Norte. However, through the technical visits in the homes of small scale agriculturists it's been verified that active trade unions and cooperatives in the region are few. According to the local interview, approximately 80% of the trade unions associations and cooperatives are inactive and most agriculturists consider themselves non-participants. On another hand, trade unions are usually sought for formalization of papers for retirement pension requisition, once that, possessing the proof of participation with the Rural Workers Trade Union for the last three years makes obtaining the retirement pension more practical. In settlements, thought, associations perform their part and the community is, most of the times, participative. During the visit to COOPERA, Mr. Antônio F. Dantas informed of the existence of other cooperatives such as COAFAPI, COPERMIL, COAPAPI (apiculture), COTISA (project designing), Milk Cooperatives, NGOs like Terra Viva and Dom Helder, Fishermen Colonies, Apodi Valey Rice Producers Association, Beekeepers Association and SEBRAE.

11.1COOPERA INFORMATION

The cooperative was founded in March of 2006 to reach the demand of agricultural products for biodiesel production, at time sustained by castor beans implementation. Nowadays, the cooperative is constituted by 70 partners, managed by Mr. Antônio Francisco Duarte (Fanfanta) and technical assistance done by Mr. Sandro. Sunflower has been stocked at a warehouse of 30 x 50 x 6 meters, rented by Coopera for R$8.000,00/mês and today it has a stock of 150t originated from the 857 ha cultivated in the proximities of Apodi which has more 220 tons to receive. However, there has been a fall on production due to delay

on cropping and the loss of weight, resulting on an average productivity of 300 kg/ha. The costs of a mechanized harvest has been approximately R$80,00/ha. Currently Coopera has been the link between Petrobrás and small scale agriculturists.
The cooperative Copermil possess a crusher with capacity of crushing 700 sacks of cotton pit in 24 hours and, in the year of 2007, approximately 12000 tons were crushed.
Contact: sandromaia@hotmail.com or cooperativados@gmail.com

(12) SUPPORT INSTITUTIONS

Some entities work towards supporting small scale agriculturists of the region such is the case of Dom Helder Camara Project. The Project is an agreement of loaning between the Brazilian Government/Ministry of Agricultural Development and International Fund for Agricultural Development. Its purpose id to develop structuring actions to strengthen the Land Reform and Small Scale Agriculture on semi-arid Northeast Region, investing effectively on articulation and organization of the social participation spaces. Actions developed in Rio Grande do Norte have been focusing with greater effort in implementation of wells denominated Water Insurance Actions. The actions developed in Rio Grande do Norte. Besides this work, the Dom Helder Câmara Project has put some effort in projects such as: Food Insurance Actions/ Production and Commercialization; Social Organization and Management; Education and Health; Gender, Generation and Ethnicity; and Financial Services. Another institution quite present has been Petrobrás, active on social projects destined to small scale agriculturists through strengthening of aquaculture, cashewculture, vegetables farming, fruits growing, apiculture and aviculture in the potiguar semi-arid region, besides the encouragement to grow oleaginous plants such as castor beans and sunflower through free distribution of seeds. During the meeting with the Japanese mission, the representative of Petrobrás emphasized the importance of JICA's project once that the project will be developing basic information, in partnership to EMPARN, EMATER and Universities such as soil correction, agricultural implementation, manuring, seed production, among others that could be used to the expansion of the area of oleaginous plants. The same reminded that the plant of Quixadá from Petrobrás has a production capacity of 57 millions of litres of oil, making projects that exist to extend production areas necessary to strengthening raw material for industry. Petrobrás has insured the purschase of vegetable oil, as long as the volume is enough to complete a 30000 litres truck.

(13) COMPLEMENTARY INFORMATION

ACTIVITIES DEVELOPED AT EMATER UMARIZAL: among the 18 municipal districts in the Region of Umarizal, 16 are serviced by technicians from Emater and by employees from city halls connected to Emater. The other 2 are serviced by other local entities.

The team of Regional Umarizal has technicians, an intern, an administrator, assistants, an educator, a nutritionist, among others. The agricultural technicians have been selected by public contests, are older than 20 years and, in 2006 there was a contest to hire 9 new technicians to pay services to the towns of Patu, Messias Targino, among other cities. According to information from a technician from Umarizal, ten years ago, the structure of Umarizal was almost pulled apart, with infra-structure totally disorganized. However, in 2006, new vehicles were acquired, implementing the computer science area and complementing their human resources.

During the meeting with the Japanese mission the following subjects were questioned and discussed:

1. Mr. César: The purchaser of oleaginous plants will be only Petrobrás? The price will be controlled by it? It's believed that the culture will replace the former culture (cotton) and the sesame culture can also be an option. Another concern is the increase on production cost that occurs annually and the price supplied to producers stay unaltered. In case the agriculturist starts depending on chemical manuring, the same will be in debts, with no conditions to continue producing. For that, it's necessary to develop a production system that doesn't create a dependence on multinationals. Another suggestion of oleaginous plants would be COTTON, SESAME AND PEANUTS.
2. Mr. Gutemberg: it hasn't been discussed as now in the past 32 years. The programs were always done from the top to the bottom and, never, a proposition from the producer to the government. The population makes a living out of agriculture and stockbreeding in such a way that incentives and increasing of value of products become necessary. It is necessary to verticalize the production, considering the valorization of the product.
3. Other approached subjects: Will there be subsidy to agriculturists to conduce the project? What is the technical viability? Agriculturists will continue to be guinea pigs?

   The reply of the mission to such questions was: As for the demonstrative unities, we will say yes. We believe that it wouldn't be adequate to supply maintenance to agriculturists once that, they will have to learn to manage the unity themselves after the end of the project.

CRITERIA AND METHODOLOGY TO DETERMINE THE MODEL COMMUNITIES AND AGRICULTURISTS

Based on data gathering done during the technical visit, the criteria and methodology have been defined to determine the Model Communities.

A) criteria for determination of Model Communities:

1. Community composed basically of land owner agriculturists, being that small scale agriculturists in partnership, associations, tenants and settlers won't be the main focus of the project, with a few exceptions;

2. Having its economies based on agriculture, being this its main source of income. Small scale agriculturists that live out a retirement pension and other governmental benefits won't be targeted by the project;
3. Community situated on the region of agriculture grown out to dry, without access to the irrigation system and that possess financial problems such as lack of alternative additional income and/or constant income maintenance;
4. Community with interest in introducing oleaginous as alternative culture, giving preference to locations where there are agriculturists with some degree of experience on growing it (ex.: sunflower);
5. Community with easy access to EMATER's office, as well as, accessibility to transport raw material and semi-processed products (ex.: oil, oleaginous "torta", other residues);
6. Community composed by 30 to 50 families of small scale agriculturists that are active participants on the project and that possess the model agriculturists' profile;
7. Community located in a region plausible to installation of the extractor unity, including stocking locations for raw material and semi-processed products (oil tanks). The community shall be located in a strategic point to provide servicing of other communities, keeping in view the possibility of receiving the raw material produced in other regions.

B) Characteristics of the Model Community

In summary, the selection of Model Communities will be prior to those composed by 60 to 70% of agriculturists that satisfy the following requirements: 1. composed of small scale agriculturists with an area inferior to 20 hectares; 2. development of agriculture grown out to dry and; 3. source of income based on agriculture.

C) Methodology for determination of Model Communities and Agriculturists

1. To accomplish a pre-selection till the end of October, according to the criteria above mentioned. There will be selected three communities for a final selection of one community;
2. To notify to JICA-Brazil the results of the pre-selected communities, including basic information and numeric data of them;
3. To determine, when possible during the year of 2008, the three pre-selected communities after data evaluation and "in loco" visit with participation of JICA;
4. When the project is commenced, the Model Community will be defined through "in loco" research and discussions between experts and counterparts.
5. to determine the active Model-Agriculturists, having as criteria their own interest, selecting them among the 30 to 50 families of the Model Community.

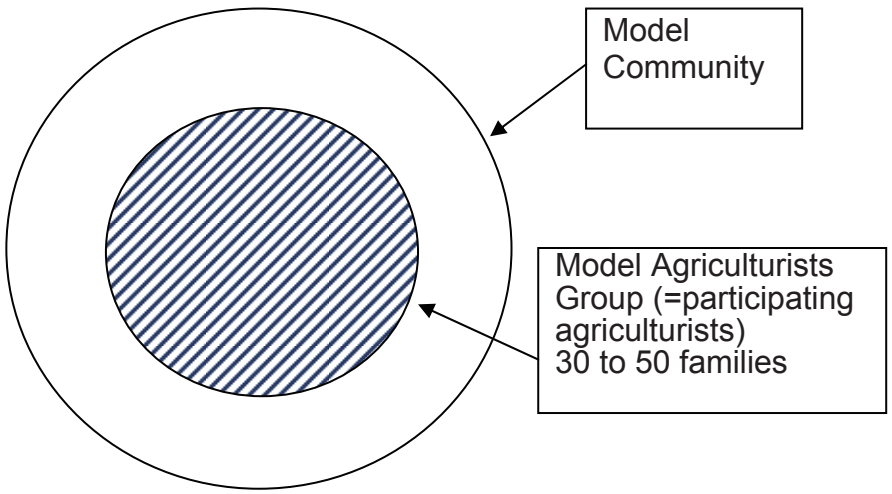
Obs. 1: The communities that present characteristics such as composition in its majority of non-owners agriculturists, irrigation system, area superior to 20 hectares and/or income predominantly non-agricultural will be disqualified from the project, and doing a new selection.

Obs. 2: during the selection, agriculturists shall informed of the responsibilities taken as cooperators, as well as, aware of the individual risks involved on oleaginous production.

D) Characteristics of Model-Agriculturists

The Group of Model agriculturists shall be composed around 60 to 70% of owners of lands inferior to 20 hectares. Agriculturists with irrigation system or another profile could compose the remainders 30 to 40 % of the group of Model Agriculturists, and it may include successful agriculturists that could act as group leaders.

Illustrative diagram of the Model Community and Model Agriculturists Group (compiled from Mr. Komazawa)



<u>Agriculturists that do not fit on the Model Agriculturists Group</u>

To provide a (1) Model Agriculturists Organization and (2) Cooperative Operational Management at the extractor unity, it will be of most importance that the activities are concentrated and developed in a sustainable way. Being so, a prior organizational small scale base will be established by the participation of 30 to 50 Model Agriculturists. The producers that are out of the Model Agriculturists Group will be accepted only after establishing the activities of the cooperative. Therefore, the raw material originated from the agriculturists that do not fit in the group, won't be received for crushing, as well as, commercialized inside the organization. The moment of inclusion of other agriculturists will be defined after agreement between JICA, EMATER/RN and Model Agriculturists.

Project Definitions
It was defined inside the project the establishment of two extractor unities in agreement to the Japanese Mission and Counterparts as it follows:

List of Counterparts
At the occasion of signing the MEETING MINUTE between the Japanese Study Mission and the Government of the State of Rio Grande do Norte about the technical cooperation for the current project, it was defined the following list of counterparts:
1. COUNTERPARTS
The **Director of the Project** was defined as being Mr. Tarcísio Bezerra Dantas (Assistant State Secretary of Agriculture, Stockbreeding and Fishing), **Vice-Director of the Project** Mr. Mário Varela Amorim (Technical Director of EMATER) and the **Coordinator of the Project**, of exclusive dedication, Mr. Marcos Romualdo Barbosa (EMATER Mossoró).

2. COUNTERPARTS FOR SPECIFIC AREAS
It was defined the participation of SAPE and EMATER-Natal with a representative of every institution with partial dedication and to recruit six extensionists from EMATER, of exclusive dedication, to take responsibility for: 1- Agricultural Practice; 2- Organization; 3- Operation, Administration of the extraction unity, and Commercialization at the Regional of Pau dos Ferros; 4- Agricultural Practice; 5- Organization; 6- Operation, Administration of the extraction unity, and Commercialization at the Regional of Umarizal. EMPARN will participate with two researchers from the Experimental Station of Apodi, with partial dedication. There will also be participation of Cooperator Institutions such as: 1- Extraordinary Secretary of Energy and International Affairs represented by Mr. Jean-Paul Terra Prates; 2- UERN represented by Mrs. Sueli S. C. Leal and 3- UFERSA represented by MR. Ricardo Galvão. The administrative area will be responsible of recruiting the necessary staff (secretary and driver) for the execution of the project.

EXPECTED RESULTS:
Based on knowledge and technology currently available, there will proposed preliminary models of sustainable biodiesel production systems from oleaginous plants culture. The preliminary models will be demonstrated at the small scale agriculturists' properties and these sustainable production systems will be assessed, revised and reformulated in a way to become appropriated for rural extension.

CONCLUSION AND SUGGESTIONS
- It is defined that the Coordinator of Mossoró will work at the regionals PAU DOS FERROS and UMARIZAL;
- Necessity of more research about the advantages of hybrids and cultivars.
- To develop a comparative chart for the seeds (Catissol Variety R$60,00 and Hybrid R$240,00);

- To develop varieties apt to the region with the purpose of providing autonomy in production of seeds (hybrids depend on the supplying by the companies);
- Collecting technical information about the efficiency of culture rotation with sunflower at the increase of production and soil structuration;
- It will be interesting that the field day will be accomplished in Lucrécia, at Mr. Queijivaldo's property, for example;
- The municipal district of Lucrécia could be considered a strategic spot for implantation of a center (Umarizal) once that it's constituted of several small scale agriculturists and there are other communities close by, such as Exum, which could participate according to the development of the project;
- It's necessary to have a training session with all technicians from Emater in order to keep all information homogeneous;
- Oleaginous plants productive chain shall be, in the future, managed by a Cooperative or Local Producers Association that have credibility;
- In order to make the center work, it will be necessary that agriculturists from other regions also participate and analyze the different variables such as: Duties of Cooperators, Quotas, acquired risks, operational cost, statute designing, etc.;
- To evaluate which is the best equipment for oil extraction. In case the equipment has crushing capacity of 100 kg/hour, there will be crushing of 8 tons per day, reaching a capacity of 2920 tons/year. In case there's a production of 1200 kg/ha of sunflower, it will be necessary a cultivated area of 2433 ha;
- Intense training will be necessary on Cooperativism and administration to agriculturists;
- To prepare courses to take advantage of residues on animal nutrition directed, at first, to technicians;
- The logistic of commercialization should be analyzed during the execution of the project (in a year).

During the implantation and development of the project, false expectations from agriculturists must be avoided, keeping all pieces of information clear and concise. It must be worked on changing the strain of thought to avoid dependence of incentives from the government and to stimulate them to develop their own way to generate products and increase value.

The geographic, social, and cultural characteristics of the region are the main factors that could make the normal course of the project harder. For such, it's necessary to prior capacitate the information diffusers (EMATER) besides doing a constant follow up along with Japanese experts in order to finish the project in the stipulated period of time. The lack of communication has often been observed, making of it, a point for improvement. The selection of the areas for the project shall be evaluated carefully, once that, depending on the site, there are great variations of opinion and consensus of the majority is harder due to the lack of interest of the agriculturists themselves in participate of the Associations or Cooperatives, since, the development of the cooperativism spirit is of extreme importance to reach the success of the project.

As for the market price of sunflower oil, it is yet to be defined and, currently, Petrobrás has as reference the price of soybeans oil which is at R$1,90/kg of oil. The position of the representative from Petrobrás leads us to conclude that the paid price by litre of extracted oil is equivalent to the price paid for the seed in gross form (R$0,81/kg), not covering the extraction costs. The residue obtained will be the only payment to cover the costs with production of oil.
Some data could not be obtained in the required period of time but, during the execution of the project, it shall be sought to complement, improving it with more ideas and available technologies seeking to develop for the self-sustainability of the project. Informations about sunflower seed distribution can be obtained by Emater data keeped at the adhesion documents.
Complementary information about the region for quick consultation is attached.
It is so narrated and I will be available for any clarifications of any doubts that may emerge.

Campo Grande, January 12th, 2008.
Ana Y. Kojima – consultant from CONSAS – Consulting and Business Ltda.

INTERNATIONAL TECHNICAL COOPERATION PROJECT

ATTACHMENT I

"SOCIAL INCLUSION BY ENCOURAGING THE PRODUCTION OF CULTURES FOR BIOENERGY GENERATION IN THE WEST REGION OF THE STATE OF RIO GRANDE DO NORTE"

REPORT: 16/09/2008 – 09/10/2008

Primary considerations

The present work was accomplished between September 16th and October 10th, 2008, under the conditions stipulated by the contract signed by Japan's International Cooperation Agency (JICA) and Consultant Ana Yimiko Kojima having as main objective, to collect and to complement pieces of information in the actuating areas of the project entitled "Social inclusion by encouraging the production of cultures for bioenergy generation in the west region of the State of Rio Grande do Norte" which shall be implanted in march, 2009, and shall last 4 years.

Objective

To collect information regarding small scale agriculturists' situation and about the development of biofuel field. All pieces of information collected will be used to strengthen the cooperation planning such as studies to identify projects and their preliminary evaluation. The study results will be of common use among JICA and Brazilian and international organs aiming to promote greater knowledge exchange between institutions.

Methodology applied onto the development of the work

Participation in the Preliminary Evaluation Mission with details informed by JICA. Gathering of secondary data and visit in loco in the selected areas, performing direct interviews and collecting information through questionnaires, along with small scale agriculturists, representatives of Government Organs, Cooperatives, Associations, Research Institutes and Educational Institutions, besides official data compilation and material distributed by the institutions.

Studied Items Specification

The present study aims to clarify the situation of biodiesel products development, verifying its impact on small scale agriculturists' activities.

A) General considerations about Rio Grande do Norte and High West Region's agriculture

The State of Rio Grande do Norte presents its regional characteristics according to climate conditions, terrain and soil (Attachments 1 and 2), a group of variables that makes of caatinga the predominant vegetation.
Although the State is the largest continental petroleum producer of Brasil, its agriculture has been the main source of subsistence of the population living in caatinga and the region called High West, area which comprehends the municipal districts focused on the project.

In order to be considered as a small scale producer, the government adopts the area dimension managed by the family, that is, through the method of fiscal module where, those who possess less than 4 modules are classified in this category. In order to better clarify, the chart below presents the area correspondent to one module, which varies according to the municipal district.

MUNICIPAL DISTRICTS	MOD/HA	MUNICIPAL DISTRICTS	MOD/HA
Alexandria		**Umarizal**	
Alexandria	45	Almino Afonso	40
João Dias	50	Frutuoso Gomes	45
José da Penha	50	Lucrécia	40
Marcelino Vieira	55	Martins	55
Tenente Ananias	50	Messias Targino	45
Pau dos Ferros		*Olho D'Agua do Borges	45
Encanto	---	Patu	45
*Francisco Dantas	---	Rafael Godeiro	45
Pau dos Ferros	60	Serrinha dos Pintos	35
Rafael Fernandes	50	Umarizal	40
São Francisco do Oeste	50		
São Miguel	45		

Analyzing agricultural conditions, it's possible to observe that there's been great alteration on the areas of temporary farming between 1994 and 2003, mainly in cotton production, considered till the last century to be the first source of revenue. It noticeable also a drastic reduction in production of subsistence cultures as much in the High West region as in the State of Rio Grande do Norte as a whole.

