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Development of integrated, sustainable beef production systems in the tropical Gulf of Mexico region for export of ecological beef to Europe and development of a national ecological beef market.

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Resumen

Se está realizando un proyecto regional con productores de carne de res. Los objetivos son establecer sistemas de producción ecológica de carne de res en el trópico del Golfo y desarrollar un mercado nacional para esta carne y además, exportarla como un producto con valor agregado a Europa. El proyecto incluye el desarrollo de sistemas integrados de producción y los productores se organizarán para producir carne de alta calidad en cantidades programadas. Se realizará investigación aplicada en manejo holístico del rancho, sistemas de pastoreo, nutrición, genética, reproducción, medicina veterinaria alternativa, calidad de carne, costos de producción y mercadotecnia. La formación de recursos humanos y extensionismo serán realizados en conjunto entre las instituciones Mexicanas y las Universidades en el extranjero.

Palabras claves: Carne de res, producción orgánica, productores, investigación, colaboración académica, comercialización, mercado nacional, exportación a Europa.

BACKGROUND

During 2001 Dr. Derrell Peel, livestock economist and professor from Oklahoma State University, was on sabbatical leave with the National Institute for Agricultural Research (INIFAP) in Chihuahua. He mapped out and analyzed Mexican beef cattle production and modeled possible scenarios for the future of this sector. Using modeling Dr. Peel found no scenario where intensive backgrounding would occur in the tropics nor anywhere fattening in corral would be expanded in the tropics. However, comparative advantages exist for beef cattle production in Veracruz: The state uses 115

million ha. for cattle production, which implies abundant pastures of which many are still native grasses. The beef cattle production is regional without much competition from other livestock indices such as milk and Veracruz is at a reasonable distance from Mexico City and other important commercial centers. Dr. Peel considered necessary the development of alternative intensification schemes and creative ideas for how to improve beef cattle production in Veracruz in order to find more attractive future scenarios for the state and region. (Personal communication, Nov 2001).

The need for alternative strategies for beef cattle production in Veracruz has increased dramatically in 2003, as a result of the agricultural tariffs within NAFTA being abolished. The situation for beef producers in Mexico has changed drastically with cheap imported beef appearing on the Mexican market. This has caused a drastic drop in prices and beef cattle trade and slaughter have diminished significantly in Veracruz. Late last year, fear of this happening caused producers in Veracruz and other Mexican Gulf states to turn to their regional Cattlemen's Union and the National Cattlemen's Association. Together they mobilized political support and unified around alternative production and commercialization schemes to improve the prospects for beef cattle production under the new trade conditions.

During 2001 tremendous changes occurred in attitudes towards livestock production in Europe with resounding effects around the globe. The latter partially provoked by the equally serious Foot and Mouth outbreaks in Argentina and Uruguay. The massive outbreak of Foot and Mouth Disease (FMD) in Great Britain and the spreading of Bovine Spongiform Encephalitis (BSE) made European consumers avoid eating beef at all costs. Simultaneously, expansion of the European Community resulted in an increase in stressful long distance transportation of livestock to slaughter to take advantage of specialty niches of the European market. Consequently, many consumers declared that they did not want to consume meat from animals either produced in the intensive systems, which pre-disposed the outbreak of FMD and BSE, or from stressed and mistreated animals. Instead the European consumer became willing to pay a high value-added price for ecologically produced beef.

The organic beef production model is based on animal well-being and preservation of the environment in sustainable grazing systems free from

contaminants. Pastures and water have to be free from herbicides and other contaminants, feed supplements must be of vegetarian origin; use of antibiotics is permitted solely according to very strict rules and homeopathic veterinary medicine is always preferred. The use of hormones and other artificial growth promoters is prohibited.

Tropical Mexico is at the present in a fortunate position with excellent possibilities to capture part of this international value-added market for ecological beef and also to develop such a market domestically. Due to the lack of financial resources to intensify beef production, even in the State of Veracruz, the nation's number one producer of beef, large parts of the beef sector has been prevented from using the aforementioned contaminants. The state of Veracruz has large virgin areas, where ranchers produce their beef in extensive grazing systems with minimal capital investment. The cattle is grazed on native pastures or mixes of native and improved pastures and receive little or no supplementary feeding, minimal preventive health care and no growth promoters are used in these traditional beef cattle production systems.