Quantity produced, percentage variation and state expressivity of main temporary farming, in High West region and on the State, 1994 and 2003.

Temporary farming	Region			State			Region/State	
	1994(I)	2003(III)	%	1994(II)	2003(IV)	%	I/II	III/IV
Cotton	7.657	1.755	-77,10	32.664	11.322	-65,30	23,40	15,50
Rice	2.06	890	-56,80	4.190	8.055	92,20	49,20	11,00
Beans	12.377	6.451	-47,90	88.173	42.752	-51,50	14,00	15,10
Manioc	5.140	1.707	-66,80	477.348	394.572	-17,30	1,10	0,40
Corn	20.590	17.600	-14,50	93.010	69.569	-25.2	22,10	25,30

Source: PDS Alto Oeste

Analyzing attachment 3, it can be observed that the middle physic characteristic tends to influence the population profile. Alexandria and Lucrécia's economy, for being based mainly on subsistence agriculture, have a Human Development Index (HDI) inferior than the municipal districts based in services as is the case of Pau dos Ferros. According to IDEMA's database, the monthly income of a head of family that's lower then 1 minimum salary or with no income, represents over 70% in Alexandria and Lucrécia. That leads to the conclusion that its population lives practically of the subsistence culture, without options to increase their gains, leading youth to seek work on melon and papaya cultures in the proximities of Mossoró and Baraúna. This migratory process has been one of the main sources of revenue to agriculturists on drought season, allowing

they to return in the winter (rain season vary from February to June) and grow beans and corn on their own properties, or on rented properties, as means to survive. According with information obtained from agriculturists, it was verified that the working force in agriculture has been reduced gradually implying on man's fixation in the country.
Having as base some information from IBGE (attachment 4) about the region, it's possible to observe that there are few places being used for farming, as well as, that the cultures that occupy most of agriculture subsistence areas have been corn and beans.

B) Current situation and challenges for production of plants for biodiesel in the State of Rio Grande do Norte.

B.1 Production

The development of agricultural production aiming production of biofuel in Brazil has been in its essence in two vectors, one of them being agricultural production of commodities, in large properties, and the other being the production of oleaginous plants for biodiesel in small scale. Brazilian government, through the Social Fuel Stamp Program, has been executing the social inclusion program by motivating the culture of oleaginous plants that may foment biodiesel production.
The State of Rio Grande do Norte has been active also in introducing oleaginous plants as an alternative source of revenue in the struggle against poverty. However, by the reduced number of oil extractors industries in the State, it wasn't possible to evaluate the appliance of the Social Fuel Stamp Program.
As for the culture of oleaginous plants, it is still insufficient, once the production of castor bean didn't achieve good results, which brought doubts to agriculturists about growing sunflowers. Sunflower on field still is found on probation along with research institutions and, according to previous information from agriculturists, productivity tends to vary according to several factors that shall be approached ahead on.

B.2 Commercialization and sales

According to 2007 and 2008 general information about the State (attachment 5), the production of cashew nuts, tomatoes and other products that may add to the gains, has shown a gradual increase. In the case of castor beans, it has been shown certain resistance of agriculturists in producing it, due to lost of credibility along with the State's Government and PETROBRÁs, which incentive was accomplished to increase the cultivated area without existing logistics of purchase for production.
Analyzing the 2007/2008 comparative chart of productivity of he 14 cultures in Rio Grande do Norte (attachment 6), it's possible to observe that subsistence cultures and sorghum used for production of silage have increased, while that castor beans productivity has decreased possibly over agriculturists disinterest. The introduction of sunflower in winter farming has shown resistance specifically over the fact that it could be repeating the same mistakes of castor beans.

The government of the State of Rio Grande do Norte has been encouraging sunflower growing through agricultural technicians from EMATER to assist small scale agriculturists whereas Petrobrás has supplied the seeds with no charge.

According to local information, the destined area for sunflower growing was predicted to be 13000 hectares in 2008. However, due to problems such as delay in seed delivery, climate conditions and agriculturists resistance, the state has accounted for an area smaller then 3000 hectares, staying beneath expectations. According to information provided by the technicians from EMATER and agriculturists, one of the factors that has led to such results is partially due to lack of transportation logistic for intermediary goods and production, for still obscure market, and its own deficiency in producing and commercializing sunflower.

B.3 The way of growing

The recommendations made to small scale agriculturists by EMATER follows the same standards developed by EMPARN (in Portuguese, it stands for Agriculture and Cattle raising Research Company of Rio Grande do Norte). The seeds freely distributed by Petrobrás has been Hybrid HELIO with a cycle from 100 to 110 days. Hybrid HELIO has the adequate characteristics to reach high productivity, developing chapters that are uniform and with high level of oil, when compared to other varieties. According to information from IDEMA and from Secretary of Agriculture, the areas involved in the Project are inside the sunflower culture zoning and, for the pluviometric index on attachment 7, sunflower could become viable. Recommendations for sunflower growing can be found on attachment 8.

The areas predicted for the development of the Project are located in regions that still use rudimentary implements like animal traction and human force (spade). During the visit, it was observed that the soil continuously used for farming was compacted to an approximate deepness of 15 cm, being necessary to do a profound plowing. In case the sunflower culture is kept on the traditional system, the rooting will be compromised in such a way that it will affect the development of the plant and productivity, besides being easily affected by prolonged droughts. Planting sunflowers can be done mechanically or manually (rattle), as long as it's done keeping a distance from 30 to90 cm between lines and 25 to 30 cm between plants, with depth from 3 to 5 cm.

Cares such as control of harmful plants must be considered mainly in the period of vegetative development, avoiding competition for nutrients. On field, few problems were observed regarding plagues, fungi diseases and bird attacks, which are very observed on the Southeast and Central-west. For such characteristics, it leads to believe in the possibility of cost reduction with the intermediary goods and viability of sunflower growing in the region.

However, very few researches have been developed in the semi-arid region, which calls for deeper evaluations, especially when referring to varieties to be grown and their adaptability.

Sunflower growing requires also to analyze production costs, once that all information is based on results from the South and Southeast regions. According to the budget elaborated for PRONAF (attachment 9), to obtain revenue over production, it will be necessary productivity of, at least, 1000

kg/hectare. Nevertheless, results obtained during all visits in the region of the Project, sunflower for drying productivity varied from 300 kg/hectare to 1000 kg/hectare, whilst, in the irrigated system it could reach a productivity of 1200 kg/hectare.

Variation of sunflower productivity 2008 harvest

Region	Producer	Sunflower area	Productivity	Observations
Apodi	COOPERA	807 ha	300 kg/ha	70 cooperators
Felipe Guerra	Francisco C. Costa	20 ha	600 kg/ha	Manual harvest
Apodi-Soledade	Francisco Targino	6 ha	667 kg/ha	Plantation 16/04 and August harvest
Alexandria-	João Batista	2 ha	1000 kg/ha	Lost of 1 ha due to rain
Lucrecia	Quejivaldo	1 ha (irrigated)	1200-1300Kg	2 ha flooded
Lucrecia	Jessivaldo	?	500 kg/ha	Severe winter

The productivity of sunflower has varied according to each region, producer's characteristics, climate conditions, manuring, among other factors. Nevertheless, the sunflower for drying farming areas ought to be considered inside the project, once it was possible to reach an estimated productivity of 1000 kg/hectare in the region of Alexandria, as it's shown on the chart.

B.4 Impact on food production

For agriculture in the High West region, mainly amongst small scale agriculturists, food production has always been considered priority due to their own local condition and this well established in the northeast culture. Some types of farming have been introduced also to generate gains such as sugar-cane and cotton, this last being their main source of revenue up to the decade of 1980. After the extermination of that culture, it hasn't been found another one to replace it yet.

Currently, agriculture in the High West region is mainly of subsistence and productivity varies according to each region, producer's condition, management, among other conditions. Analyzing the following chart, it can be observed that the average productivity inside the state is considerably low in comparison to other regions of the country. The main subsistence cultures such as beans and corn follow the national average levels as shown bellow.

Productivity of the main agricultural products of Rio Grande do Norte

Agricultural Product	2007 productivity/ha	2008 productivity /ha
Cotton	732 Kg/ha	761 Kg/ha
Rice	3.566 Kg/ha	3.589 Kg/ha
Beans	387 Kg/ha	469 Kg/ha
Corn	550 Kg/ha	729 Kg/ha

Source: IBGE, LSPA August 2008

Analyzing some agriculturists' productivity in the High West region, we can observe that beans and corn production vary a lot according to each region and the producer's management (dry or irrigated farming).

Agricultural productivity of the Region

Region	Product	Productivity
Alexandria (Producer Number 7)	Beans	240 kg/ha
	Corn	240 kg/ha
Alexandria (Raimundo)	Beans	600 a 720 Kg/ha
	Corn	1200 Kg/ha
Lucrécia (Quejivaldo)	Irrigated beans	2100 a 2400 Kg/ha

According to information obtained by small scale agriculturists from the region, many provide for their family by selling part of the production due to lack of options to generate gains. However, when introducing oleaginous plants, agriculturists shall be advised to keep the subsistence cultures, once that, during the visits, some agriculturists invested their whole area to grow oleaginous plants, increasing the risks regarding their families' provisions.

B.5 Use of residues

Sunflower is a rich source of protein, that may be used in several ways, such as ornamental and medicinal plant, in culture rotation, green manuring, as seeds "in natura", also as fodder, "torta" and bran for feeding animals.

The "torta" presents intermediary nutritional characteristics between sunflower grain and bran. According to some researches, the values in the composition of fat sunflower "torta", expressed in natural material, were of 7.57% moistening, 22.19% of rough protein, 22.15% of ethereal extract, 4.68% of mineral material, 0.35% of calcium, 0.70% of phosphorus and 23.28% of rough fiber, and, on an assay about digestibility in swines, values of digestible and metabolizable energy of 3421 and 3247 kcal/kg were found, respectively, indicating it to be an ingredient of energetic profile and intermediary level of protein, but with high levels of rough fiber. However, the bromatologic composition of "torta" may vary due to several factors such as the type of soil, variety of grain used and the type of crusher as well as its adjustments.

The availability of oleaginous plants residues will bring a promising result to breeders of bovine, ovine and caprine cattle, making of it another alternative of revenue.

C) Oil destination

Brazil has a great and diversified production of oils and vegetable fats, that are used as cooking oils and for countless industrials ends. The vegetable oil industry occupies a strategic spot on the context of food industry, for it elaborates a product for final consumption and it is an essential intermediary good for food industry. Sunflower is mostly used for cooking oil production, can be used for other ends, such as cosmetics, soap fabrication, and in the paint industry replacing flaxseed oil, among other purposes.

Nevertheless, the Project focuses on producing biodiesel and, according to information provided by Petrobrás representatives, the oil produced by the project will be warranted for levy in any region, as long as it completes one full

tank (approximately 30,000 litres). The current price is based on the price of soy, which is commercialized at R$2,00/litre.
The budget for an oil extractor is attached for future evaluation (attachment 10).

D) Information about model agriculturists
Among the properties visited during the mission, many were very small, with less than 50 hectares, considered small scale agriculturists fit in the incentives to small scale agriculture program. However, by analyzing statistics from IBGE (1995), it's seen that over 60% of rural establishments in the High West region are properties with less than 10 hectares.

Land Structure, in the Region, 1995

	Establishments		Area	
Area Classification (ha)	Absolute	%	Absolute	%
Less than 2,00	4.247	27,00	4.520	1,00
2,01 – 10,0	5.376	34,20	24.926	5,20
10,01 – 50,0	4.013	25,50	92.226	19,40
50,01 - 200	1.598	10,20	148.457	31,20
200,01 - 1.000	458	2,90	160.435	33,70
Over 1.000,01	42	0,30	45.064	9,50
Total	15.734	100,00		100,00

Source: IBGE, Automatic Recovery System, 2005.

The small scale agriculture that fits in this context presents great necessity of an alternative source of revenue, once that all family's provisions come from the land. Analyzing family constitution, there is abundant working force but, without means that can be used for agriculture, the same people migrate to other regions in search of work and remuneration. In order to better clarify the population's financial conditions, the chart bellow shows the per capita income in the High West region. Taking as average the town of Umarizal, it's hoped that at the end of the project there shall be an improvement on the model agriculturists' per capita income.

Per capita income in the Region (1991 and 2000)

Index	1991	2000
Lowest =Venha Ver	R$ 40,00/ person/month	R$ 42,00/ person/month
Highest=Pau dos Ferros	R$ 150,00/ person/month	R$ 170,00/ person/month
Others= Riacho da Cruz e Umarizal	R$ 80,00/ person/month	R$ 100,00/ person/month

Observing the population's distribution in the High West Region as about their occupation, it's verified that there is great concentration in the rural area, with few opportunities, in the industrial area (attachment 11). Agriculture focuses subsistence, without techniques to improve productivity. However, sunflower growing could be well accepted as an alternative source of revenue, as long as the results obtained by the model agriculturists are positive.

E) Animal Breeding

The areas that are not used for growing plants have been destined to the breeding of bovine, ovine and caprine cattle, which work as an alternative source of revenue, whether it's through the commercialization of the animals ou through sales of dairy products.

Real numbers of Cattle - 2003

Pau dos Ferros	
Bovine	7.200
Swine	978
Equine	221
Donkeys	233
Mules	78
Ovine	2.505
Caprine	1.209
Rabbits	-
Source: IBGE	

Alexandria	
Bovine	10.650
Swine	641
Equine	625
Donkeys	366
Mules	259
Ovine	3.595
Caprine	2.464
Rabbits	-
Source: IBGE	

Lucrecia	
Bovine	1.428
Swine	168
Equine	48
Donkeys	110
Mules	37
Ovine	296
Caprine	242
Rabbits	-
Source: IBGE	

The statistics presented on the regional economic diagnosis point the bovine cattle as the most important in the region. Up to the middle 80's, the combination cattle/cotton/subsistence cultures was considered the economic pivot of the region. However, with the retraction of the cotton business, which happened all over the State, and that also affected the region, the cattle breeding was directly affected, for the offer of fodder was reduced – obtained after the cotton cropping and that was used to feed animals. Besides that, it's worth mentioning that the "torta" extracted from cotton seeds was used as source of protein for cattle.

Ovinecaprineculture constituted itself, in the Region, as an animal breeding activity and economically secondary, in comparison to bovine cattle breeding – dairy, mainly. Nevertheless, it's important to emphasize that those are animals which can adapt to hostile environment, in a superior way than bovine cattle, for example. They present lower production costs this last and are relatively easy to be commercialized, having in view a regional cultural tradition to consume this sort of meat.

Another problem faced by the sector regards the periods of drought which reduce the offer of food to animals and enhance the production costs. In that way, it's possible to come up with alternative feeding ways that, produced in the Region itself, can avoid ration imports which, in many cases, make regional production unviable.

Currently, several producers have agreed to produce silage in order to decrease losses during the drought season. However, for being voluminous, it requires a great source of protein such as the cotton or sunflower "torta", or soy bran to attend the protein needs.

F) Human Resources

F.1 EMATER's technical assistance

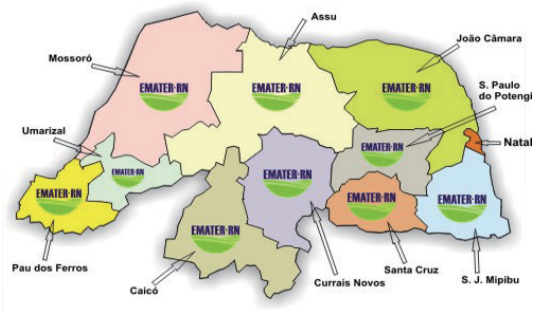
The Institute of Technical Assistance and Rural Extension of Rio Grande do Norte (EMATER-RN) is a great autarchy linked to the State Secretary of Agriculture, Cattle breeding and Fishing (SAPE) which exists for over 50 years and is present at the 167 municipal districts of the State and focuses mainly in Small Scale Agriculture.

EMATER is composed by 1 central office and 10 regional unities having as a goal to reach 97,000 small scale agriculturists focusing: Fruit Growing Agribusiness, Cattle Breeding, Fishing, Aquaculture and Support to Small Scale Agriculture.

Among the foreseen actions to increase mainly in Professional Education; Disseminating habits of associating and cooperating; Structuring Sustainable Family Properties; Support to Small Scale Agribusiness; Reviving of oleaginous plants and fiber production; Elaboration, Improvement and Assistance to Rural Credit directed to Small Scale Agriculture and to Teach reading and writing to adults. In these actions is also included the Reviving of oleaginous plants and fiber production Program, focusing sunflower farming.

The mains Programs developed by EMATER are:

1. Strengthening Small Scale Agriculture Program – Pronaf;
2. Credit for Land;
3. Harvest Insurance;
4. Direct Purchase from Local Small Scale Agriculture;
5. Teaching youth and adults to read and write – Letters of the Country;
6. Digital Inclusion and citizenship School;
7. Youth Protagonism;
8. Territorial Development;
9. Zero Hunger;
10. Proagro Plus;
11. Small Scale Agri Industrialization;
12. Rural Tourism;
13. Life Quality and Promoting Health at Work;
14. Fomenting Strategic Cultures – castor beans, cotton, sorghum, cashew, tropical flowers and, nowadays, sunflower;
15. Ready Land;
16. Seed Bank;
17. Light for all Program.



To serve this demand, EMATER has hired in 2006 approximately 120 professionals to work on the 167 municipal districts, adding forces with professionals that have been working for over 25 years. Increasing the numbers for transportations and equipments has also been made a priority by acquiring vehicles, motorcycles, GPS devices palmtops and agricultural equipments for horticulture.

EMATER has worked in partnership with EMPARN for diffusing technology to small scale agriculturists. However, this effort still finds itself beneath all necessities, once that the number of agricultural technicians isn't enough for the

demand proportions, which is about 100 agriculturists for 1 technician. In order to better clarify, there a list attached of agricultural technicians as well as the responsible people from EMATER, and the contacts for each town in the region of Umarizal and Pau dos Ferros.
Intending to solve such problems, EMATER and EMPARN are performing several Technical Circuits annually, in different regions, ministering lectures, courses and technical visits. The sunflower culture has also been approached in the last circuits as being a promising one to foment the biodiesel industry, using residues and improving productivity of honey.