These systems can be improved by raising the quality of each step in the complete chain from the birth of the animal on the ranch to the beef being consumed. This requires intensification, but different from the implementation of high-technology animal agriculture. In the context of ecological production of beef in tropical Mexico intensification includes:

- a) Replacing extensive pasture-based systems with intensive rotational grazing using high producing adapted forage species.
- b) Ensuring adequate supplementary feeding during the dry season, when available pasture is of insufficient quantity and quality. Uneven growth of the cattle is thereby avoided and a higher overall growth rate achieved, permitting slaughter of young animals at competitive body weights.
- c) Adequate management of the animals with regard to prophylactic health care using homeopathic veterinary medicine. Compulsory participation in the national campaigns to eradicate Brucellosis and Tuberculosis.
- d) Enforcing slaughter of the animals only at Federally Inspected Slaughter plants (TIF), where food safety is guaranteed.

Beef produced under these circumstances can obtain an internationally recognized certification as "organic or ecologically produced".

- e) Establishment of marketing strategies to ensure profitability of integrated holistically managed beef production systems and commercialization of value-added ecological beef products sold internationally and nationally.

OBJECTIVES

General objective

To establish integrated ecological beef cattle production systems in Mexican Gulf region with the aim of exporting quality beef to Europe, while at the same time sensitizing and introducing these value-added products on the national market in Mexico. To expand the project through partnership among the Gulf States.

Specific objectives

- 1) To form a strategic alliance within the livestock sector to expand and improve extension activities with and among beef cattle producers in the Gulf of Mexico states in collaboration with the University of Florida (UFI), Texas A&M University (TAMU) and other interested institutions.
- 2) Strengthening academic and scientific collaboration and student training between CP-CV, CEIEGT-UNAM, The Danish National Institute for Agricultural Research, The Swedish University of Agricultural Sciences (SLU) and other interested institutions.

JUSTIFICATION

The tropical Gulf region has favorable agro-ecological conditions and large extensions for high quality pasture development, predisposing the conversion to organic beef production. In addition, some Gulf of Mexico states maintain traditional ranch management with no or minimal technology leaving them mostly free from toxic substances.

Unifying producers in organic beef production for national and international value-added market niches will increase producer income and activate the devastated cattle industry.

The dramatic increase in commercialization of organic beef in Europe and the US provides a timely opportunity for the Gulf states to begin organic beef production, using comparative advantages of each state to optimize the production chain.

Organic beef production generates up to 50 % higher producer income than the conventional, thus not requiring governmental subsidies.

Academic institutions, industry, state and federal governments in the Gulf States have the capacity and are committed to the development and promotion of organic beef production.

HYPOTHESIS

Currently, an opportunity exists to reverse the present trend of low profitability of tropical beef cattle production in Mexico. It can be converted into value-added and profitable ecological production of beef in the Gulf region to be exported to niches of the European market. Concurrently a national market for ecological beef can be developed in Mexico.

Through the proposed beef cattle production project, both producer and academic cooperation between the participating institutions and in the region of the Gulf of Mexico can be greatly expanded and enhanced.

MATERIALS AND METHODS

This project consists of two parts: the establishment of organic beef cattle production on farms and applied research to support it. It also includes undergraduate and graduate student training and extension through work with producers. Limited research will be conducted on station.

Location and participants

The center of the project is the State of Veracruz, the nation's number one producer of beef, but it will expand into a regional project involving producers, academic and other institutions in the livestock sector in other Gulf States. The UFI and a TAMU have made a commitment to the project and likewise the states of Quintana Roo and Tabasco, while Campeche y Yucatan are deeply interested in joining the project.

Duration of the project

Duration of the project is divided in three phases:

Phase I: Initiation of the project during 2002, one year. Concluded. Financed by the participating individuals and institutions.

Phase II: Development and expansion of the project during 2003 to 2005, three years.

Phase III: Consolidation of the project during 2006 and 2007, two years for which a separate proposal will be developed a year before the conclusion of phase II. Not included in this proposal.

Producer participation

The producers currently committed to the project are located in northern, central and southern Veracruz. Their beef cattle ranches differ in size and management. All are committed to the production of quality beef and to obtain organic certification through of the project. However, the pace at which this goal will be reached is individual.

Some producers will manage all phases of the production from calf-finished animal by themselves. Other will not, but ideally the project will rapidly become a closed circle. A producer may be able to raise his calves to 200-250 kg body weight according to a holistic management plan, but may not be able to continue all his calves through the backgrounding phase. He may therefore offer to sell x head of young cattle another producer, who may be specializing in that phase. Others may want only to finish cattle and would like to buy backgrounded cattle etc.