F.2 Cooperatives from the medium and high west region of Rio Grande do Norte

Analyzing the cooperatives conditions from the high west region of Rio Grande do Norte, focused area of JICA's work, it has been observed that there is a grand deficiency regarding the constitution and maintenance, as well as their own directors and cooperators training.
Among the 12 cooperatives in the region listed by the Agricultural and Cattle Breeding Secretary of Rio Grande do Norte, 5 cooperatives are installed in Apodi and 7, in other places. It's been observed that, among the 5 cooperatives existent in Apodi, only 3 are fully active. And in the municipal districts from the High West, of the 7 registered, only 4 are actives (attachment 16).
As for Associations, there are or there were in most communities or squatter camps with the objective of benefiting local population with the construction of cisterns and improvements, purchasing agricultural equipments, among other agricultural activities. According to information acquired by agricultural technicians from EMATER and local people, only 20% of the Associations still maintain its part inside society.
The Apodi Region Cooperative (COOPERA) was founded in 2006 with the objective of attend to the oleaginous plants demand. Currently there are 70 cooperators registered and 807 hectares of sunflower for drying were cultivated in the region, obtaining an average of productivity of 300kg/ hectares. Currently, the cooperative has 150 tons of sunflowers in stock and a little of castor beans from the previous years. The technical assistance for sunflower growing was maintained by COOPERA's technicians, and all expenses with seeds, intermediate goods, thrashing and transportation are predicted to be covered by the cooperative in partnership with PETROBRÁS, assuring an average price of R$0,81 per kg of sunflower seed for producers. However, through all the way from growing to stocking, several technical flaws were observed, such as: delay in seeds and fertilizers delivery, lack of technical information, deficiency in agricultural implements, harvest lost due to lack of reapers and working force, inadequate thrasher, bad weather, stocking site and, above all, lack of commercial logistics.
The agriculturists that have chosen to grow sunflower with technical assistance from EMATER have had all expenses financed by Banco do Brasil and Banco do Nordeste, and the outlet canal is predicted to be made concrete through PETROBRAS. Nevertheless, it has been observed great insecurity from agriculturists that are afraid to repeat the same problem faced when growing castor beans.

G) Federal Government's Incentive for sunflower growing – Harvest-Insurance Program

Brazilian's, Federal Government, intending to reduce rural poverty, has created several programs of support. The Harvest-Insurance has been applied in the State since 2003/2004 harvest, as it can be observed in the following chart.

Evolution of the agriculturists' participation

State	Participating agriculturists				
	2002/2003 Harvest	2003/2004 Harvest	2004/2005 Harvest	2005/2006 Harvest	2006/2007 Harvest
Alagoas	189	6.988	11.051	11.479	-
Bahia	-	7.000	8.907	9.148	6.067
Ceará	108.950	36.106	128.663	160.012	172.932
Minas Gerais	-	26.577	8.563	7.102	812
Paraíba	29.915	37.562	49.755	54.791	59.310
Pernambuco	27.753	28.877	31.908	46.264	52.904
Piauí	18.761	12.601	23.543	38.206	34.211
Rio Grande do Norte	-	3.149	8.613	12.005	8.462
Sergipe	14.724	18.970	16.858	17.577	11.635
TOTAL	200.292	177.830	287.861	356.584	346.333

Source: Jadna presentation - SAPE

Characteristics of the Harvest-Insurance Program:

- Guaranty of revenue to those who lost above 50% of their harvest by drought or excess of rain;
- In 2008, all over Brazil, about 560 thousand small scale agriculturists joined the program and, In Rio Grande d Norte, the number reaches 14 thousand agriculturists in 52 towns.
- Rio Grande do Norte state government, along with Emater-RN and SAPE, intend to reach 24 thousand small scale agriculturists in 71 towns.
- Harvest-insurance provides a R$550,00 worth benefit, paid in 5 parcels of R$110,00;
- Requisites:
  1. Being a small scale agriculturist from the semi-arid.
  2. Having rough family income up to one minimum salary and a half;
  3. Cultivate non-irrigated area between 0.6 to 1.0 hectares;
  4. Cultures covered by insurance: Rice, cotton, beans, manioc and corn.

Source: Jornal da Emater, Year IV, Number 12, Natal, July, 2008

Currently, with sunflower culture being diffused, this culture has received the same benefits of other subsistence cultures such as Pronaf and Harvest-Guaranty. This last shall be valid over sunflower growing from 2009 harvest.

Final Considerations

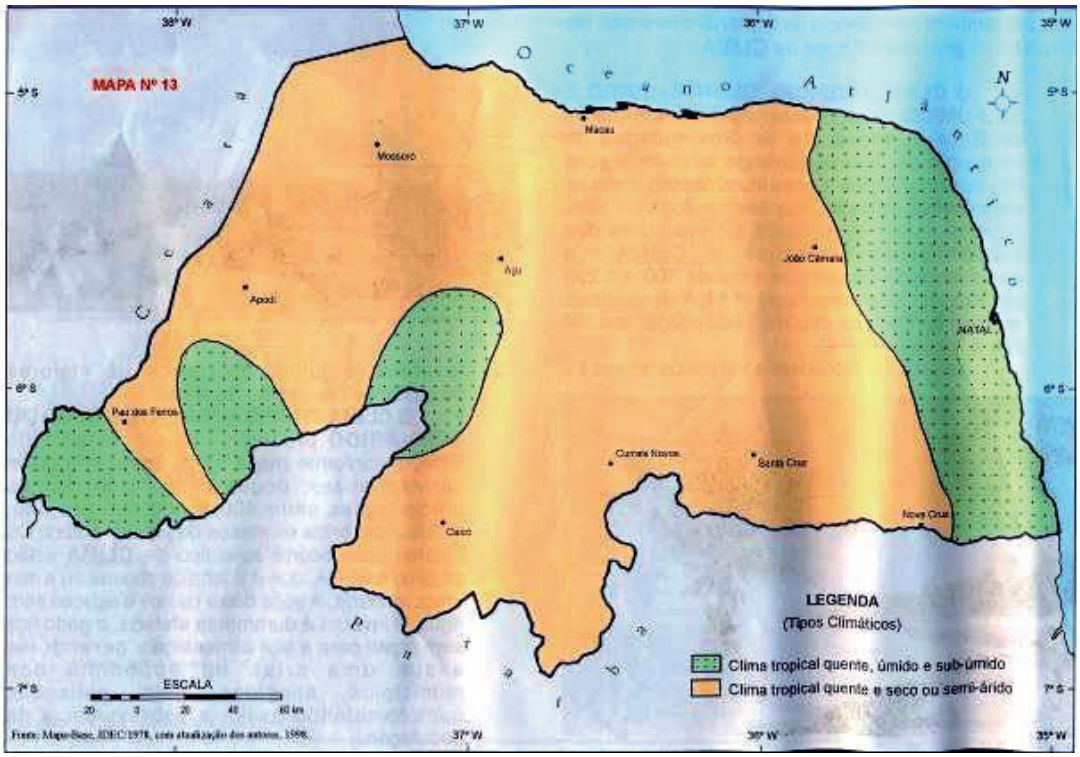
Sunflower, as previously observed, has several utilities, being apiarian fodder, biodiesel production, cooking oil and using residues for animal feeding the most known uses. Besides those, it can also be used for subsistence cultures rotation, improving the quality of the soil.

Due to climate and soil conditions and to the existence of family working force, it's possible to implement sunflower farming and other oleaginous in the semi-arid region. However, more detailed researches will be necessary to evaluate the best variety or hybrid to be grown, the best time for planting, soil analysis and preparation of agricultural technicians, such researches can be developed during the Project to be implanted on March, 2009. The installation of crusher unities are of extreme importance, once that, the main advantages will be using the residues for animal feeding, manuring, and creating news jobs, increasing income, contributing directly in keeping people in the country, producing sustainable bioenergy and promoting social inclusion of small scale agriculturists, being this last the main objective of the Project.

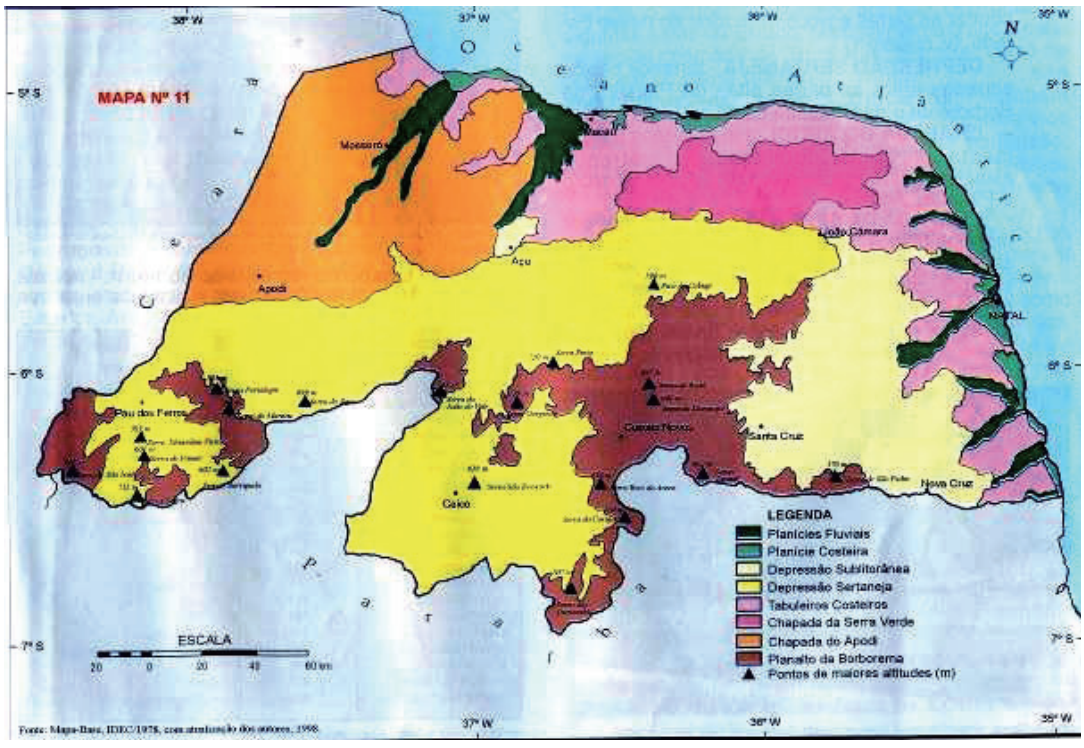
The results of the Project will depend a lot on vertical and horizontal communication between Japanese specialists and the institutions involved, especially when referring to the commercialization **canal**, besides the needs of narrowing relationships among model agriculturists and guiding them to develop the spirit of cooperating.

ANEXOS II

Clima do Estado do Rio Grande do Norte

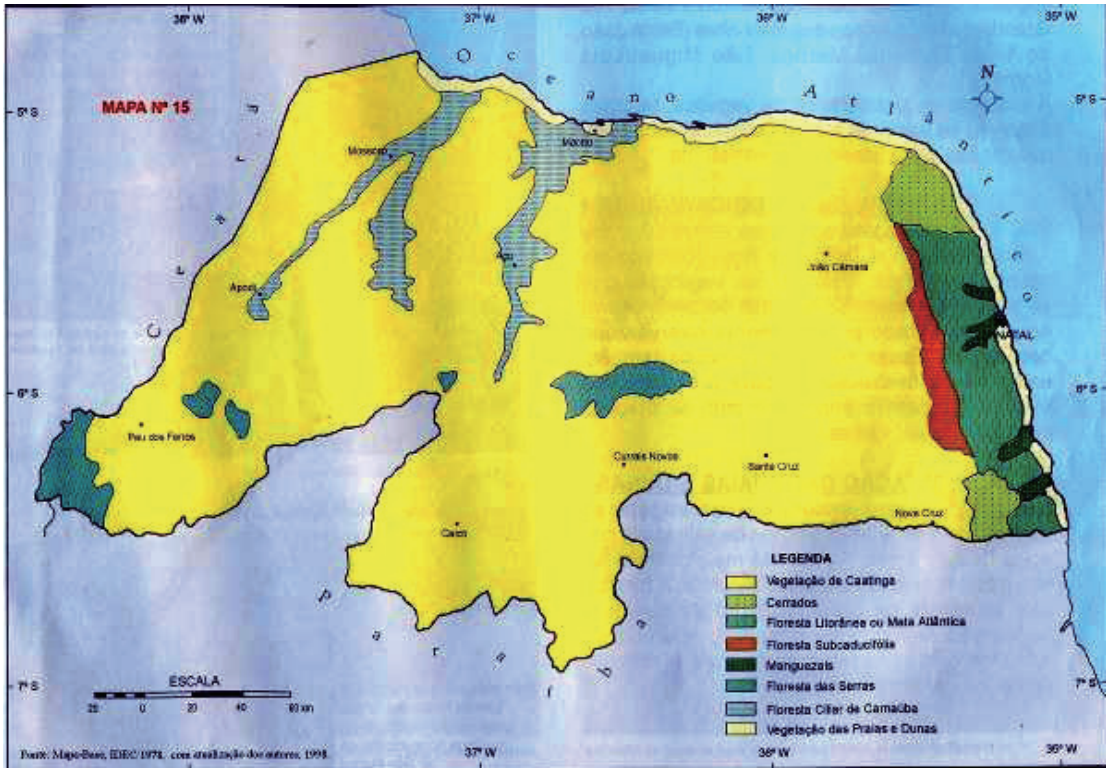


Relevo do Estado do Rio Grande do Norte

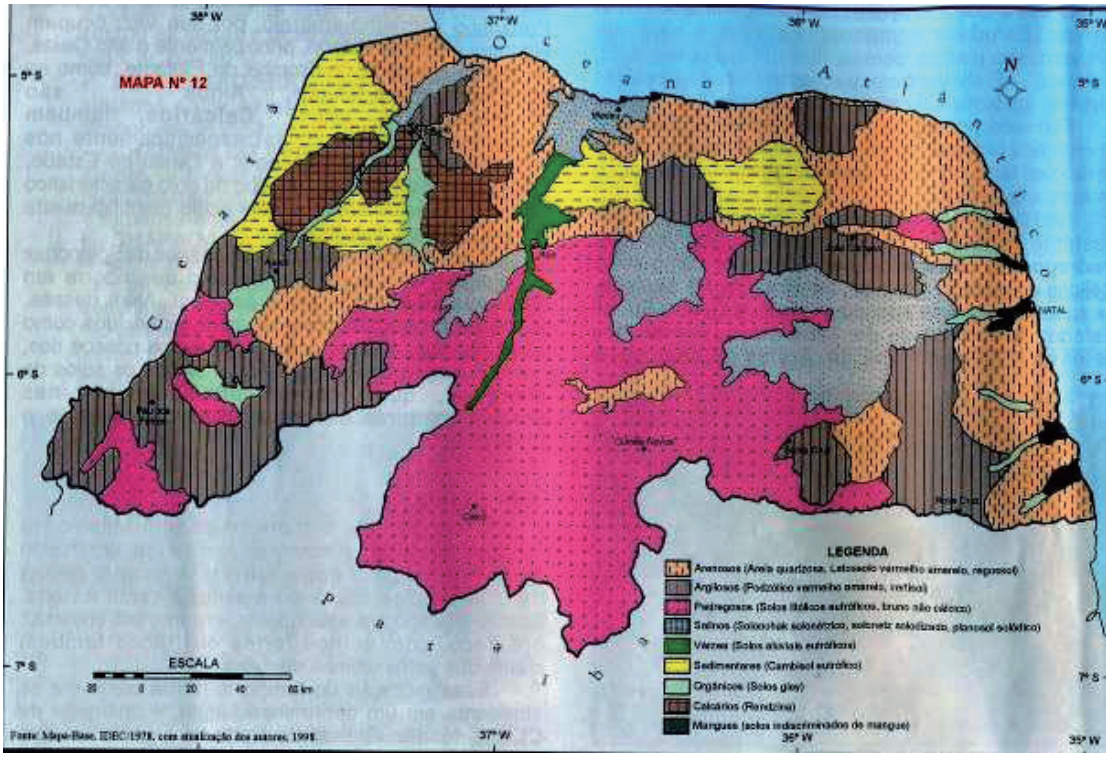


Fonte: FELIPE, José; CARVALHO, Edílson . **Atlas escolar Rio Grande do Norte**, 1999.

Vegetação do Estado do Rio Grande do Norte



Solo do Estado do Rio Grande do Norte



Fonte: FELIPE, José; CARVALHO, Edílson . **Atlas escolar Rio Grande do Norte**, 1999.

Tabela compartiva das principais características entre os municipios baseados nos dados estatísticos de 2000.

	Pau dos Ferros	Alexandria	Lucrécia
População Total (2000)	24,758	13,772	3,218
Taxa de Alfabetização	77,40	65,20	73,80
% Chefe de Domicílio Ganhando até 1 S. M	45,10	56,33	49,81
% Chefe de Domicílio sem rendimento	4,14	14,16	22,73
IDH	0,725	0,637	0,660
Esperança de Vida ao Nascer:	70.104	67.342	66.212
Área (Km2)	259,96 km²	381,20 km²	30,94 km²,
Altitude da Sede (m)	193 metros	319 metros	216 metros
Distância em Relação à Capital	400 km	369 km	348 km
Tipo de Clima	clima muito quente e semi-árido, com estação chuvosa atrasando-se para o outono	Clima muito quente e semi-árido, com estação chuvosa atrasando-se para o outono	clima tropical chuvoso
Precipitação Pluviométrica Annual (normal)	721,3 mm	762,6 mm	872,9 mm
Precipitação Pluviométrica Annual (observada)	770,5 mm	672,6 mm	1.381,4 mm
Período Chuvoso	fevereiro a junho	fevereiro a maio	fevereiro a maio
Temperaturas Médias Anuais (Maxima)	36,0 °C	33 °C	36,0 °C
Temperaturas Médias Anuais (Media)	28,1 °C	28 °C	28,1 °C
Temperaturas Médias Anuais (Minima)	21,0 °C	18 °C	21,0 °C
Umidade Relativa Média Anual	66%	66%	66%
Formação Vegetal	Caatinga Hiperxerófila - vegetação de caráter mais seco, com abundância de cactáceas e plantas de porte mais baixo e espalhadas. Entre outras espécies destacam-se a jurema-preta, mufumbo, faveleiro, marmeleiro, xique-xique e facheiro	Caatinga Hiperxerófila - vegetação de caráter mais seco, com abundância de cactáceas e plantas de porte mais baixas e espalhadas. Entre outras espécies destacam-se a jurema-preta, mufumbo, faveleiro, marmeleiro, xique-xique e facheir	Caatinga Hiperxerófila - vegetação de caráter mais seco, com abundância de cactáceas e plantas de porte mais baixo e espalhado. Entre outras espécies destacam-se a jurema-preta, mufumbo, faveleiro, marmeleiro, xique-xique e facheiro
Solos	Podzólico Vermelho Amarelo Equivalente Eutrófico - fertilidade alta, textura média e média cascalhenta, acentuadamente drenado, relevo suave	Podzólico Vermelho Amarelo Equivalente Eutrófico - fertilidade média a alta, textura média cascalhenta, acentuadamente drenado, raso, relevo suave ondulado	Podzólico Vermelho Amarelo Equivalente Eutrófico - fertilidade alta, textura média, acentuadamente drenado, relevo suave ondualdo
Uso do solo	a utilização agrícola sem irrigação está restrita a culturas resistentes a seca, recomenda-se uso intensivo de práticas de controle a erosão, uma pequena área é cultivado com culturas de subsistência	a utilização agrícola deve ser restrita a culturas resistentes a um longo período de estiagem (algodão arbóreo). Pequenas áreas são cultivadas com culturas de subsistência, como milho e feijão.	a utilização agrícola sem irrigação está restrita a cuturas resistentes a seca. Recomendam-se práticas intensivas de controle a erosão
Aptidão Agrícola	restrita para lavouras, apta para culturas de ciclo longo como algodão arbóreo, sisal, caju e coco e uma pequena área regular e restrita para pastagem natural	restrita para lavouras, aptas para culturas de ciclo longo, como, algodão arbóreo, sisal, caju e coco. Pequena área isolada a sudeste com aptidão regular para pastagem natural. A sudeste há algumas áreas indicadas para preservação da flora e da fauna ou para recreação	restrita para lavouras, apta para culturas de ciclo longo como algodão arbóreo, sisal, caju e coco. Uma pequena área é indicada para preservação da flora e da fauna ou para recreação
Sistema de Manejo	baixo e médio nível tecnológico, onde as práticas agrícolas dependem do trabalho braçal e da tração animal com implementos agrícolas simples	baixo e médio nível tecnológico. As práticas agrícolas dependem do trabalho braçal e tração animal com implementos agrícolas simples	baixo, médio e alto nível tecnológico, podendo as práticas agrícolas estar condicionadas tanto ao trabalho braçal, e a tração animal, com implementos agrícolas simples, como a motomecanização
Relevo	100 a 200 metros de altitude	200 a 400 metros de altitude	200 a 400 metros de altitude
Rio Principal	Apodi	de Alexandria	
Riachos Principais	do Meio, do Retiro, da Estrema, das Cajazeiras, Capa	de Alexandria, da Mata, do Meio	
Açudes com Capacidade de Acumulação Superior a 100.000 m³	4 (Barragem Pau dos Ferros= 54.846.000 m3) e 25 de Marco = 8.181.000 m3)	3 (Pulgas=3.300.00m3, Riacho do Meio = 1.610.000 m3, e Riacho da Mata= 750.000 m3)	Acude Lucrecia = 27.270.000 m3

Área Colhida e Quantidade Produzida dos Principais Produtos Agrícolas - 2003

Pau dos Ferros		
Produto	**Área Colhida (ha)**	**Quantidade Produzida (t)**
Algodão herbáceo	6	4
Banana	14	295
Castanha de caju	30	6
Coco-da-baía (1)	2	8
Arroz	40	60
Batata doce	12	48
Cana-de-açúcar	13	325
Feijão	550	220
Fumo	5	4
Milho	650	488
Fonte: IBGE		
Nota: (1) 1000 frutos		

Alexandria		
Produto	**Área Colhida (ha)**	**Quantidade Produzida (t)**
Algodão herbáceo	15	10
Arroz	17	25
Batata-doce	8	32
Cana-de-açúcar	2	50
Feijão	730	292
Fumo	89	60
Manga	2	11
Milho	930	744
Tomate	6	150
Banana	1	20
Castanha de caju	2	1
Coco-da-baía (1)	1	4
Fonte: IBGE		
Nota: (1) 1000 frutos		

Lucrecia		
Produto	**Área Colhida (ha)**	**Quantidade Produzida (t)**
Algodão herbáceo	6	4
Arroz	10	14
Batata - doce	5	20
Cana-de-açúcar	29	920
Feijão	180	72
Mandioca	5	40
Milho	370	294
Banana	2	40
Castanha de caju	2	1
Coco-da-baía (1)	9	35
Manga	6	31
Fonte: IBGE		
Nota: (1) 1000 frutos		

ANEXO 5.1

TABELA COMPARATIVA 2007 E 2008 DA ÁREA COLHIDA DAS 14 CULTURAS NO RIO GRANDE DO NORTE

CULTURA	2007 DEZ	2008 AGO	VAR. ANUAL %
Algodão	3644	5969	63,80
Arroz	5060	5351	5,75
Feijão	21357	33960	59,01
Milho	28191	54660	93,89
Mamona	92	47	-48.91
Sorgo Granífero	14221	14324	0,72
Sub-total	72565	114311	
Tomate	9053	9162	1,2
Cana-de-açúcar	3836626	4113299	7,21
Mandioca	566216	574601	1,48
Banana	190946	122539	-35.83
Castanha de Caju	40408	40800	0,97
Sisal	1394	1262	-9.47
TOTAL	4717208	4975974	
Abacaxi	91152	91712	0.61
Coco-da-baía	60334	60163	-0.28
Total em mil frutos	151486	151875	

Fonte: IBGE, LSPA agosto/2008

ANEXO 5.2

TABELA COMPARATIVA 2007 E 2008 DA PRODUÇÃO OBTIDA DAS 14 CULTURAS NO RIO GRANDE DO NORTE

CULTURA	2007 DEZ	2008 AGO	VAR. ANUAL %
Algodão	3644	5969	63,80
Arroz	5060	5351	5,75
Feijão	21357	33960	59,01
Milho	28191	54660	93,89
Mamona	92	47	-48.91
Sorgo Granífero	14221	14324	0,72
Sub-total	72565	114311	
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Banana	190946	122539	-35.83
Castanha de Caju	40408	40800	0,97
Sisal	1394	1262	-9.47
TOTAL	4717208	4975974	
Abacaxi	91152	91712	0.61
Coco-da-baía	60334	60163	-0.28
Total em mil frutos	151486	151875	

Fonte: IBGE, LSPA agosto/2008

Anexo 6

TABELA COMPARATIVA DE PRODUTIVIDADE 2007/2008 DAS 14 CULTURAS NO RIO GRANDE DO NORTE

CULTURA	2007 t/ha	2008 t/ha	Produtividade
Algodão	**0.732**	**0.761**	⇔
Arroz	**3.566**	**3.589**	⇔
Feijão	**0.387**	**0.469**	↑
Milho	**0.550**	**0.729**	↑
Mamona	**0.754**	**0.635**	↓
Sorgo Granífero	**1.958**	**2.038**	↑
Tomate	**27.433**	**26.557**	↓
Cana-de-açúcar	**62.458**	**62.328**	⇔
Mandioca	**10.973**	**11.124**	⇔
Banana	**27.904**	**19.165**	↓
Castanha de Caju	**0.347**	**0.347**	⇔
Sisal	**0.569**	**0.587**	⇔

Fonte: IBGE, LSPA agosto/2008

ANEXO 7

Tabela comparativa dos indices pluviometricos entre os anos 2007 e 2008

	NORMAL	OBSV. 2007	OBSV.2008
ALEXANDRIA(DELEGACIA)	665,4	527,1	1029.2
ALMINO AFONSO(PARTICULAR-EX.ST.MILAG)			1086.8
ANTONIO MARTINS(EMATER)	595,2	770,3	1147.4
ANTONIO MARTINS(ST. AREIAS (ex-Corredor)	595,2	524,7	853
APODI(BASE FISICA EMPARN)	602,7	475,2	843.3
APODI(PREFEITURA)	602,7	575,3	1132.9
CARAUBAS(PARTICULAR)	558,6	514,2	652.4
ENCANTO(PREFEITURA)			1407.9
FELIPE GUERRA(PREFEITURA)			623.7
FRANCISCO DANTAS (EMATER)	636,8	537,9	
FRUTUOSO GOMES(EMATER)			1158
JOSE DA PENHA(EMATER)			1200.5
JOSE DA PENHA(SITIO ANGICOS)			1054.5
LUCRECIA(EMATER)	758,1	787,6	839.4
MARCELINO VIEIRA(EMATER)			749.5
MARCELINO VIEIRA(EMATER/ST.VACA MORTA)			1184.9
MARTINS(PARTICULAR)	974,5	940,8	1459.3
MESSIAS TARGINO(PREFEITURA)	753,5	730,1	818.7
OLHO D'AGUA DOS BORGES(PARTICULAR)	645,9	571,9	1210.1
PAU DOS FERROS(PARTICULAR)	636,8	593,4	1098
RAFAEL FERNANDES(EMATER)			1070.7
RAFAEL GODEIRO(PREFEITURA)	753,5	658,5	1131
SAO FRANCISCO DO OESTE (PREFEITURA)	636,8	867,6	
SAO MIGUEL(EMATER)			1005.4
SERRINHA DOS PINTOS(PREFEITURA)	974,5	680,9	1204.5
SEVERIANO MELO(ACUDE MALHADA VERMELHA)	600	409,1	923.9
SEVERIANO MELO(PREFEITURA)	600	320,9	704.6
TENENTE ANANIAS(EMATER-ST MORORO)			943.5
UMARIZAL(EMATER)	706,4	463,1	1044.5

Fonte: EMPARN – Dados resumidos do site

http://www.emparn.rn.gov.br/links/meteorologia/monitoramento_mensal.html

RECOMENDAÇÕES PARA O PLANTIO DO GIRASSOL(EMPARN):

Manejo:

- Subsolagem em solos compactados, aração na profundidade de 20 cm em solos argilosos com duas gradagens;
- Adubação com fertilizantes simples, misto, orgânico, organo-mineral, de acordo com as condições do solo;
- Época de plantio de acordo com as condições climáticas (pluviosidade entre 500 a 700 mm bem distribuidos);
- Espaçamento para plantio: 70 a 90 cm entre linhas e de 30 a 25 cm entre plantas com profundidade de 3 a 5 cm;
- 4 a 5 kg de sementes/ha;
- Controle de plantas daninhas, principalmente nos primeiros 40 dias após a emergência das plantas;
- Controle de Pragas: Vaquinha, lagarta preta, percevejos, besouro do capítulo, formigas, lagarta rosca;
- Controle de doenças fúngicas: Podridão da raiz e do colo das plantas e Mancha de alternária. Geralmente proliferam com o excesso de umidade e altas temperaturas;
- Colheita com 14 a 16% de umidade, armazenados a 11%.
- Zoneamento agrícola.

Variedade e híbridos recomendados pela EMPARN

1. Variedades Embrapa 122, Nutrissol e Catissol;
2. Híbridos: M734, Agrobel 960, Hélio 360, Hélio 362, Hélio 253, Hélio 251, MG 52, V20038 e VDH 487

Características:

- Ciclo: 100 a 110 dias para a produção de grãos e de 80 a 90 dias para silagem;
- Altura média de 1,70 m;
- Potencial médio d produção de grãos: 1.500 a 2.000 kg/ha para variedade e híbridos, respectivamente;
- Teor médio de óleo: 40%

ATTACHMENT 9

Budget for sunflower production – Pronaf
Production costs for 1 ha of sunflower
Variety: Catissol 1 Productive Cycle: 100 days Distancing: 0.9m X 0.3m
Expected productivity: 1,000 to 1,200 Kg/ha

%	Description	Parcel	Quantity	Unities	Price R$	
					Unit	Total
40,4%	**Intermediary goods**	1ª.				**211,50**
0,00%	Seeds		4	Kg		-
1,15%	Poison against ants		1	Kg	6,00	6,00
7,54%	Insecticides		1	Kg	40,00	40,00
27,32%	Fertilizer NPK		220	Kg	0,65	143,00
4,30%	Fertilizer Boro		9	Kg	2,50	22,50
						-
25,21%	**Soil Preparation and planting**	1ª.				**132,00**
22,92%	"Gradagem"		2	h/trator	60,00	120,00
2,29%	Planting e replanting		2	d/h	6,00	12,00
						-
18,34%	**Culture care and plants health**	1ª.				**96,00**
4,58%	**control**		2	d/ha	12,00	24,00
8,02%	Weeding and animal traction		7	d/h	6,00	42,00
2,29%	Manual weeding (retouching with spade)		2	d/h	6,00	12,00
3,44%	Fertilizers appliance		2	d/h	9,00	18,00
	Defensors appliance					-
16,05%		2ª.				**84,00**
	Harvest		14	d/h	6,00	84,00
	Manual/processing					
100%	**Total**					**523,50**
	Gross Revenue		**1000**	**Kg/ha**	**0,81**	**810,00**
35,37%	**Net Income**					**286,50**

Source: compilation of data from EMATER Budget /2008.

Investment	**1st parcel**	**2nd parcel**	**Total**
Period		3 months after the 1st parcel	
Value	R$ 439,50	R$ 84,00	R$ 523,50
Percentage	83,95%	16,05%	100%

Obs.: Working force was reduced in 50% since it's for small scale agriculture. The cost of acquiring seeds was not considered, became they are donated by PETROBRÁS.

OIL EXTRACTOR BUDGET

COMPANY: ECIRTEC – BAURÚ-SP
BUDGET DAY: October 6th, 2008.

A) – Means of supplying
01) Transporter to feed the safety screen.
02) Cleaning Screen
03) Transporter to supply the feeding hopper of the crusher
04) Feeding hopper of the crusher
05) Feeding transporter of the crusher
06) Continuous crusher Ecirtec: model MPE-300
07) Collector tank of oil for filtering
08) Pumping gear: for transport of oil all the way from the collector tank of oil for filtering to the filtering crusher
09) Filtering Crusher Ecirtec
10)"Lung" tank of filtered oil: capacity of 400 litres.
11) Pump: for transporting filtered oil all the way from the "lung" tank to the final storage room located outside of the building at a maximum distance of 5 m or at the bottling tank
12) Air compressor
13) Metallic Structure
14) Complements: mechanic and electrical accessories, pre-assembly, training
B) – Speed of production: equipment dimensioned for 300kg/h of sunflowers
C) – Assembly checking, training and gear positioning
D) – Price per unity:
Considering the means described above, the supply has the following price:
– Unity for 300kg/h: R$450,000.00 (four hundred and fifty thousand reais)

ATTACHMENT 11

EMATER'S EMPLOYEES CHART

REGIONAL UNITY IN PAU DOS FERROS

LOCAL OFFICE	ADRESS	PERSON IN CHARGE	TELEPHONE NUMBER
Água Nova	Rua 13 de Maio, 94	Hercílio Barros Barbosa	3359-0034*
Alexandria	Rua Ananias Emídio, 242	Mauro Abrantes Nobre	3381-3090
Cel. João Pessoa	Rua Nenenzinha Moreno, 70	Francisco de Assis da Silva	3357-0074*
Dr. Severiano	Rua Princesa Izabel, 10	Romilson José Meira da Trindade	3356-0192*
Encanto	Rua Afonso Rodrigues, s/n	Francisco Vieira Sales Júnior	3354-0111*
Francisco Dantas	Rua Costinha Fernandes, 01	José Wilson Fernandes	3379-0072*
José da Penha	Rua Pedro Simplício, s/n	Lavosier Fontes de Queiroz	3383-2304
Luiz Gomes	Av. Nossa Senhora Santana, 14	Luciano Nunes Torquato do Rego	3382-2438*
Major Sales	Rua Marieta Fernandes, 76	Wadna Lúcia da Cruz de Oliveira	3388-0137*
Marcelino Vieira	Rua Des. Licurgo Nunes, s/n	José Miguel Cavalcante Segundo	3385-2020
Paraná	Rua Joaquim Luiz, s/n	Alan Augusto Valentim Duarte	3389-5066
Pau dos Ferros (Local)	Rua D. Pedro II, 89	Haroldo Lobo de Paiva	3351-2732
Pau dos Ferros (Regional)	Rua Joaquim Torquato, 1192	Sônia Maria Silva Cabral	3351-2437
Pilões	-	Aldo Ronaldo Dantas	-
Portalegre	Rua Hipólito Fialho, 354	Manoel de Freitas Neto	3377-2281*
Rafael Fernandes	Rua Egídio Chagas do Nascimento, s/n	João Edimar da Costa	3358-0165*
Riacho de Santana	Assistido pelo Escritório Local de Pau dos Ferros	-	3351-2437
São Francisco do Oeste	-	Ideus Costa Nunes Júnior	-
São Miguel	Rua José Bonifácio, s/n	Francisco das Chagas Souto Leonardo	3353-2115
Tenente Ananias	Rua José Pereira, 28	Sebastião Gomes Coelho	3356-2434
Venha Ver	Av. Min. Aluízio Alves, s/n	Antonio Viana Filho	3355-0004

ATTACHMENT 12

Population occupied by economic sector, in the region and in the State, 2000.

Municipal districts	**Agriculture, Cattle Breeding, Silviculture and Aquaculture**		**Industry**		**Services**		**Total**
	Absolute	**%**	**Absolute**	**%**	**Absolute**	**%**	
Alexandria	1.960	**47,50**	225	5,40	1.944	47,10	4.129
Almino Afonso	767	767	157	9,90	662	41,70	1.586
Antônio Martins	1.390	**66,00**	106	5,00	609	29,0	2.105
Encanto	916	57,90	120	7,60	545	34,5	1.581
Francisco Dantas	445	42,10	35	3,30	578	54,6	1058
Frutuoso Gomes	603	48,60	106	8,50	533	42,9	1.242
José da Penha	1117	55,90	76	3,80	804	40,30	1.997
Lucrécia	296	29,70	93	9,30	608	61,0	997
Marcelino Vieira	1.644	**56,20**	279	9,50	1.004	34,30	2.927
Martins	1.525	56,80	129	4,80	1.031	38,40	2.685
Messias Targino	253	23,30	118	10,90	714	65,8	1.085
Olho D'Agua do Borges	539	38,70	209	15,00	646	46,30	1.394
Patu	893	25,50	446	12,70	2.163	61,8	3.502
Pau dos Ferros	1.531	16,20	1237	13,10	6.676	70,7	9.444
Rafael Fernandes	602	43,20	86	6,20	705	50,60	1.393
Rafael Godeiro	414	46,70	62	7,00	411	46,3	887
São Francisco do Oeste	441	35,60	156	12,60	641	51,8	1.238
São Miguel	4.089	58,60	465	6,70	2.427	34,7	6.981
Serrinha dos Pintos	814	54,60	131	8,80	546	36,6	1.491
Tenente Ananias	1.276	52,90	205	8,50	931	38,60	2.412
Umarizal	1.213	32,20	485	12,90	2065	54,9	3.763
	33.800	46,40	6.000	8,00	33.060	45,60	72.800

Source: IBGE, Demographic Census – Employment and income: 2000 Sample Results.