Producer cooperation is a high priority in the project because it is the only way to be able to export ecological beef to Europe. The production has to be large with predetermined quantities of homogenous, high quality, eventually organically certified beef delivered in a timely manner. This goal will be extremely difficult, practically impossible, to reach for a single producer.

Extension and producer participation in collateral project activities

An important part of the mission of CP-CV, CEIEGT-UNAM, UFI, TAMU and other universities is extension. Therefore this project will hold related workshops and events for producers. Participation of Mexican and US producers in events and courses held in Mexico, Florida and Texas and other Gulf states in the project will be promoted. This should contribute to a stronger relationship between Mexican and American producers in the Gulf States.

Applied research

Research is needed in all areas since ecological beef production in the Mexican tropics is a groundbreaking effort. The project includes the complete chain from the birth of the animal on the ranch until the value-added products reach the national and international consumers. Numerous options for experiments exist and results of the applied research will assist the producers in optimizing their organic beef production. As the project advances and new producers are incorporated these recommendations will facilitate a more rapid and homogenous expansion of the project. Mexican students and professors and postgraduate students from UFI, TAMU, SLU and scientists from Denmark and other experts will join the research efforts.

Examples of applied research in the project:

Genotype comparisons through all stages of the growth and development of the animals in the project. Ex. Angus versus Zebu x European crossbred cattle vs. BeefMaster to try to find optimal genotypes for these pasture based systems both with regard to average daily gain, fed conversion and live animal ultrasound and carcass characteristics.

- a) Grazing systems: Comparisons of different types of intensive rotational grazing systems. Comparisons of different forage species in these grazing systems.
- b) Finishing phase: Comparisons between fattening on pasture versus in corral with supplementation based on regional sub-products and products.
- c) Early weaning of heifer and bull calves: Use of locally made creep-feeding comparing different rations and weaning and different ages at weaning such a 4 months of age being compared to the common 6 months of age.
- d) Postpartum reproduction: Comparison of temporal weaning versus continuous presence of the calves. Comparison of different body conditions maintained during gestation and its effects on postpartum reproduction
- e) Comparisons of cost of production under different alternative management schemes and using IRM-SPA (Integrated Resource Management- Standard Performance Analysis- beef) as a tool by the participating producers in Mexico.
- f) Marketing strategies and the development of international and national market niches and the entrance into the European Community.

- g) Development and evaluation of indicators of sustainability using different alternative management and production systems in ecological beef production in the Mexican tropics.

Phase I, concluded: Activities carried out during (fall 2001-) 2002.

Pilot activities through Spring 2002:

- a) **This project, pioneering the development of organic beef production in Mexico, was formalized fall 2001** by Pernilla Fajersson and Fernando Livas.
- b) **A system for ecological beef and dairy production based on dual purpose cattle production was being developed in Tuxpan** by Lic, Romulo Cuevas Villalobos, our lead producer and Fernando Livas, his advisor. **In April sale of ecologically produced beef and dairy products began** in the producer's shop in Tuxpan with great success.
- c) **The development of marketing strategies is led by Dr. Katja Jansen**, a German Post-Doctoral Research Associate and animal scientist trained in marketing and PR, She was recruited to CP-CV fall 2001 and is the main liaison in Europe and also with COVECA during Phase II.
- d) **Collaboration with COVECA, the Veracruz Agricultural Trade Commission, was initiated during fall 2001.** COVECA was created in 2001 and its Dir. Marco Miguel Muñoz proposed developing this project to become a Gulf States Accord project.
- e) **Consequently, the project proposal was presented at the Annual Meeting of the Gulf of Mexico States Accord (GOMSA) in Veracruz January 2002** and was very well received. Representatives from Quintana Roo, Tabasco and Campeche and participants from Florida and Alabama expressed sincere interest in the project. Follow-up collaboration continued.
- f) **Recruitment of producers to the project is ongoing and has resulted individual and groups of producers participating.** One of them is the GGAVATT Union (a very successful Mexican system of organizing producers in transfer of technology groups) in northern Veracruz, which includes 250 dual purpose producers with a 20 000 heads of cattle. (January 26, 2002).
- g) **Collaboration with TAMU** is based on Pernilla Fajersson's work there during the 1996-98, when she coordinated a Texas-Mexico beef cattle project and conducted research on reproductive physiology of cattle.
- h) A preliminary exploration of the organic beef market in Texas was carried out by Mr. Paul Kroschewsky, a COVECA collaborator in early 2002.
- k) **Other expert collaborators: Dr. Jerry Dewitt, extension expert from Iowa State University,** began his collaboration after being an invited

speaker at the First National Congress on Sustainable Agriculture held in November 2001 at CP-CV. **Dr. Jim Stouffer, Professor Emeritus from Cornell University and world expert on ultrasonography of carcass characteristics in live cattle**, has collaborated with Pernilla Fajersson since the 1980's.