ATTACHMENT 13

ADMINISTRATIVE REGION OF PAU DOS FERROS

LIST OF PUBLIC EMPLOYEES FOR ALLOTMENT UNITY

MUNICIPAL DISTRICT	TEAM NAME	POSITION/JOB	ORGAN
Água Nova (01)	Hercílio Barros Barbosa	Ext. Rural I (Agric. Tec.)	EMATER-RN
Alexandria (03)	Mauro Abrantes Nobre	Ext. Rural II(Veterinary)	EMATER-RN
	Laila Milena Nogeira Oliveira	Ext. Rural I (Agric. Tec.)	EMATER-RN
	* Roney Bernardino da Silva	Zootecnist	SEJUC
Cel. João Pessoa (03)	Francisco de Assis da Silva	Ext. Rural I (Tec. Agric.)	EMATER-RN
	Joaquim de Souza Rego	Agricultural Technician	DATANORTE
	Francisco Alves da Costa	Adm. Assistant	EMATER-RN
Dr. Severiano (02)	Romilson José Meira da Trindade	Ext. Rural I (Agric. Tec.)	EMATER-RN
	Raimundo Nonato de Lima	Adm. Assistant	EMATER-RN
Encanto (02)	Francisco Vieira Sales Júnior	Ext. Rural I (Agric. Tec.)	EMATER-RN
	Alceu de Freitas Rego	Adm. Assistant	PREFEITURA
Fco. Dantas (1)	José Wilson Fernandes	Ext. Rural I (Agric. Tec.)	EMATER-RN
José da Penha (01)	Lavosier Fontes de Queiroz	Eng. Agrônomo	PREFEITURA
Luiz Gomes (2)	Luciano Nunes Torquato do Rego	Ext. Rural II (Agric. Eng.)	EMATER-RN
	Kergenilson de Paiva Meneses	Ext. Rural II (Agric. Eng.)	EMATER-RN
Major Sales (1)	Wadna Lúcia da Cruz de Oliveira	Ext. Rural I (Agric. Tec.)	EMATER-RN
Marcelino Vieira (03)	José Miguel Cavalcante Segundo	Ext. Rural I (Agric. Tec.)	EMATER-RN
	**Antonio Herbert Xavier de Queiroz	Ext. Rural II (Educator)	EMATER-RN
	Irmã Maria Cardoso Fontes de Queiroz	Adm. Assistant	EMATER-RN
Paraná (01)	Alan Augusto Valentim Duarte	Agricultural Technician	PREFEITURA
Pau dos Ferros (Local) (07)	Haroldo Lobo de Paiva	Ext. Rural II (Agric. Eng.)	EMATER-RN
	Agamenon da Costa Melo	Ext. Rural I (Agric. Tec.)	EMATER-RN
	José Edson Filho	Ext. Rural I (Agric. Tec.)	EMATER-RN
	Klívio Loreno Raulino Tomaz	Ext. Rural II(Veterinary)	EMATER-RN
	José Ari Maia Filho	Ext. Rural I (Agric. Tec.)	EMATER-RN
	Maria de Fátima Bezerra	Adm. Assistant	EMATER-RN
	Antonio Avelino do Nascimento	Topógrafo	DATANORTE
Pau dos Ferros (Regional) (06)	Sônia Maria Silva Cabral	Ext. Rural II (Ch. Reg.)	EMATER-RN
	José Gomes da Costa Sobrinho	Ext. Rural II (Ass. Cred)	EMATER-RN
	Epifânio Silvino do Monte	Ext. Rural II (Ass. Agro)	EMATER-RN
	Glenda Fernanda Coelho Lins	Ext. Rural II (Nutric.)	EMATER-RN
	José de Arimatéa Diógenes	Adm. Assistant	EMATER-EN
	José de Souza Castro Filho	Driver	EMATER-RN
Pilões (02)	Aldo Ronaldo Dantas	Ext. Rural I (Agric. Tec.)	EMATER-RN
	Cândido Neto Fernandes	Agricultural Technician	PREFEITURA
Portalegre (01)	Manoel de Freitas Neto	Ext. Rural II (Agric. Eng.)	EMATER-RN
Raf. Fernandes (02)	João Edimar da Costa	Agricultural Technician	SETHAS
	Cleiton Dantas de Medeiros	Ext. Rural I (Agric. Tec.)	EMATER-RN
São Fco.do Oeste(01)	Ideus Costa Nunes Júnior	Ext. Rural I (Agric. Tec.)	EMATER-RN
São Miguel (06)	Francisco das Chagas Souto Leonardo	Ext. Rural II (Agric. Eng.)	EMATER-RN
	Ana Valéria Lacerda Freitas	Ext. Rural II (Agric. Eng.)	EMATER-RN
	Epitácio Felizardo Bento	Ext. Rural I (Agric. Tec.)	EMATER-RN
	Nikaline Freire de Medeiros	Ext. Rural II (Soc. worker)	EMATER-RN
	Georgio Abrantes Barbosa Cavalcante	Ext. Rural II(Veterinary)	EMATER-RN
	Maria Lucimar da Costa Barros	Adm. Assistant	EMATER-RN
Ten. Ananias (02)	Sebastião Gomes Coelho	Ext. Rural I (Agric. Tec.)	EMATER-RN
	Dernival Fernandes de Souza	Adm. Assistant	DATANORTE
Venha Ver (03)	Antonio Viana Filho	Agricultural Technician	PREFEITURA
	Expedito Salviano	Ext. Rural I (Agric. Tec.)	EMATER-RN
	José Gilvan Torres	Ext. Rural I (Agric. Tec.)	EMATER-RN

Total= 50 *Non-legal. **Lacks confirmation

REGIONAL UNITY OF UMARIZAL

LOCAL OFFICE	ADRESS	PERSON IN CHARGE	TELEPHONE
Almino Afonso	Rua Almino Afonso, 217	Luzineide Monteiro Carlos	3395-0218
Antonio Martins	Av. Senador Joaquim Inácio, 430	Everton Augusto de Mesquita	3392-0293
Frutuoso Gomes	Rua José Carlos, s/n	Edvaldo Lopes de Moura	3394-0093
Itaú	Rua Raimundo Fernandes,518	Manoel Fortunato Sobrinho Júnior	3371-2189
Janduis	Rua Moisés Gurgel, s/n	Edimilson José dos Santos	3366-0281
João Dias	Rua Francisco Veríssimo Filho, s/n	Jose Brunet Filho	3393-0098
Lucrécia	Rua Julieta Dantas, s/n	Adeilton Alves da Cunha	3396-0217
Martins	Rua Senador Pedro Velho, 400	Laélio Cunha de Souza	3391-2280
Messias Targino	Rua Manoel Fernandes Jales,315 - Centro	Aderban Medeiros da Silva	-
Patu	Av. Lauro Maia,112	José Jair Dantas	3361-2352
Rafael Godeiro	Rua Benedito Julião, s/n	Rogério Fernandes Martinelli	3363-0117
Riacho da Cruz	-	Assistido por Frcº Antº de Freitas Umarizal	3397-2245
Rodolfo Fernandes	-	João Batista Xavier de Lima	3373-2002
Tabuleiro Grande	-	Clauberto Bessa Cavalcanti	-
Umarizal	Av.Divinópolis, 295	Antônio Gutemberg da Costa	3397-2245
Serrinha dos Pintos	Rua Eugênio Costa S/N	Jarbas Dinis Costa de Amorim	3398-0020
Viçosa	-	Assistido por Francisco Atº de Freitas	-

ATTACHMENT 15

ADMINISTRATIVE REGION OF UMARIZAL

LIST OF PUBLIC EMPLOYEES FOR ALLOTMENT UNITY

MUNICIPAL DISTRICTS	TEAM NAME	CARGO/FUNÇÃO
Almino Afonso	Washington Luiz Jales[*1]	Ext. Rural I
Antonio Martins	Everton Augusto de Mesquita[*1]	Ext. Rural I
Frutuoso Gomes	Edvaldo Lopes de Moura	Ext. Rural I
Itaú	Manoel Fortunato Junior[*1]	Ext. Rural I
Janduis	Edmilson José dos Santos[*1]	Ext. Rural I
João Dias	José Brunet Filho	Ext. Rural II
Lucrécia	Adeilton Alves da Cunha[*1]	Ext. Rural I
Messias Targino	Aderban Medeiros da Silva[*1]	Ext. Rural I
Olho D'agua	Ienilton Alves Gurgel	Ext. Rural I
Patu	Paulo Sergio de Souza[*1]	Ext. Rural II
Regional Emater	Rogerio Fernando martinelli[*1]	Ext. Rural I
Riacho da Cruz	Francisco Antonio de Freitas	Ext. Rural II
Rodolfo Fernandes	João Batista Xavie de Lima[*1]	Ext. Rural I
Serrinha dos Pintos	Jarbas Dinis Costa de Amorim[*1]	Ext. Rural I
Umarizal (3)	Antonio Gutemberg da Costa	Ext. Rural I
	Cezar Augusto de Oliveira	Ext. Rural I
	Jose Cesar Meneses da Costa	Ext. Rural I
Total	**17**	

[*1]new employees

ATTACHMENT 16

LIST OF COOPERATIVES IN THE REGION OF MEDIUM AND HIGH WEST OF RIO GRANDE DO NORTE

ANTONIO FRANCISCO DUARTE - COOP. FROM APODI REGION **(COOPERA)** - **APODI/RN**	Active
MILTON FERREIRA DE SALES – MIX REGIONAL COOP. FROM APODI (COOPERMIL) RUA BENJAMIM CONSTANTE, 227 59700-000 - **APODI/RN**	Rented
FÁTIMA DE LIMA TORRES - POTIGUAR APICULTURE COOPERATIVE **(COOPAPI)** RUA SEBASTIÃO CISENANDO, 262 - CENTRO - CIBRAZEM BUILDING 59700-000 **APODI/RN**	Active
ANTÔNIO FRANCISCO GURGEL - COOP. TRAB. EM MÚLTIPLOS SERV. DE APODI (COOTRASEMA) RUA GOVERNADOR DIX-SEPT ROSADO, Nº 244 CENTRO 59700-000 – **APODI/RN**	Shut Down
JOSÉ EVANGELISTA GOMES - COOP. TÉC. INTERDISCIPLINAR DE SERV. ASSES. E PESQUISA **(COOTISA)** RUA PEDRO I, 68, CENTRO 59700-000 - **APODI/RN**	Active
LUIZ LIBRANIO PESSOA - COOP. AGROP. DE SÃO MIGUEL LTDA. (COOPASMIL) RUA CHICO OTAVIANO, 160 – CENTRO 59920-000 - S**ÃO MIGUEL/RN**	Active
ANTÔNIO LOPES - COOP. AGRÍCOLA MISTA DE TENENTE ANANIAS (COAMTAL) RUA JOSÉ MOREIRA DO NASCIMENTO, 511 – CENTRO 59955-000 - **TENENTE ANANIAS/RN**	Active
PAULO CESAR GALDINO - COOP. AGROP. REGIONAL DE MARTINS (COOPARMA) RUA DESEMBARGADOR HEMETÉRIO, S/Nº 59800-000 - **MARTINS/RN**	Sales only of intermediary goods
JOSÉ DE ARIMATÉIA - COOP. MISTA DE SÃO FRANCISCO DO OESTE **(COOPOESTE)** RUA ALEXANDRE BENEDITO, S/Nº - CENTRO 59908-000 - **SÃO FRANCISCO DO OESTE/RN**	Shut Down
ANTÔNIA MARIA DA SILVA - COOP. M. AGRO-INDL. PEQ. PROD. CARAUBAS **(COOPERUBA)** PRAÇA APRONIANO MARTINS DE SÁ, Nº 13 59780-000 – **CARAUBAS/RN**	Active
FRANCISCO DANTAS DA SILVA FILHO - COOP DE SERV. MÚTPLOS DE LUCRÉCIA (COOPSEL) RUA RAUL ALENCAR, 368 – CENTRO 59805-000 - **LUCRÉCIA/RN**	Shut Down
JOÃO JÁCOME DE BRITO JR - COOP. DE TRAB. P/ O DESENVOLV.SUSTENTÁVEL DO ALTO OESTE POTIGUAR RUA JOAQUIM TORQUATO, S/Nº VILA ELIANTO PIGNATARIO SL. 01 DNOCS 59000-000 **PAU DOS FERROS/RN**	Active

GPS and GOOGLE EARTH – João Batista agricultural property and other properties at Alexandria region with satellite view.

Project area and selection for model definition.
The figure was obtained by Google Earth satellite image view and the exact model property was pointed in yellow, obtained by mobile GPS at the visit. Other properties around 15 Km distance had been marked in red color. We concluded that more than 50 properties with good access can be found in this project area.

Distância	Km	Tempo
Apodi a Pau dos Ferros	86	
Pau dos Ferros a Marcelino Vieir	8	*inf. Emater
Pau dos Ferros a F. Dantas	11	*inf. Emater
Pau dos Ferros a Encantos	11	*inf. Emater
Alexandria a Lucrécia	44	1hora e 25 minutos
Lucrécia a Umarizal	21	20 minutos
Umarizal a Martins (subida)	32	46 minutos
Martins a Umarizal (descida)	32	31 minutos
Lucrécia a Caraubas	42	40 minutos
Caraubas a D. Rosado	38	26 minutos
D. Rosado a Mossoró	36	34 minutos