Start of major project activities summer 2002

1) **The 1st International Course for Producers on Ecological Cattle Production** (10 producers, representing groups) **was held in collaboration with the Regional Cattlemen's Union in Central Veracruz (UGRZCV)** (June 13-15). International speakers were Dr. Katja Jansen, Gottingen, Germany, Dr. Bill Ocumpaugh, TAMU, Dr. Jim Stouffer, Cornell University and Dr. Jerry Dewitt, Iowa State University. Topics included: Principles of ecological beef production and the proposed project, efficient use of forages and newly developed species, intensive rotational grazing systems and ultrasound of live animals for beef quality. Organic certification of beef, marketing strategies, farmer organization and production of organic beef in Veracruz were other topics. Also, initial steps to organize the producers were taken and commitments were made. The proceedings from the course, a CD, serves as part I of a manual on Ecological Beef Production for participants in the project (June 13-15th).

2) **The Regional Cattlemen's Union in Central Veracruz joined the project team** as a result of the collaboration on the course.

3) **Collaboration with the Department of Animal Science at the UFI** was discussed in Quebec in July. Follow-up has resulted in a commitment by Dr. Glen Hembry, Chair of the Animal Science Department, and the identification of Dr. Adebola Adesogan as one of counterparts.

4) **Collaboration with Danish experts**, pioneers and leaders in organic livestock production was established, when Dr. Pernilla Fajersson visited with Dr. Mette Vaarst at the Danish Institute of Agricultural Research and Dr. Stig Milan Thamsborg and his group at the Royal Agricultural and Veterinary University in Copenhagen (August 13-15).

5) **A preliminary survey of British interest in organically certified beef from Veracruz was conducted** after the UK was identified as a potential market by Dr. Katja Jansen. The survey was carried out in two villages in southern England (August 24-28th). Twelve of 32 persons (44%) interviewed were interested in consuming organic beef from Mexico and also approved of both the draft logo, a label about how ecological beef is raised and supplying

Mexican recipes with our product. Likewise the local butcher, supermarket and a hotel restaurant specializing in organic food expressed interest in organic beef from Mexico.

5) **The San Antonio Trade Commission (Texas) visited Veracruz** and visited with Pernilla Fajersson about **organic beef** and were most interested in pursuing the development of this product (September).

6) **The 1st international symposium on "Organic production of beef and milk in the tropics"**, was organized in Tuxpan by AGROINPES our Lead Producer's, Lic. Romulo Cuevas agro-business, for producers, advisors and students (October 24-26th). National and international speakers, Dr. Fulvio Gioanetto from Italy and Dr. René Ferrer from Cuba participated. Topics were; Mexican beef on the global market, HACCP and a quality production chain, handling organic residues, organic beef and dairy certification, collaboration with Danish experts and exploration of the British beef market for import of organic beef from Veracruz. Ensuring quality of milk, acupuncture of cows, and organic cattle production in Veracruz were other topics. A visit was made to Lic. Romulo Cuevas, organic dairy and butcher shop and to his ecologically managed beef cattle ranch. In the final discussion participating producers made commitments and **Lic. Romulo Cuevas and DVM Pedro Parada immediately initiated the organic certification of their ranches**. Likewise, the students voiced their commitment to organic livestock production. The proceedings of the symposium serves as part II of the start-up manual for ecological livestock production.

7) **Lic. Romulo Cuevas expanded the local sales of his organic beef and dairy products** by initiating collaboration with a distributor **marketing these products in Mexico City (October)**. And his trade-mark is in process.

8) **Dr. Fulvio Gioanetto, international certifier with Bioagricoop, IFOAM, joined the project team**, following the symposium, and is working closely with project members and participating producers.

9) **Advances of the project were presented at an international congress: "Responding to the Increasing Global demand for Animal Products"**, (Nov.)

10) **The Regional Cattlemen's Union in Central Veracruz launched a new initiative proposing the local Cattlemen's Associations form cooperatives and diversify** to gain strength and improve marketing of their beef and dairy products. The cooperative activities planned are: a) **organic beef production** to capture market niches, supply beef to supermarkets (organic beef included), b) opening of regional butcher shops (an opportunity to sell

organic beef regionally), c) export of calves/backgrounded cattle to the US (those produced organically will have value added) (November).

10a) **A symposium on "Organic Certification of Beef and Advances in Ecological Beef Production in the State of Veracruz" was held at the Regional Cattlemen's Union in Central Veracruz. Among the 40 producers attending were representatives from the 11 newly formed cooperatives. Lic. Romulo Cuevas and DVM Pedro Parada, who is also certifying his ranch, presented their ecological livestock production to stimulate others to follow-suit. They received rapt attention and a multitude of questions from the audience and commitments were made (November 27th).**

10b) **On December 6th 50-60 other members from the cooperatives attended a new meeting and again commitments were made.**

11) **The project was presented at the Agricultural Round table at the Annual Meeting of GOMSA in Tampa Dec. 8-11, 2002 and was recommended to become a GOMSA project.**

All the aforementioned activities were financed by individual project team members, participating institutions and producers, while outside funding of the project was being sought.

This project is being developed very carefully, a step at a time, to ensure that the crucial concepts of quality and ethics are being adhered to in every detail as the project advances. As of August 2003 the Regional Cattlemen's Union of the Central Zone in Veracruz, COVECA and Lic. Romulo Cuevas Villalobos no longer participate in the project. The following actions are in process and being planned for the expansion of the project over the next three years.

Phase II: Activities concluded, in process and planned for 2003-2005.

Activites in year 2003:

Expansion of number of participating ranches and technical assistance:

1) Four producers in Veracruz have obtained their organic certification and 13 more have initiated the conversion to organic farming in 2003.

2) Technical assistance for implementation of HACCP procedures and initiation of organic management on the ranches was provided by members of the project team.

3) Sampling and analisis of toxic remains in bovine meat. Determination of Clenbuterol, Zilpaterol, Organophosphorates, etc. on request from beef buyers.

- 4) Sampling and analysis of feed, pasture, soil and water for the detection of chemical contaminants on request from beef buyers.
- 5) Technical assistance by organic certifiers; Dr. Fulvio Gioanetto, MVZ Omar Cruz and colleagues, to 17 ranches in Veracruz.

Extension activities:

- 1) Producers Day (March 28th) at Lic. Cuevas ranch, 70 producers requesting a workshop, (Financed by FIRA).
- 2) Review of organic certification by Dr. Fulvio Gioanetto with 50 producers in central Veracruz. Beginning of certification with a few. (March 29th).
- 3) Invited talk by Lic. Cuevas to 200-300 producers during the Farmers Day in Tepezintla organized by the first GGAVATT group ever founded (April).
- 4) Presentation of the full project proposal and activities completed at the GOMSA meeting in New Orleans June 11-14th. The project was approved as the first and so far only official project of the Agricultural Working group of the Gulf States Accord. (Participation Financed by the Veracruz Government, SAGARPA).
- 5) 2nd International Course for Producers on Ecological Beef Production. Twenty-one producers from the states of Veracruz, Tabasco and Quintana Roo, a representative of the City of San Antonio, Texas and speakers from Texas, Oklahoma, Sweden and Germany participated (7-9th of July). (Financed by FIRA).
- 6) Presentation of advances of the project in the GOMSA meeting in Merida. (October 1-4th). (Participation financed by the Veracruz government, SAGARPA).

Applied research:

- 1) In February 2003, Saul Lozano, a veterinary student began his bachelor's thesis at UNAM-CEIEGT on the evaluation of Neem as a dewormer and natural tick insecticide in organic beef production on a participating ranch.
- 2) Continued study of commercialization and marketing research by Katja Jansen as of 2004 possibly a Post-Doctoral Research Associate in Mexico.
- 3) Ing. Eliazar Ocaña Zavaleta graduated with a M. Sc. In Tropical Agroecosystems from the Colegio de Postgraduados, Campus Veracruz with the thesis entitled: "Effects of stocking rate on intensively grazed native pastures, soil properties, milk and calf production of grazing Holstein xZebu cows in tropical Mexico" (Dec. 10th, 2003).