Altitude	m
Lucrécia	207
Umarizal	174
Martins	714

PROPRIEDADES VISITADAS

AGRICULTORES DO RIO GRANDE DO NORTE

	Data	Agricultor	Constituição familiar	Características agrícolas	Características da pecuária	Fonte de renda	Informações sobre o Girassol	Aptidão para o projeto
1	2008/09/22 visita das 11:00-12:00	Francisco Chagas Costa - Município de Felipe Guerra		A propriedade é herança do pai que possuia 800 ha e foi dividida entre 9 filhos. Utiliza implementos agrícolas contratada (do pai e vizinho); não tem costume de plantio adubado.	Possui criação animal; os ovinos são comercializados a R$ 6,00/Kg e, normalmente, quando se vende com 10 Kg de peso vivo, é vendido a R$ 60,00; Produz silagem de SORGO FORRAGEIRO e uma trincheira de 1,8 x 23 x 3,5 m comporta 40 t e é possível alimentar de 26 a 30 animais durante a época da seca; tem outras 2 trincheiras de 1,5 x 1,8 x 11 m; Tem aumentado as pragas de pastagens como CAPIM RABO DE RAPOSA, MATA PASTO, SAMBA COITÉ, JUTIRANA (consumido pelos animais)	Agricultura (girassol) e pecuária	Obteve informações do girassol à 3 anos atrás.No primeiro ano plantou com adubação com orientação da COOPERA, porém houve atraso no plantio; Foi realizado a análise do solo através da cooperativa e utilizou adubação orgânica; No segundo ano, plantou por conta próprio. Em 2008 aumentou a área de plantio do girassol para 20 ha (sequeiro); A semente é adiquirida através do repasse da cooperativa; COOPERA entrou com todos os custos; Teve acompanhamento do técnico da Emater (para adaptação da plantadeira);Não observou ataque de pássaros; A cooperativa contrataria uma colheitadeira mas não houve acordo; Este ano colheu manualmente; O produto é entregue em Apodi e está beneficiado em	RECOMENDADO com característica de INOVADOR.
2	23-Sep	Francisco Pacido Tagino (Dodó) - comunidade Soledade - tel 9957-2517	Família com 9 filhos, sendo que um morreu aos 28 anos de idade.	Area total de 64 ha sendo: 15 ha de mata nativa, 6ha de girassol, 20 ha de algodão, 8 ha de milho, 15 ha de pastagem. Não cultivou feijão pois houve infestação de broca. O solo é arenoso superficialmente com predominância de solo argiloso na parte profunda. Houve ataque de pássaros no sorgo mas não no milho. Um dos problemas observado é a falta de interesse dos filhos em dar continuidade com a agricultura; possui conta pendente na cooperativa, impedindo-o de fazer empréstimo bancário. Hoje, está renegociando R$ 4.000,00; Há problema na colheita do algodão por falta de mão de obra que foram para outro estado	10 cabeças de gado leiteiro. Tem mais criação na propriedade do pai que é de 190 ha.	Agricultura (algodão, girassol, milho) e pecuária.	Plantou 6 ha de girassol em 2008 e foi a primeira experiência; Não obteve bons resultados pois teve dificuldade no plantio e o custo do trator foi de R$ 50,00/hora. O plantio foi com a matraca no dia 16/04 e a colheita manual em agosto (o custo da colheita mecanizada sairia por R$ 70,00/ha); a produção fica a 11 km da casa e produziu aproximadamente 4000 kg em 6 ha (666 kg/ha).	RECOMENDADO. Acredita que o girassol é melhor do que o algodão, caso seja cultivado com as devidas orientações técnicas.
3	23-Sep	Raimundo Maurilio de Oliveira (Cinto) - Assentamento Milagres - tel. 3333-2807	Assentamento de 600 ha distribuída entre 26 famílias, sendo 90 ha de reserva legal e 60 ha de área de cultivo comunitário.	A Associação recolheu o valor do fomento de R$ 2.100,00 por família para a aquisição de trator, carroça e grade aradora para o uso comunitário. Sr Raimundo está no assentamento a 10 anos e possui 13 ha dividindo a área para o cultivo de 8 ha de algodão, 2 ha de milho, 2ha de pasto e 1 ha de girassol. O custo de produção do algodão foi de R$ 500,00 sendo o produto colhido comercializado a R$ 2.000,00	A pecuária é coletiva e, como são 5 pessoas na família, cada um possui 4 cabeças de gado. Quando o Sr. Raimundo entrou no assentamento, possuia uma dívida de R$ 9.500,00 e hoje, administra um comércio local. O genro trabalha com apicultura e possui 40 colméias.	Comércio (bar); agricultura (algodão), apicultura e pecuária.	Plantou 1 ha de girassol (plantio atrasado) mas teve 30 dias de chuva contínua. O dia da adubação também não foi adequada, uma vez que ficou 10 dias exposta ao sol. O plantio foi com a matraca; o girassol foi debulhado com a máquina debulhadeira de milho.	RECOMENDADO.
4	24-Sep	Domingos Alves Soares e Julieta - Marcelino Vieira	Casal mais 6 famílias de rendeiros. Sua filha Silvana é agrônoma e trabalha na MDA. A produção é dividida sendo duas partes para o produtor (parceiros ou rendeiros) e uma parte para o propriet ário (Sr. Domingos).	200 ha divididas entre 6 famílias. Desenvolve agricultura de sequeiro e 50% da área é inutilizada por falta mão-de-obra. Possui trator, grade e carreta. Realiza serviços terceirizados para gradagem. Cultiva 15 ha de milho e feijão (principal atividade). Tem o cultivo da cana para produção de rapadura. A produção em parceria é de 30 ha de feijão, 30 ha de milho e 10 ha de cana. Possui poço artesiano de 60 m de profundidade, possui equipamento para irrigação.	Rebanho de bovino leiteiro, ovinos, caprinos e aves.	Agricultura; produção de rapadura (20.000 unidades/ano comercializado a R$ 1,20/unidade); bovino leiteiro misto e avicultura (pequenos animais para consumo e venda).	cultivou o girassol experimentalmente mas como o gasto foi de R$ 1000,00 com retorno de R$ 200,00, não o recomenda o cultivo. Aplicou adubo químico em época inadequada, não capinou, faltou orientação, semente chegou atrasado, plantio de 3 a 4 sementes por cova (ideal pe 7 a 8 sementes por cova).	NÃO RECOMENTADO. Insuficiência de mão-de-obra e pelos custos de produção elevada.
5	24-Sep	Antônio de Pádua Medeiros - Marcelino Vieira - tel. 9401-7861	Antônio e Valdinete desenvolvem a apicultura como principal fonte de renda.	Montou a casa do mel e possui 500 colméias. A área é de 145 ha e cultiva 2 ha de milho, 2 ha de sorgo forrageiro, 3 ha de cana e 4 ha de capim.	Pecuária de gado leiteiro.	Apicultura; venda de derivados lácteos; produção de doces caseiros.	Plantou 1 ha de girassol e observou aumento na produtividade do mel. No entanto, a produção foi apenas de 173 kg devido ao plantio atrasado e capitulos desuniformes.	RECOMENDADO para desenvolver juntamente com a APICULTURA.
6	25-Sep	Valdemar Ferreira de Sena (Patrício) - Munic. Rafael Ferandes - tel 3348-0032	Mora com a esposa e o filho Jaime,vivendo exclusivamente da agricultura. Eram 7 filhos mas quase todos foram para a cidade de Francisco Dantas (um deles trabalha como agrônomo). Comenta-se que o desemprego local é alto. Infra-estrutura com 4 casas, 2 carros e 1 moto. O irmão tem trator com plantadeira, ensiladeira e grade aradora e niveladora.	Possui 4 propriedades: 1. Na de 38 ha, cultiva-se 1 ha de milho, 5ha de sorgo, 0,5 ha de banana e 31,5 ha de pasto e mata; 2. Na de 75 ha cultiva 3ha de milho, 10 ha de sorgo, 2ha de capim elefante, 0,5 ha de banana, 1 ha de leucena e 58,5 ha para pecuária; 3. Área de 18 ha, sendo 10 ha de milho e 8 ha de pasto nativo; 4. Área de 3 ha sendo 1,5 ha de banana, 0,5 ha de capim elefante, 0,5 ha de leucena e 0,5 ha de área inaproveitada.	70 vacas leiteira e novilhas; 90 caprinos. Utiliza silagem de sorgo e fornece capim elefante. Não utiliza o feno mas tem 300 toneladas de silagem. Dependendo da ocasião, comercializa-se a silagem para os vizinhos. A produção leiteira é de 200 l/dia, em média, com 28 vacas leiteiras. Durante a estação das chuvas a produção passa para 280 a 300 litros. Comercializa caprinos como reprodutor. Na região há uma Associação com 18 sócios para caprinocultura e ovinocultura.	Fruticultura (banana, laranja), bovinocultura de leite, venda de leite ao laticínio de Pau dos Ferros (R$ 0,68/litro com frete excluso) e caprinocultura. Comercializou para o Programa Compra-Direta mas não recebeu R$ 3.000,00.	Por não utilizar o sistema de irrigação, acredita que o cultivo do girassol não dê bons resultados.	NÃO RECOMENDADO. Possui outras atividades que complementa a renda familiar.
7	25-Sep	Almir Rogerio Fernandes de Souza (27 anos), Francisco Jackson Fernandes (26 anos, irmão de Almir) - Agricultores de Alexandria, na Comunidade Cedro	Almir é irmão de Francisco.	Almir possui 10 ha sendo utilizado 4 ha para o cultivo do feijão (produtividade de 180 kg/ha) e 3 ha para milho (produtividade de 180 kg/ha). Não cultiva o algodão por causa do bicudo.	Cria 9 bois de engorda e 1 vaca, numa área de 3 ha. Tem produção de mel que é desempenhado por Francisco. Há uma associação de moradores do Sítio Cedro com 18 apicultores, fundada em 2007, mas não tem mostrado produção no momento.	Agricultura de subsistência. Bovino de engorda e mel.	Nunca plantou girassol.	RECOMENDADO. Está em busca de novas alternativas que possa complementar a apicultura.
	25-Sep	Raimundo G. Sobrinho e Alfredo Francisco da Silva - Alexandria		Raimundo possui 7 ha e Alfredo 8 ha.	O leite é comercializado a R$ 0,30 durante a safra, R$ 0,80 durante a seca, tendo como média R$ 0,57 por litro de leite.	Agricultura de subsistência. Vendeu o excedente de feijão a R$ 80,00 durante a safra (entre-safra comercializado a R$ 140,00).	Nunca plantaram girassol pois não tiveram orientação em tempo hábil.	RECOMENDADO, com certa restrição. Teme que aconteça o mesmo que a Mamona. Com orientação, será bons produtores.
8	25-Sep	Josué Quejivaldo de Moraes (36 anos) - Lucrécia		Possui 7 ha e 5 ha foi destinado ao girassol de sequeiro e 2 ha para feijão irrigado. Utiliza trator Tobata da associação, possui kit de irrigação e moto. O plantio é feito com a matraca.	S/ informação.	comercialização do feijão; COMÉRCIO -Área de lazer com comercialização de bebidas e utilização do sistema de irrigação para atrair público.	Cultivou 5 ha de girassol mas houve perdas por excesso de chuva que extendeu por 15 dias (500 mm) e faltou chuva na fase de formação de grãos. Acredita ser melhor que a pecuária.	**RECOMENDADO - AGRICULTOR MODELO.**
9	25-Sep	Antonio Jessildo de Oliveira (40 anos) - Conversa na Emater Lucrécia		Possui 11 ha sendo dividido em 1 ha de feijão, 2 ha de cana, 2 ha de milho, 3 ha de girassol, 3 ha de capim e mata. Possui sistema de irrigação para 5 ha, 1 carroça, 1capinadeira de boi e 1 moto.	21 garrotes (novilho macho), vaca de leite e touros.	Rapadura; venda de produtos lácteos; comercialização de animais; venda de produtos agrícolas (feijão e milho).	Cultivou 3 ha de girassol e produziu de 1200 a 1300 kg (300 kg/ha).	RECOMENDADO - Proximidade com o agricultor modelo (Sr. Quejivaldo) e para troca de idéias.
10	25-Sep	Agostinho Evaristo da Cunha (46 anos) - Conversa na Emater Lucrécia	Possui Carroça, Carro, Matraca, Pulverizador costal e sistema de irrigação para 7 ha.	Possui 26 ha numa área de vazante e cultiva 2,5 ha de feijão com irrigação, 3 ha de milho, 4 ha de capim elefante e Brachiaria, 0,5 ha de cana, 14 ha de pastagem e 2 ha de reserva.	S/ informação.			
11	2008/9/29 visita das 14	Francisco Chagas (Munic. Felipe Guerra),						RECOMENDADO agricultor pioneiro em girassol
9	2008/9/29 visita das 15:50 as 16:30	Alzimar do Assentamento Nova descoberta	Esposa e 2 crianças	Área de 27 ha, cultivando 6 ha de milho para consumo e venda, 4 ha de algodão, 3 ha de girassol e 4 a 5 ha de sorgo. A locação do trator para os assentados é de R$ 35,00 e para os terceiros, R$ 60,00/hora. A associação possui 2 tratores. A produtividade do algodão (não adubado) foi de 60@/ha, sendo vendido a R$1,00 o	Possui 6 vacas leiteira (para consumo e venda). O gado é alimentado com resíduo de algodão, silagem de milho e pastagem nativa.	Pretende aumentar a produção de milho pois tem facilidade de comércio, aumentar a área plantada de girassol, reduzir o algodão já que o custo com a mão-de-obra é cara. Tem renda com a comercialização do leite para o Programa Compra-Direta. Trabalha como tratorista com o trator da associação	Plantou girassol experimentalmente utlizilando o financiamento do Banco do Brasil. O empréstimo foi de R$ 750,00;ha. A Coopera fez as orientações e a colheita fez-se com a debulhadeira de milho da associação. Produtividade alcançada foi de 400 a 500 kg/ha	RECOMENDADO para avaliar o desempenho animal com o fornecimento de resíduos da colheita de girassol.

10	2008/9/29 visita das 16:45 as 17:15	S/ nome		Anteriormente ao girasssol, cultivava algodão, milho e sorgo. Optou pela mudança devido a novidade. A mão-de-obra está escassa e plantou utilizando trator alugado.		Não informou	Plantou 18 ha de girassol e cultiva há 2 anos, sendo que o primeiro ano foi com adubação	NÃO RECOMENDADO. Cultiva com muito risco.
11	2008/9/29 entrevista conjunta	Jausair		Possui área de 25 ha e cultivou 9 ha de girassol (30 tarefas), 6 ha de algodão, 1 ha de feijão e 3 ha de milho.			O produto final dos 9 ha de girassol rendeu 300 kg/ha. Foi cultivado entre os dias 13 e 25 de abril. Observou que o milho teve melhor rendimento.	QUESTIONÁVEL
12	2008/9/30 entrevista das 10:55 as 11:30	Jose Souza	3 filhos casados que moram em João Pessoa. Queixa-se com o aumento da insegurança na zona rural.	Possui 25 ha, cultiva 15 ha e os 10 ha é de mato. 7 ha de milho, arroz e feijão. Não possui sistema de irrigação.	Possui 16 vacas e 40 novilhas e machos (garrotes). Este ano já comercializou 10 cabeças. Ouviu que a ração de girassol é boa para os animais. Atualmente faz silagem de sorgo para o gado.	Aposentado. Venda de animais e leite	Nunca plantou girassol mas gostaria de experimentar para o gado.	QUESTIONÁVEL. No entanto, poderá ser testado para avaliação do desempenho animal.
13	2008/9/30 entrevista das 11:40 as 13:00	Dilma (93 anos)	A matricarca vive com 3 famílias totalizando 60 pessoas. No entanto, a família chega a 100 pessoas.	Possui 75 ha, sendo de 20 a30 ha de cultivo de milho, feijão, sorgo, melância e gerimum (abóbora), exclusivamente para o consumo. Não realiza adubação mas utiliza o orgânico. Observou que anualmente vem reduzindo a produção. Época de cultivo do milho é de dezembro a janeiro	Possui caprinocultura e bovinocultura (13 cabeças)que é utilizado para consumo e também para a tração animal. Os filhos gostam da vida no campo.	Vive exclusivamente da aposentadoria. Os filhos saem para trabalhar como diarista (no Sr. José Souza também). Recebe bolsa família. Possui um veículo	Nunca experimentou o girassol.	RECOMENDADO. Mão-de-obra abundante e o resíduo poderá ser utilizado para a alimentação animal.
14	2008/9/29 entrevista das 14:30 as 15:10	Antonio Neto da Silva (Munic. De Francisco Dantas)	Assentamento de 402 ha (mas na realidade é de 212 ha por problemas no papel), com 24 associados e a produção é conjunta.	Indisponibilidade de água mas cultiva milho, arroz, feijão, sorgo e batata para subsistência. Utiliza equipamentos da associação.	Criação de galinhas	Venda de excedente para compra de produtos indispensáveis (sal, açúcar), venda de 60 a 100 frangos por vez. Vende a R$ 14,00/galinha. Tem custo com aquisição do milho (2 sacas) e ração (R$ 120,00)	Por desenvolver a apicultura, tem interesse em cultivar o girassol.	QUESTIONÁVEL. A associação precisa ser consultada para a tomada de decisão.
15	2008/9/29 entrevista das 15:10 as 15:30	Assis	Tem 5 filhos mas 2 moram em SP. Hoje, vivem em 4 pessoas: o pai, a mãe, o filho de 38 anos e o neto de 10 anos.	O filho trabalha pouco e planta milho e sorgo. O feijão e o milho, de 2 ha, é destinado ao consumo	Possui de 4 a 5 cabeças de gado.	Os dois são aposentados.		NÃO RECOMENDADO. Há pouco interesse e pouca mão-de-obra.
16	2008/9/30 entrevista das 15:40 as 16:30	Benedito (56 anos)	Criou 12 filhos e hoje vive com a esposa e 7 filhos. As 7 pessoas trabalham no campo.	Quer trabalhar e tem boas condições de saúde. Possui 3,4 ha e planta 1 ha de feijão, 0,5 ha de hortaliças, 0,5 ha de capineira. O açúde toma espaço de 1 ha e a casa, 0,4 ha. Tem irrigação. Adquiriu o equipamento com 4 anos de cultivo do fumo.	2 vacas	Comercialização semanal de hortaliças em Pau dos Ferros. Acredita que as hortaliças remdem mais que o milho e a aposentadoria. A esposa é funcionária pública.	Gostaria de plantar 1 ha e acredita ser melhor do que o fumo.	NÃO RECOMENDADO. A área é aproveitada no máximo e não haverá espaço para o cultivo de girassol.
17	2008/9/30 entrevista das 16:35 as 16:50	Domingos	Tem 4 filhos (gêmeos de 21 anos, 19 anos e 15 anos). São 5 pessoas disponíveis para o trabalho no campo.	A propriedade tem 27 ha mas o terreno é arrendado (94 ha). Produz milho e feijão para consumo. Não possui equipamento e nem faz adubação. Faz rotação de cultura.	1 bezerro, 1 vaca e um garrote (macho).	Passa por dificuldades pois não tem emprego fixo e trabalha de diarista. Os filhos trabalham no corte da cana em SP e retornam no inverno para ajudar. Recebe 17 anos a Bolsa Família.	Acredita dar certo mas não possui informações. Se houvesse preço e comércio garantido, participaria do projeto.	NÃO RECOMENDADO. Não possui área própria.
18	2008/10/1 entrevista das 8:25 as 9:15	Antônio - Comunidade Riacho do Meio (vivem mais 15 famílias na comunidade) - Alexandria	Os 100 ha do avó é dividido com os 7 filhos. As 5 famílias juntas poussuem 2 ciminhonetes, 2 carros e 10 motos. Havia uma associação de farinha mas nunca funcionou.	Área disponível de 30 ha. Cultiva 1 ha de hortaliças. Area não utilizada de 15 ha. Cultiva 0,5 ha de milho e feijão. Parou de cultivar o fumo por motivo de aumento de custo com a mão-de-obra.	30 vacas e 40 ovelhas numa área de 14 ha. Utiliza trator e capinadeira da prefeitura.	Comercio de hortaliças na feira e compra direta, bovinos e caprinos. Muitos da comunidade vão para Baraúna (Mossoró) para trabalho temporário.	Não plantou pois choveu muito. Pretende cultivar no próximo ano.	RECOMENDADO. Para avaliação animal.
19	2008/10/1 entrevista das 9:25 as 9:45	Gregório Gonçalves da Silva (produtor de fumo) - Alexandria	6 pessoas (4 filhos)	Cultiva fumo a 16 anos. Possui 15 ha: 2 ha de fumo irrigado, 4 ha de feijão sequeiro (2 safras anuais), 1 ha de sorgo, milho e melancia. A área de irrigação é de 6 ha.	26 cabeças	Fumo e pecuária. O pagamento do fumo é feito 12 dias após a entrega.	Nunca plantou	NÃO RECOMENDADO. Explora a terra totalmente.
20	2008/10/1 entrevista das 10:20 as 10:50	Ivaldo Melo (Comun. Poltros Mortos) - Alexandria	5 filhos homens com suas respectivas esposas.	Possui 180 ha sendo aproveitada 3 ha para o cultivo do milho e feijão.	Desenvolve a ovinocultura	Vive da aposentadoria dos depis mais a renda da comercialização dos animais.	Nunca plantou	NÃO RECOMENDADO. Pois tem uma vida estável com o recebimento da aposentadoria.
21	1-Oct	Francisco Deusamar de Oliveira	casal e mais duas crianças	Possui 200 ha proveniente da herança da avó e cultiva 9 ha de milho e feijão para subsistência.	Desenvolve a ovinocultura	Venda de animais	Tem área mas não consegue aproveitar.	RECOMENDADO. Disponibilidade de área
22	2008/10/1 entrevista das 11:00 as 11:50	Raimundo. Na Comunidade vivem 50 famílias	É arrendatário a 15 anos e trabalha para o patrão. Vivem em 6 pessoas e todos trabalham na lavoura.	Utiliza 40 ha e 10 ha é destinado ao milho e feijão sequeiro para consumo. 30 ha são utilizadas para o gado e os ovinos.	30 cabeças de bovinos e alguns ovinos. Possui porcos e galinhas para comercialização.	Venda de animais		RECOMENDADO com certa restrição. A propriedade não é própria mas tem mão-de-obra e vontade suficiente.
23	2008/10/1 entrevista das 11:00 as 11:50	Hélio Paiva (Sítio Glória) - Alexandria	Trabalha na área de associação de 50 ha, vivendo com outras 15 famílias (em Pilões).	10 a 15 ha são destinadas para o cultivo coletivo de milho e feijão para o consumo, além de senvolver a apicultura.		A associacao tem o apoio do BID que ajuda desde 2000. A renda é garantida com a venda de galinhas e porcos, além da aposentadoria. O mel é comercializado a R$ 3,00/kg e tem 200 Kg estocado.	Acompanha pela televisão. Tem interesse em cultivar.	QUESTIONÁVEL. Trabalha em associação e é aposentado, mas a comunidade possa trabalhar com o cultivo e quer alternativa para rotação de cultura.
24	2008/10/1 entrevista das 13:50 as 14:50	João Batista Fernandes (Alexandria-Comun. Juazeirinho) - tel 3381-2104		Produtor de fumo a 23 anos. Faz reflorestamento com Algaroba pois o mesmo floresce de setembro a dezembro e há incremento na produção do mel. O custo de produção para o girassol foi menor do que o milho.	Bovinocultura e ovinocultura	Venda do fumo, animais, milho e feijão, e mel.	Cultivou 3 ha de girassol, sendo que perdeu 1 ha pela chuva e 2 ha produziu 1000 kg/ha (sem irrigação). Foi debulhado na máquina de feijão. O manejo foi fácil e houve aumento na produção do mel. Teve o financialmento do Banco do Brasil com orçamento de R$ 700,00/ha mas não pegou.	RECOMENDADO como agricultor modelo. É inovador e gosta de pesquisa à campo. Talvez o agricultor conheça melhor que os técnicos.
25	2008/10/1 entrevista das 15:30 as 15:40	Antônio Justino (Polo Quixada tem mais 23 famílias).	Tem 11 filhos mas hoje vive com a esposa e 3 filhos. Moram também outras 2 famílias	Area de 18 ha utilizando 10 ha para o milho e feijão para consumo e o restante para criacão animal.	Possui 5 vacas e galinhas para o consumo.	Produção de queijo e aposentadoria.	Desconfia do girassol em repetir o mesmo problema da mamona.	NÃO RECOMENDADO. é aposentado.
26	2008/10/1 entrevista das 15:30 as 15:40	José de Anchieta	Esposa mais 3 filhos	das 18 ha, 10 ha utiliza para o cultivo do milho e feijão para o consumo. Trabalha com 80 colméias mas teve problemas com a associacão de João Dias.	4 vacas e 10 ovelhas	Venda de ovelhas, serviço de pedreiro.	Não tem informação	QUESTIONÁVEL.
27	2008/10/1 entrevista das 15:30 as 15:40	Geraldo	Esposa e 3 filhos. Vivem outras famílias no local.	Possui 100 ha sendo 20 ha destinado a agricultura. O restante da área é destinado a pecuária.	30 vacas leiteiras e 100 ovelhas. Comprava a R$ 21 reais, 300 a 400 sacas de torta/ano. Este ano comprou 200 sacas a R$ 30,00/saca. A aquisição é feita, geralmente, nos meses de setembro a janeiro.	Venda do leite e animais.	Não tem informação	RECOMENDADO. Possui área e necessita de ração animal.
28	2008/10/1 entrevista das 15:30 as 15:40	Graça	Esposo e 5 filhos	Vive na comunidade		Todos trabalham temporariamente na plantação de melão.	Não tem informação	QUESTIONÁVEL.
29	2008/10/1 entrevista das 15:50 as 16:20	Alvamario Soriano de Paiva - Sitio Riachão - Alexandria	Esposa e 1 filho.	Possui 48 ha. Deixou de plantar o fumo. Cultiva feijão e melancia irrigada. No inverno cultiva-se o feijão e milho.		Comercializa o feijão na entressafra.	Não tem informação	QUESTIONÁVEL.
30	2008/10/1 entrevista das 15:50 as 16:20	Antônio Godeiro (meeiro, arrendatário)		Cultiva de 4 a 5 ha de milho, feijão e gergelim. Busca por alternativa de produção. Trabalha com irrigação por asperção.		Falta de renda	Ninguém plantou	NÃO RECOMENDADO. A área é arrendada.
31	2008/10/1 entrevista das 15:50 as 16:20	Francisco Arnold de Paiva - Sitio Riachão - Alexandria	Vivem em 6 pessoas.	Cultiva 15 a 16 ha de milho para o consumo. Sente deficiência de mão-de-obra. Possui sistema de irrigação e utiliza para feijão e capim.	60 bovinos leiteiro e de carne.	Venda de queijo.	Gostaria de experimentar, se houver apoio.	RECOMENDADO. Possui área e necessita de ração animal.