Additional academic activities:

- 1) Advances of the project were presented at the Annual meeting of the American Society of Animal Science (ASAS) (Phoenix, Arizona June 21-24th). (Financed by Pernilla Fajersson)
- 2) Visit to TAMU for collaborative work on the project July 24th. (Financed by TAMU).
- 3) Visit to the Swedish University of Agricultural Sciences (SLU) in Uppsala and the campus in Skara to develop a collaboration. (August 2003). (Co-financed by Pernilla Fajersson and the SLU).
- 3) Training of project members in organic beef production and certification.

Activities in years 2004 and 2005:

Expansion of ranches and technical assistance:

1) **In 2004:** Another 20 ranches will be added in Veracruz. Mexican States beginning certification: Quintana Roo, Tabasco and Campeche with 10 ranches each.

In 2005: 20 more ranches will be added in Veracruz, Quintana Roo, Tabasco and Campeche respectively. Mexican states beginning certification: Yucatan and Tamaulipas with 10 ranches each.

- 2) Technical assistance for implementation of HACCP procedures and initiation of organic management on the ranches will be provided throughout the year by members of the project team.
- 3) Monthly sampling and analysis of toxic remains in bovine meat.
- 4) Monthly sampling and analysis of feed, pasture, soil and water.
- 5) Technical assistance by project members and Dr. Fulvio Gioanetto and Ing. Omar Cruz, organic certifiers from Bioagricoop, to 24 ranches in Veracruz.

Extension activities:

- 1) 3nd and 4th International Course for Producers on Ecological Beef Production will be held in Tabasco, Campeche and/or Quintana Roo with producers, expert visitors and collaborators from other Gulf of México states. (June)
- 3) 1nd and 2nd Demonstration Day on the ranch of MVZ Pedro Parada, Poza Rica, Veracruz. (spring-summer). Invitation to producers Gulf States.

Applied research:

- 1) Starting fall 2004 a national or international Ph.D. student will be researching bull management in pasture-based organic production on one of the participating ranches in collaboration with Texas A&M University and will also begin an evaluation indicators of sustainability of the production system on the same ranch.
- 2) Start of a M.Sc. student's research investigating carcass characteristics in live finished organic cattle of different breeds using ultrasound to determine meat quality and optimal point of slaughter.
- 3) Continued study of commercialization and marketing research by Katja Jansen.
- 4) Visit by one of the TAMU counterpart and a postgraduate student (June). Exchange of visits with the Swedish and Danish experts (June and possibly November 2003).

Processing and marketing activities 2004:

- 1) Organization of slaughter and processing procedures, including the development of high quality packaging meeting international standards, possibly in collaboration with the City of San Antonio, Texas and a packaging firm in the same state, to be initiated with a trip of leaders and selected participating producers to Texas (Spring 2004).
- 2) Transportation of carcasses and packaged beef from Coatzacoalcos, Veracruz to Galveston, Texas to be developed in collaboration with Lic. Daniel Ruiz (start fall 2004).
- 3) Initiation of the development of a trade mark and label.
- 5) Development of marketing strategies, national and international market niches (England/Germany) and on the entrance into the European Community.
- 6) Feasibility study of production and marketing of "Organic Mexican Corned Beef" to Great Britain.

Processing and marketing activities 2005:

- 1) Continued and completed in 2005: Organization of slaughter and processing procedures and transportation for value-added marketing at participating TIF slaughterhouses and packers.
- 2) Continued and completed in 2005: Development of high quality packaging meeting international standards, in collaboration with the City of San Anotnio and a Texas packaging firm (initial contacts made). Fully operative by 2006.

- 3) Continued and completed in 2005: Initiation of the development of a trade mark and label. Established by 2005.
- 4) Continued and completed in 2005: Development of export procedures including transportation of products. Established and operating by 2005.
- 5) Continued and completed in 2005: Development of marketing strategies, national and international market niches (England/Germany) and on the entrance into the European Community. Established and operating by 2005.
- 6) Feasibility study for the production and marketing of "Organic Mexican Corned Beef".

Additional Academic activities:

- 1) Advances of the project will be presented at the Annual meetings of ASAS (July), European Association of Animal Production (EAAP) meeting (June 2005), at the Annual Scientific Meetings of the State of Veracruz (October), at the Annual meetings of the Mexican Animal Production Association (AMPA) and of the Latin American Animal Production Association (ALPA) (November).
- 2) Collaborative research and extension work on the project. Collaboration with TAMU and UFI counterparts and research by graduate students from each of the universities (June). Similar visits and activities with SLU and continued collaborative work with Danish experts.
- 3) Publication of 2 scientific articles/year in international peer-reviewed journals.