32	2008/10/2 visita das 10:25-11:05	Sra. ALDA – Sítio Araújo, Munic. Olho d'água dos Borges. Localiza-se a 15Km de Umarizal e 6 Km da Cidade de Olho d'água dos Borges	A Sra. Alda é viúva e vive com os netos. Teve 5 filhos mas 1 faleceu e somente 1 filho mora na região. O genro mora próximo. Ela garante que o local é o melhor lugar para se viver. Gostaria que os filhos tivessem do que sobreviver e continuar na comunidade.	Possui uma área aproximada de 12 ha sendo cultivado 1 ha de milho e feijão (no inverno) para o consumo. O cultivo de verão é destinado a venda, sem no entanto haver um comprador certo. Antigamente cultivava-se o fumo por 3 anos mas, como a religião evangélica não permite, afastou-se do ramo. as vezes compra milho para alimentar as galinhas.	Não possui nenhuma criação mas o filho mantém 5 cabeças, vendendo-os quando houver necessidade. Possui galinhas para o consumo. O restante dos 11 ha não é aproveitado pois a capacidade de irrigação é somente de 1 ha uma vez que não há renda para pagar gasto de energia extra.	Aposentadoria da Sra. Alda (avó); irmão produz hortaliça orgânica; somente o irmão participa do Programa Compra-direta mas houve atraso de 5 meses no recebimento (R$ 500,00).	Através da TV. É difícil a aceitação pois não conhece a cultura, como plantar e colher. Necessita de um modelo. Caso houver orientação da Emater pretende testar.	Mão-de-obra suficiente. Falta motivação. A religião poderá interferir no desempenho. No entanto, possui área suficiente para cultivar o girassol de sequeiro.
33	2008/10/2 visita das 11:55-13:15	Quejivaldo	Esposa e 2 filhos pequenos.	A agricultura é semi-mecanizada com a utilização do micro-trator (TOBATA) adiquirido pela associação. Adubação orgânica residual (800 kg/ha). No cultivo do feijão há problemas com a doença MINADOR. Observou-se que houve uma melhora do solo e aumento de produtividade com a rotação de cultura. Quanto a cultura do girassol, observa que há necessidade de reposição de adubo após 2 anos de cultivo. Caso não houver adubação acredita-se que a produção venha a reduzir para 800 kg/ha.	Não possui criação.	comercialização do feijão; COMÉRCIO -Área de lazer com comercialização de bebidas e utilização do sistema de irrigação para atrair público.	Plantou 3 ha de girassol mas colheu somente 1 ha (1200 a 1300 Kg), havendo perda de 2 ha. O cultivo foi sem irrigação. O girassol foi debulhado com a debulhadeira de milho e aguarda para ser comercializado à Petrobrás. O preço informado é de R$ 0,81/Kg. Tem interesse em dar continuidade a produção de girassol pois não requer muitos cuidados. Os resíduos da colheita (capítulo) é utilizada para a compostagem e o talo é incorporado no solo. Não adubou e nem utilizou o Boro. Único problema foi o excesso de chuva. Caso tudo saísse bem, estaria colhendo 4000 a 5000Kg. O plantio foi realizado no dia 20/03/2008 e a colheita realizada no final de junho. A 3 anos atras cultivou o Catisol (800 a 900 kg/ha) e notou que a produtividade foi inferior do que [illegible]	Produtor modelo de Girassol em Lucr é cia. RECOMENDADO.
34	2008/10/2 visita das 14:10-14:20	Jessivaldo			21 cabeças de gado (capitulo do girassol será utilizado na alimentação bovina).	Venda da rapadura; venda de produtos lácteos; comercialização de animais; venda de produtos agrícolas (feijão e milho).	Produziu 500 Kg/ha de girassol pois o inverno foi rigoroso. Uma parte do cultivo foi adubada e outra não. Considerou que o cultivo é fácil e tem interesse em plantar novamente. Não se sabe ainda a rentabilidade. Em boas condições de clima acredita que haverá uma produção média de 1500 Kg/ha. O girassol foi debulhado com a máquina e o produto ainda não foi comercializado. O capítulo será utilizado para a alimentação do gado.	RECOMENDADO para acompanhar o desempenho animal com a o uso de resíduos para a alimentação animal.
35	2008/10/2 visita das 14:27-14:35	Casal da Comunidade EXUM (obs. A Comunidade Exum é composta de aproximadamente 30 famílias)	Tem 5 filhos mas todos casaram e sairam de casa, trabalhando nas terras arrendadas. Teve problema de saúde (visão) e fora considerado inválido para dar continuidade ao trabalho rural. Por ém, gosta da agricultura	Cultiva 2 ha de milho e feijão para consumo	Mantem 5 vacas	Aposentadoria do casal e pensão por invalidez.	Nunca produziu	**NÃO RECOMENTADO. Insuficiência de mão-de-obra e fonte de renda baseada na aposentadoria.**
36	2008/10/2 visita das 14:48-15:20	Ilton - Região da divisa do Serrote do Leito e Várzea Grande (Na comunidade vivem aproximadamente 15 famílias)	Na propriedade vivem 3 famílias. Há uma Associação que trabalha com 30 a 40 famílias no beneficiamento de milho, feijão, uso do trator, transporte de legumes e produção de lenha. Cada sócio paga R$ 1,00 por mês.	A área é de 6 ha e utiliza 1 ha para o cultivo do milho e feijão para o consumo. Tem vontade para cultivar diferentes culturas mas a área é destinada a pecuária.	Criação de 10 vacas leiteiras (para consumo) numa área de 5 ha.	Diarista de pedreiro (5 a 6 dias por mês); extração de lenha do terreno vizinho; trabalho de tatorista (a remuneração é feita na base de grãos); Trabalho de frete (recebe 25 % do valor contratado).Participação na contabilidade da Associação.	Tem poucas informações sobre o girassol e o terreno é pequeno. Não possui recurso e não tem assistência técnica. Necessita de tempo para pensar e avaliar o mercado.	

VISITED PROPERTIES AGRICULTURISTS OF RIO GRANDE DO NORTE

	Date	Agriculturist	Family Constitution	Agricultural characteristics	Stockbreeding Characteristics	Source of income	Information about sunflower	Aptitude for the project
1-	2008/09/22 visit from 11:00 to 12:00	Francisco Chagas Costa - Munic í pal district of Felipe Guerra		The property is inheritance from the father that possessed 800 ha and it was divided among 9 children. Uses hired agricultural implements (from his father and neighbour; isn't used to manuring.	Possess animal breeding; bovine are commercialized at R$ 6,00/Kg and, normally, when it's sold with 10 Kg of living weight, it's sold at R$ 60,00; Produces silage of sorghum forage and a trench of 1,8 x 23 x 3,5 m takes 40 tons and it's possible to feed 26 to 30 animals during drought season; has other 2 trenches of 1,5 x 1,8 x 11 m; Has increased pastures plagues like o CAPIM RABO DE RAPOSA, MATA PASTO, SAMBA COITÉ, JUTIRANA (consumed by animals)	Agriculture (sunflower) and stockbreeding	Obtained information on sunflower 3 years ago. In the first year planted with manure with guiding from COOPERA, however the planting was delayed; it was done some soil analysis through the cooperative and used organic manuring; In the second year, planted on his own. In 2008 increased the sunflower farming area to 20 ha (grown out to dry); the seed is acquired through the cooperative; COOPERA paid all costs; had follow up from atechnician from Emater (for adaptation on the planter); Bird attacks were not observed; the cooperative would have hired a combine but there no deal; This year was cropped manually; The product is stocked in Apodi and will be processed in Guamaré.	RECOMMENDED with characteristic of INOVATOR.
2	23-Sep	Francisco Pacido Tagino (Dod ó) - community Soledade - cell phone 9957-2517	Family with 9 children, being that onde died at the age of 28 years.	Total area of 64 ha being: 15 ha of native woods, 6ha of sunflower, 20 ha of cotton, 8 ha of corn, 15 ha of pasture. They haven't grown beans because there was plague infestation. The soil is sandy and superficially with predominance of clay deeper. The sorghum has been attacked by birds but not the conr. One of the problems observed is the lack of interest of the children to continue with agriculture; he possesses debts at the cooperative, preventing him from getting a loan. Nowadays, he is renegotiating R$ 4.000,00; There is a problem with the cotton cropping due to lack of the working force that went to settlements.	10 heads of milky cattle. Has more animals in his father's property that is of 190 ha.	Agriculture (cotton, sunflower, corn) and stockbreeding.	Planted 6 ha of sunflower in 2008 and it was the first experience; Didn't obtained good results because had difficulty planting and the tractor costed R$ 50,00/hour. Planting was done with an instrument on April 16th and manual harvest in August (the cost of mechanized harvest would be R$ 70,00/ha); production is at 11 km from the house and it produced approximately 4000 kg in 6 ha (666 kg/ha).	RECOMMENDED. Believes that the sunflower is better than cotton, in case it's grown with the proper technical guiding.
3	23-Sep	Raimundo Maurilio de Oliveira (Cinto) - Milagres Settlement - phone 3333-2807	Settlement of 600 ha distributed among 26 families, being 90 ha of legal reservation and 60 ha of common farming area.	The Association has collected the foment amount of R$ 2.100,00 per family to acquire a tractor, cart and plowing railings for common use. Mr Raimundo has been at the settlement for 10 years and has 13 ha sharing the farming area to 8 ha of cotton, 2 ha of corn, 2ha of pasture and 1 ha of sunflower. the cost of cotton production was R$ 500,00 being the product cropped and sold at R$ 2.000,00.	Stockbreeding is in group and, being 5 people in the family, each one has 4 heads of cattle. When Mr. Raimundo joined the settlement, he had a debt of R$ 9.500,00 and today, he manages a local commerce. His son-in-law works with apiculture and has 40 hives.	Commerce (bar); agriculture (cotton), apiculture and stockbreeding.	Plantou 1 ha de girassol (plantio atrasado) mas teve 30 dias de chuva contínua. O dia da adubação também não foi adequada, uma vez que ficou 10 dias exposta ao sol. O plantio foi com a matraca; o girassol foi debulhado com a máquina debulhadeira de milho.	RECOMMENDED
4	24-Sep	Domingos Alves Soares e Julieta - Marcelino Vieira	Couple plus 6 families of tenants. Their daughter Silvana is agronomist and works at MDA. Production is divided in 2 parts for the producer (partners or tenants) and for the land owner (Mr.	200 ha divided among 6 fam í lies. They develop agriculture grown out to dry and 50% of the area is not used due to lack of working force. They possess tractor, railings and truck. They provide services with railings. Thwy grow 15 ha of corn and beans (main activity). They have sugarcane farming for rapadura production. The production in partnership is of 30 ha of beans, 30 ha of corn and 10 ha of sugarcane. There is a well 60m deep. They have irrigation equipment.	Dairy bovine cattle, ovine, caprine and birds.	Agriculture; rapadura production (20.000 unities/year commercialized at R$ 1,20/unity); mix dairy bovine leiteiro and aviculture (small animals for consumption and sale).	Grew sunflower experimentally but since the expenses were of R$ 1000,00 with income of R$ 200,00, does not recommend the cultivation. Used chemical manure in an inapropriate time, didn't clean the land, lacked of orientation, seeds were late, planting 3 to 4 seeds per hole (ideal of 7 to 8 seeds per hole).	NOT RECOMMENDED. Insuficiency of working force and high costs of production.
5	24-Sep	Ant ô nio de P á dua Medeiros - Marcelino Vieira - phone 9401-7861	Ant ô nio and Valdinete develop apicultureas main source of income.	He assembled the house of honey and has hives. The area is of 145 ha and he grows 2 ha of corn, 2 ha of sorghum forage, 3 ha of sugarcane and 4 ha of grass.	Dairy stockbreeding.	Apiculture; dairy sale; home made candy production.	Planted 1 ha of sunflower and observed increase on honey productivity. However, the production was only of 173 kg due to late planting and uneven heads.	RECOMMENDED to develop it along with APICULTURE.

6	25-Sep	Valdemar Ferreira de Sena (Patr í cio) - Municipal district Rafael Ferandes - phone 3348-0032	He lives with his wife and his son Jaime, living exclusively out of agriculture. There were 7 children but almost all of them moved to the city of Francisco Dantas (one of them works as agronomist). It's said that unemployment at the site is very high. Infra-strututre of 4 houses, 2 cars and 1 motorcycle. His brother has a tractor with a planting machine, a silage maker and a plowing and leveling railing.	He owns 4 properties: 1. At the one with 38 ha, grows 1 ha of corn, 5 ha of sorghum, 0.5 ha of bananas and 31.5 ha of pasture and woods; 2. At the one with 75 ha grows 3ha of corn, 10 ha of sorghum, 2ha of elephant grass, 0.5 ha of bananas, 1 ha of leucaena and 58.5 ha for strockbreeding; 3. Area of 18 ha, being as 10 ha of corn and 8 ha of native grass; 4. Area of 3 ha being as 1.5 ha of bananas, 0.5 ha of elefant grass, 0.5 ha of leucaena and 0.5 ha of non-used area.	70 dairy cows heifers; 90 caprines. He uses sorghum silage and provides elefant grass. He doesn't use hay bu has 300 tons of silage. According to the ocasion, he sells silage to his neighbours. The milk production is of 200 l/day, in average, with 28 dairy cows. During rain season production goes up to 280 to 300 litres. He commercializes caprine males as studs. In the region there is an association with 18 associates for caprine and ovine breeding.	Fruits farming (bananas, oranges), dairy cattle, commerce of milk to Pau dos Ferros dairy industry (R$ 0,68/ litre includinf delivery fee) and caprine breeding. He sold to the Direct-Pruschase Program but awaits on R$ 3.000,00 of payment.	For not using an irrigation system, he believes that sunflower farming won't have good results.	NOT RECOMMENDED. He has other activities to complement their family income.
7	25-Sep	Almir Rogerio Fernandes de Souza (27 years old), Francisco Jackson Fernandes (26 years old, Almir's brother) - Agriculturists from Alexandria, Cedro Community	Almir is Francisco's brother.	Almir has 10 ha being used 4 ha for beans (productivity of 180 kg/ha) and 3 ha for corn (productivity of 180 kg/ha). He doesn't grow cotton because of boll weevil.	He has bulls growing fat and 1 cow, at a 3 ha area. He keeps honey production which is done by Francisco. There is an association of residents of Cedro Small Farm with 18 apiculturists, founded in 2007, but it hasn't been productive up until now.	Subsistence Agriculture. Bovine to fatten and honey.	He has never grown sunflower.	RECOMMENDED. He's in search of alternative ways to complement the apiculture.
8	25-Sep	Raimundo G. Sobrinho and Alfredo Francisco da Silva - Alexandria		Raimundo owns 7 ha and Alfredo owns 8 ha.	Milk is sold for R$ 0,30 during harvest season , R$ 0,80 during drought, average of R$ 0,57 per litre of milk.	Subsistence Agriculture. He sold the excedings of beans for R$ 80,00 during harvest season(between-harvest season is sold at R$ 140,00).	They have never grown sunflower because they didn't receive any guidance in time.	RECOMMENDED, with certain amount of restriction. He fears the same that happened to the castor beans will happen. With proper guidance, they shall be good producers.
9	25-Sep	Jos é Quejivaldo de Moraes (36 years old) - Lucrécia		He ows 7 ha and 5 ha was destined to sunflower grown out to dry and e 2 ha for irrigated beans. He uses the Tobata Tractor from the association, and owns an irrigation kit and a motorcycle. The planting process is done with the use of an instrument.	No information.	Commerce of beans; Shop -Leisure area with commerce of beverage and use of the irrigation system to attract people.	He grew 5 ha of sunflower but there were losses due to excess of rain which last 15 days (500 mm) and lack of rain at the grain formation phase. He believes it's better than stockbreeding.	**RECOMMENDED - MODEL-AGRICULTURIST.**
10	25-Sep	Antonio Jessildo de Oliveira (40 years old) - Talk at Emater Lucrécia		He owns 11 ha dividing it in 1 ha of beans, 2 ha of sugarcane, 2 ha of corn, 3 ha of sunflower, 3 ha of grass and woods. He owns an irrigation system for 5 ha, 1 cart, 1 mower pulled by cattle and 1 motorcycle.	21 steers, dairy milk cow and bulls.	Rapadura; commerce of dairy products; commerce of animals; commerce of agricultural products (beans and corn).	He grew 3 ha of sunflower and produced 1200 to 1300 kg (300 kg/ha).	RECOMMENDED - Proximity with the model-agriculturist (Mr. Quejivaldo) and for ideas exchange.
11	25-Sep	Agostinho Evaristo da Cunha (46 years old) -Talk at Emater Lucrécia	Owns cart, car, planting instrument, Costal Sprayer and an irrigation system for 7 ha.	He owns 26 ha at a oozing area and grows 2.5 ha of beans with irrigation, 3 ha of corn, 4 ha of elephant grass and Brachiaria, 0.5 ha of sugarcane, 14 ha of pasture and 2 ha of reserve.	No information.			
12	2008/9/29 visit from 2 p.m.	Francisco Chagas (Municipal district Felipe Guerra),						RECOMMENDED agriculturist pioneer in sunflower

13	2008/9/29 visit from 03:50 to 4:30 p.m.	Alzimar from the Nov	Wife and 2 children	Area of 27 ha, growing 6 ha of corn for consumptionand coomerce, 4 ha of cotton, 3 ha of sunflower and 4 to 5 ha of sorghum. The fee to rent the tractor for settlers is R$ 35,00 and for others, R$ 60,00/hour. The association has 2 tractors. The cotton productivity (non-manured) was of 60@/ha, being sold at R$1,00/kg.	He owns 6 dairy cows (for consumption and commerce). The cattle is fed with cotton residue, corn silage and native pasture.	He intends to increase the production of corn because it's easy to sell, increase the area of sunflower farming, reduce the cotton area since its working force is expensive. He earns income with milk commerce on the Direct-Purchase Program. He works as a tractor driver at the association.	He grew sunflower experimentally using a loan of R$ 750,00/ha from Banco do Brasil. Coopera ofeered guidance and cropping was done with the corn harvester of the association. It reached productivity of 400 to 500 kg/ha.	RECOMMENDED in order to evaluate animal performance by supplying residues of sunflower crops.
14	2008/9/29 visit from 4:45 to 5:15 p.m.	No name.		Previously to sunflower, He used to grow cotton, corn and sorghum. He chose for changing due to novelty. The working force is scass and he planted using a rented tractor.		He didn't inform.	He planted 18 ha of sunflower and has grown it for 2 years, manuring in the first year.	NOT RECOMMENDED. Grows with to many risks.
15	2008/9/29 group interview	Jausair		Owns an area of 25 ha and grew 9 ha de girassol (30 tasks), 6 ha of cotton, 1 ha beans and 3 ha of corn.			The final product of the 9 ha of sunflower yield 300 kg/ha. It was grown between the 13th and the 25th of April. He observed that corn had better yield.	QUESTIONABLE.
16	2008/9/30 interview from 10:55 to 11:30 a.m.	Jose Souza	3 married children that live in João Pessoa. He complains about the decrease of security in the rural zone.	He owns 25 ha, grows 15 ha and the remainders 10 are grass. 7 ha of corn, rice and beans. He doesn't have an irrigation system.	He owns 16 cows and 40 heifers and speers. This year he has already sold 10 heads. He heard that sunflower fodder is good for animals. Currently he makes sorghum silage for the cattle.	Retired. Commerce of animals and milk.	He has never grown sunflower but would like to try it for the cattle.	QUESTIONABLE. However, he could be tested for evaluation on animal performance.
17	2008/9/30 interview from 11:40 a.m. to 01:00 p.m.	Dilma (93 years old)	The matriarc lives with 3 families in a total of 60 people. However the family goes up to 100 people.	She owns 75 ha, being 20 to 30 ha of corn, beans, sorghum, watermelon and pumpkin, exclusively for consumption. They don't use fertilizers but manure. She has observed that the production has decreasing every year. The period of time for growing corn is from December to January.	There are caprine and bovine (13 heads) cattle that are used for consumption as well as for animal traction. The children enjoy living in the country.	She lives exclusively of her retirement pension. The children leave to work as freelancers (at Mr. Jos é Souza's as well). Receives "family grant" (brazilian government benefit). She owns one vehicle.	She has never tried growing sunflower.	RECOMMENDED. Plentiful of working force and residues could be used to feed animals.
18	2008/9/29 interview from 2:30 to 3:10 p.m.	Antonio Neto da Silva (Municipal district of Francisco Dantas)	Settlement of 402 ha (but legally it's only 212 ha), with 24 associates and joined production.	Unavailability of water but still grows corn, rice, beans, sorghum and potatoes for subsistence. Uses equipment from the association.	Chicken breeding.	He sells the excedings in order to purchase essencials (salt, surgar)sale of 60 to 100 chicken at a time. He sells at R$ 14,00/chicken. He has expenses on purchasing corn (2 sacks) and fodder (R$ 120,00)	For developing apiculture, he has interest in growing sunflower.	QUESTIONABLE. The association must be consulted before making a decision.
19	2008/9/29 interview from 3:10 to 3:30 p.m.	Assis	He has 5 children but 2 live in S ã o Paulo. Nowadays, 4 people live together: the father, the mother, the 38 year old son and the 10 year old gradson.	His son works little and grows corn and sorghum. 2ha of beans and corn are destined to consumption.	He owns 4 to 5 heads of cattle.	They are both (2) retired.		NOT RECOMMENDED. There's little interest and little working force.
20	2008/9/30 interview from 3:40 to 4:30 p.m.	Benedito (56 years old)	He raised 12 children and nowadays lives with his wife and 7 children. 7 people work in the field.	He is healthy and wants to work. He owns 3.4 ha and grows 1 ha of beans, 0.5 ha of vegetables, 0.5 ha of grass. The dam takes 1 ha and the house, 0.4 ha. There is irrigation. He acquired the equipment with 4 four years of growing tobacco.	2cows	Weekly commerce of vegetables at Pau dos Ferros. He believes vegetables yield more than corn and the retirement pension. His wife is a civil server.	He would like to grow 1 ha and believes it will be better than tobacco.	NOT RECOMMENDED. The area used to its full extent and there is no room to grow sunflowers.

21	2008/9/30 interview from 4:35 to 4:50 p.m.	Domingos	He has 4 children (21 years old twins, a 19 years old and 15 years old). There are 5 people available to work on the field.	The property has 27 ha but the land is rented (94 ha). It produces corn and beans for consumption. He doesn't own equipment or manures. He does culture rotation.	1 bullock, 1 cow and 1 speer.	He goes through hard times because he doesn't have a permanent job and works freelance. His children work cutting sugarcane in São Paulo and come back in the winter to help. Receives the "family grant" for 17 years.	He believes it could work but has no information. If there were price and sale insured, he would participate of the project.	NOT RECOMNENDED. He isn't a land owner.
22	2008/10/1 interview from 8:25 to 9:15 a.am.	Ant ô nio - Community Riacho do Meio (Another 15 families live at the community) - Alexandria	The grandfather's 100 ha is divided among the 7 children. The 5 families own together 2 trucks, 2 cars and 10 motorcycles. There was a flour association that never worked.	Available area of 30 ha. They grow 1 ha of vegetables. Non-used area of 15 ha. The grow 0.5 ha of corn and beans. They quit growing tobacco due to increase on working force costs.	30 cows and 40 sheeps in na area of 14 ha. He uses a tractor and grass mower from the city hall.	Commerce of vegetables at the street market and direct purchase, bovines and caprines. Many people from the community go to Baraú na (Mossor ó) for temporary work.	They did not plant because it rained too much. They intend to do so next year.	RECOMMENDED. For animal evaluation..
23	2008/10/1 interview from 9:25 to 9:45 a.m.	Gregório Gonçalves da Silva (tobacco producer) - Alexandria	6 people (4 children)	He has been growing tobacco for 16 years. He owns 15 ha: 2 ha of irrigated tobacco, 4 ha of beans grown out to dry(2 annual crops), 1 ha of sorghum, corn and watermelon. The irrigation area is of 6 ha.	26 heads	Tobacco and stockbreeding. The payment for tobacco is done 12 days after delivery.	He has never planted.	NOT RECOMMENDED. Exploits the land completely.
24	2008/10/1 interview from 10:20 to 10:50 a.m.	Ivaldo Melo (Community Poltros Mortos) - Alexandria	5 male children with their respective wives.	He owns 180 ha being used as 3 ha for growing corn and beans.	Ovine breeding.	He lives of the retirement pension of his dependants and of commerce of animals.	He has never planted.	NOT RECOMMENDED. Due to a stable life from retirement pension.
25	1-Oct	Francisco Deusamar de Oliveira	Couple plus 2 children.	He owns 200 ha that were inherited from his Grandmother and grows 9 ha of corn and beans for subsistence.	Ovine breeding.	Commerce of animals.	He has land but can't use it well.	RECOMMENDED. Availability of land.
26	2008/10/1 interview from 11:00 to 11:50 a.m.	Raimundo. 50 families live at the community	He's been a tenant for 15 years and works for the boss. They are 6 people and work at the husbandry.	He uses 40 ha and 10 ha is destined to corn and beans grown out to dry for consumption. 30 ha are used for bovine and ovine cattle.	30 heads of bovines and some ovines. He has pigs and chicken for commerce.	Commerce of animals.		RECOMMENDED with certain amount of restriction. The land isn't his but he there's working force available and enough will to do it.
27	2008/10/1 interview from 11:00 to 11:50 a.m.	H é lio Paiva (Small Farm Gl ó ria) - Alexandria	He works at the association area of 50 ha, living with other 15 families (in Pilões).	10 to 15 ha are destined for collective farming of corn and beans for concumption, besides development of apiculture.		The association has the support of BID which helps since 2000. The income is guaranteed with commerce of chicken and pigs, besides the retirement pension. Honey is sold at R$ 3,00/kg and there are 200 Kg stocked.	He follows it on TV. He has interest in growing.	QUESTIONABLE. He works in association and is retired, but the community could grow it and they seek and alternative for culture rotation.
28	2008/10/1 interview from 01:50 to 2:50 p.m.	Jo â o Batista Fernandes (Alexandria-Community Juazeirinho) - phone 3381-2104		He has been a Tobacco producer for 23 years. He does reforestation with Algaroba, because it blossoms from September to December and there's an improvement on honey production. The costs to produce sunflower were lower than to produce corn.	Bovine and ovine breeding.	Commerce of Tobacco, animals, corn, beans and honey.	He grew 3 ha of sunflowers, and lost 1 ha due to rain and in 2 ha produced 1000 kg/ha (no irrigation). It was cropped with the beans machine. The management was easy and there was an improvement on honey production. He was approved for a loan of R$ 700,00/ha from Banco do Brasil but did not collected.	RECOMMENDED as model-agriculturist. He's inovator and enjoy field research. Maybe the agriculturist knows better than the technicians.

29	2008/10/1 interview from 3:30 to 3:40 p.m.	Ant ô nio Justino (Polo Quixada has more 23 families).	He has 11 children but nowadays lives with his wife and 3 children. Other 2 families live there as well.	Area of 18 ha using 10 ha for corn and beans for consumption and the rest for animal breeding.	He owns 5 cows and chicken for consumption.	Cheese production and retirement pension.	He is afraid that sunflowers will have the same problem of castor beans.	NOT RECOMMENDED. He's retired.
30	2008/10/1 interview from 3:30 to 3:40 p.m.	José de Anchieta	Wife plus 3 children.	From 18 ha, 10 ha is used to grow corn and beans for consumption. He works with 80 beehives but he had some problems with João Dias's Association.	4 cows and 10 sheeps.	Commerce of sheeps and work as mason.	He has no information	QUESTIONABLE.
31	2008/10/1 interview from 3:30 to 3:40 p.m.	Geraldo	Wife and 3 children. Other familias live at the site.	he owns 100 ha being 20 ha destined to agriculture. The rest is destined to stockbreeding.	30 dairy cows and 100 sheeps. He used to buy at 300 to 400 sacks of "torta" at R$21,00 per year. This year he bought 200 saks at R$ 30,00/sack. The acquisition is done, usually, between September and january.	Commerce of milk and animals.	He has no information	RECOMMENDED. He owns land and needs fodder for the animals.
32	2008/10/1 interview from 3:30 to 3:40 p.m.	Graça	Husband and 5 children	Lives at the community.		They all do temporary work at the melon field.	She has no information.	QUESTIONABLE.
33	2008/10/1 interview from 3:50 to 4:20 p.m.	Alvamario Soriano de Paiva - Riach ã o Small Farm - Alexandria	Wife and 1 child	He owns 48 ha. He quit growing tobacco. He grows beans and irrigated watermelon. On winter he growns beans and corn.		Sells beans at the between-harvest season.	He has no information	QUESTIONABLE.
34	2008/10/1 interview from 3:50 to 4:20 p.m.	Ant ô nio Godeiro ("meeiro", tenant)		He grows 4 to 5 ha of corn, beans and sesame. He seeks an alternative production. He works with irrigation of sprinkles.		Lack of income.	Nobody has planted.	NOT RECOMMENDED. The area is rented.
35	2008/10/1 interview from 3:50 to 4:20 p.m.	Francisco Arnold de Paiva - Small Farm Riach ã o - Alexandria	6 people live there	He grows 15 to 16 ha of corn for consumption. He feels a deficiency of working force. He has an irrigation system and uses it for beans and grass.	60 meat and dairy bovine.	Cheese commerce.	He would like to try if there's support.	RECOMMENDED. He owns area and needs fodder for the animals.
36	2008/10/2 visit from 10:25 to 11:05	Mrs. ALDA – Small Farm Ara ú jo, Municipal district. Olho d' á gua dos Borges. It's situated at 15Km from Umarizal and 6 Km from the city of Olho d'água dos Borges	Mrs. Alda is a widow and lives with her grandchildren. She had 5 children but one died and only one lives in the region. Her son-in-law lives close by. She afirms that's the place to live. She whishes her children had means to make a living and could stay at the community.	She has an approximate area of 12 ha growing 1 ha of corn and beans (in the winter) for consumption. The summer crops are destined for sale, without having a specific buyer. Up until 3 years ago she used to grow tobacco but cince the evangelic regilion does not allow it, they have abandoned it. Sometimes she buys corn to feed her chicken.	She doesn't possess any cattle but her son keeps 5 heads, selling them when there's need. She has chickens for consumption. The rest of the 11 ha isn't used because the irrigation capacity is of only 1 ha once that there's no income to pay for the extra energy consumption.	Retirement pension of Mrs. Alda (grandmother); brother produces organic vegetables; only the brother participates of the Direct-purchase program but there has been a delay of 5 month on payment (R$ 500,00).	Throught TV. It's difficult because doesn't know the culture, how to plant and crop. Needs a model. If there is guiding form Emater, intends to try.	QUESTIONABLE. Enough working force. Lack of motivation. Religion may interfere on performance. However, possesses enough area to grow sunflower grown out to dry.
37	2008/10/2 visit from 11:55 to 13:15	Quejivaldo	Wife and two small children.	Semi-mechanized agriculture using micro-tractor (TOBATA) acquired by the association. Residual organic manuring (800 kg/ha). On farming beans there is a problem with the disease MINADOR. It has been observed that there was an improvement of soil and increase in productivity with culture rotation. As for sunflower growing, it's observed that there's need to replace the manure after 2 years of cultivation. In case of no manuring it's believed that the productivity will decrease to 800 kg/ha.	He doesn't have any cattle.	Beans commercialization; COMMERCE -Leisure area with commercialization ofdrinks and usingthe irrigation system to attract the public.	Planted 3 ha of sunflower but cropped only 1 ha (1200 to 1300 Kg), having loss of 2 ha. The cultivation was done without irrigation. The sunflower was threshed with the corn harvest combine and awaits to be commercialized with Petrobr á s. The price informed if R$ 0,81/Kg. Has interest in continuing sunflower production because it doesn't requires much care. The residues of the harvest (heads) is used to manuring and the stem is incorporated to the soil. Didn't manure or used boron. The only problem was the excess of rain. If everything went well, would crop 4000 to 5000Kg. The planting was done on March 20th 2008 and harvestdone in the end of June. Three years ago grew Catisol (800 to 900 kg/ha) and noticed that the producitivity was inferior than with the hybrid. There was guiding from the Agricutural Technician Adeilton and WOULD RECOMMEND FOR	Sunflower Model-Producer in Lucr é cia. RECOMMENDED.

38	2008/10/2 visita das 14:10-14:20	Jessivaldo			21 heads of cattle (sunflower heads will be used to feed bovine cattle).	Sale of rapadura; Sale of dairy products; commercialization of animals; sale of agricultural products (beans and corn).	Produced 500 Kg/ha of sunflower for the winter was harsh. Part was manured, part wasn't.. Considered it easy farming ans has interest in planting again. Still doesn't know if there's profitability. In good weather conditions believes that there will be an average production of 1500 Kg/ha. Sunflower was threshed with a machine and the product has been commercialized yet. The heads will be used to feed cattle.	RECOMMENDED to go along with animal performance with the use of residues to feed animals.
39	2008/10/2 visit from 14:27 to 14:35	Couple from the Community EXUM (obs. Community Exum is composed of approximately 30 families)	They have 5 children but all got married and left home, working at rented land. He had Health problems (sight) and was considered disabled to continue at the rural work. However, enjoys	They grow 2 ha of corn and beans for consumption.	Keeps 5 cows	Couple's retirement pension and disability pension.	Never produced.	**NOT RECOMMENDED. Insuficiency of working force and income based on retirement pension.**
40	2008/10/2 visit from 14:48 to 15:20	Ilton - Border region of Serrote do Leito and V á rzea Grande (About 15 families live at the community)	At the property 3 families live. There is a Association that works with30 to 40 families in processing corn, beans, tractor use, vegetables transportation and firewood production. Every associate pays R$ 1,00 por mês.	The area is of 6 ha and he uses 1 ha for corn and beans for consumption. He wishes to grow different cultures but the area is destined to stockbreeding.	Breeding of 10 dairy cows (for consumption) at an area of 5 ha.	Daily wage of mason (5 to 6 days per month); extraction of firewoodfrom the bordering land; work as tractorist (payment is based grains); work with transportation (gets 25% of the contracted amount). Participation at the Association Accountancy.	Has very little information about sunflower and the las is small. Doesn't have resources or technical assistance. Needs time to think and evaluate the market.	


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