EXPECTED OUTCOMES OF THE PROJECT

A strong collaborative project among the Gulf states including the complete production chain and marketing of organic beef using comparative advantages of each participating state.

1) Academic collaboration: Human resource development and extension

- a) Strengthened scientific collaboration through academic exchange of students and faculty members between the participating institutions. Establishment of collaborative research projects within the project. Professors invited to teach courses and participate in postgraduate student committees at counterpart universities. Students obtaining postgraduate degrees at the counterpart institutions.

- b) Training of Mexican and foreign students. Example, Mexican students: 1 completed Post-Doctoral project, 1 Ph.D and 1 masters degrees and 3 bachelor's thesis generated from the project.
- c) 9 scientific presentations at national and international meetings
- d) 4 scientific articles in international peer-reviewed journals
- e) Formation of a real bond between Gulf State universities and producers. Tangible products: a) The creation an index of cattle companies with organic production the Mexican Gulf States. b) Development of a regional and international information system of the behavior of beef markets under global conditions for academic use and advice to beef cattle producers.
- f) Academic collaboration in extension among Mexican institutions, UFI, professors from TAMU, other expert collaborators and students participating in courses/events with producers in Mexico. By the end of 2005 the number of producers are estimated at a total of 400 from all participating Gulf states. An estimated 80-100 Mexican producers will similarly be participating in events in the American Gulf States. Examples: Producers participating in a) the International Livestock Congress at the Houston Livestock show b) The beef cattle congress at the University of Florida c) the IRM-SPA continuing education workshops.

1) Impact of the project

In the calculations the Mexican peso is valued at 11.25 to the US dollar.

Expansion plan for ranches becoming certified through the project:

Four (4) ranches began the certification process in 2002. During year 2003 it is expected that 20 ranches in the state of Veracruz will initiate the organic certification process (be in conversion) and a few may obtain certification the same year. The project will expand to include 50 new ranches, 20 additional ones in Veracruz and 10 each in Quintana Roo, Tabasco and Tamaulipas, in the certification process during the year 2004. Finally, 100 new ranches, another 20 in Veracruz, 20 more in each of Quintana Roo, Tabasco and Tamaulipas and 10 each in Campeche and Yucatan, will begin organic certification of beef during the year 2005.

During 2002-2005: An estimated 174 beef cattle ranches, counting only the ones projected for the Mexican Gulf states will obtain organic certification through the project.

During year 2004: The 24 certified ranches in Veracruz, 4 in conversion since 2002 plus 20 beginning the conversion in 2003, are estimated to have

100 head of cattle and 50 ha. land each. In total 2400 head of cattle and 1200 ha of land will be in conversion and 48 new full-time direct employment opportunities will be generated.

By the end of 2004: From these same ranches 40% (extraction rate)= 960 animals will be slaughtered with a carcass yield of 59% = 280 kg/carcass. Consequently, a total of 268,8 tons of beef, whereof 50 kg/head = 48 tons of prime cuts, which are projected to be exported to Europe. The packaged value-added organic beef is projected to fetch a price of 30 US dollars/kg with the utility of 9 US dollars/kg = 450 US dollars/50 kg. This is 4 times the domestic price of 7.47 USD/84 pesos for American cuts of conventional beef in Mexican supermarkets. However, the producer commonly sell live animals presently at 1.24 US dollars/kg, which would yield a utility of 0.35 US dollars/kg. Live weight is estimated at 480 kg animal \times 0.35 = 168 US dollars in utility/head.

The exported organic prime cuts (packaged) generate an additional income of 432 dollars/head and 17,288 US dollars/producer and year (40 head of cattle) compared to 168 and 6720 US dollars using the traditional Mexican marketing strategy.

The remaining 190 kg/carcass of the organic beef will be sold on the domestic market at 6.22 US dollar/kg, with a utility of 0.70 US dollars/kg or 133 US dollars/head and 5320 US dollars/producer and year (40 head).

Total utility for 40 organic carcasses will be 17, 288 plus 5320 = 22,608 US dollars/producer and year compared to 6720 for a traditional sale.

By the end of 2005: A total of 174 ranches will obtain organic certification. From these ranches 6960 head of cattle will have been slaughtered producing 1,948 tons of beef of which 348 tons will be exported to Europe. There will be a total utility of 3,933792 US dollars (44,255160 pesos) for the 174 ranches/year. In case the 174 ranches had maintained a conventional beef production with traditional sales, the expected utility would be 1,169280 US dollars.

The conversion of land will amount to 8700 ha and the total number of ecologically managed cattle 17400, contributing to the preservation and sustainability of environmental conditions.

In 2005 employment opportunities generated will increase, as both, direct and indirect employment opportunities expand with increased quantities of

organic beef. More labor will be required in the post-harvest chain for cutting and processing the meat, packaging and labeling for export generating an estimated 2 new jobs per production unit. These being in addition to the original 1 job created/farm at the beginning of conversion.

In conclusion, through the project a multiplying effect by imitation will take place. A chain of businesses surrounding the production of organic beef will be created within the framework of coordinated regional objectives. The result will be a growing, competitive and organized market of organic beef of international quality, which will satisfy national demands and capture niches on the export markets. The project will be the beginning of a conversion to a clean, competitive and sustainable agricultural production coupled with increased labor demand, economic growth and strengthened commercial relationships in the Gulf of Mexico region.

Project participants:

- State of Veracruz, Mexico:** 1) Colegio de Postgraduados - Campus Veracruz: Pernilla Fajersson, *Professor and Co-Principal Investigator*, sustainable beef cattle production systems, reproduction and nutrition, applied genetics, and colleagues. Katja Jansen, *Visiting Professor*, Ecological beef production, Liaison with Europe and in charge of marketing strategies for livestock products. Eliazar Ocaña Zavaleta, *Agronomist (Professor at CEIEGT), M.Sc. from CP-CV and academic at CEIEGT*, intensive rotational grazing systems in tropical agroecosystems.
- 2) CEIEGT, UNAM: Fernando Livas Calderón, *Professor and Co-Principal Investigator*, Ecological beef production, nutrition, and meat science. Jesus Carillo, *Forage and grazing behavior*, potential Ph.D. student. Saul Lozano, *veterinary student*, working on bachelor's thesis.
- 3) Pioneer Producer: Pedro Parada, *producer* of ecological beef and agro-industrialist in Poza Rica.
- 4) International organic certifier: Fulvio Gioanetto, Ph.D., and Omar Cruz Bioagricoop (IFOAM).
- 5) COVECA: Lic. Marco Miguel Muñoz and colleagues, expert in commercialization of agricultural products
- 6) A group interested in Coatzacoalcos interested in joining the project. Leader: Lic. Jesus Salas
- Other Mexican Gulf states:** 1) Quintana Roo: José Lugo Maldonado, *Ing., Secretary of Agricultural Development*.
- 2) Tabasco: Ing. Jaime Lastra, *Secretary of Agriculture*.

3) Campeche: Eudaldo Espinosa Alvarez, *Secretary of Rural Development*.

The US Gulf states: 1) University of Florida:

Glen Hembry, *Professor and Head*, Dept. of Animal Science.

Lee McDowell, Professor of international livestock production and mineral and vitamin expert

USDA: Chad Chase Jr. , lead scientist , expert on beef cattle production, USDA, Brooksville-Florida

2) Texas A&M University professors:

Bill Holloway, *Director*, Texas A&M Research and Extension Center, Uvalde, Beef cattle production and nutrition.

William Ocumpaugh, *Professor*, Head of TAES-Beeville Forage Laboratory, Development and use of forage varieties in livestock production.

David Forrest, *Professor*, Dept. of Animal Science, Reproductive physiology, beef cattle production.

Ted Montgomery, *Director*, West Texas A&M University Meat Science Center, beef cattle production

Other American collaborators:

Derrell Peel, *Professor*, Oklahoma State University Livestock Economist, Beef cattle Specialist.

James Stouffer, *Professor emeritus*, Cornell University, Ultrasonography for evaluation of beef quality in live animals.

Danish collaborators:

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Stig Milan Thamsborg, *Professor*, Organic beef cattle production, the Royal Agricultural and Veterinary University in Copenhagen.

Swedish Collaborators:

Hans Andersson, *Professor*, SLU, Agricultural Economics,

Kerstin Svennersten, *Senior Lecturer*, SLU, Animal Husbandry,

Lena Lidfors, *Senior lecturer*, SLU, Animal welfare and behavior,

Lotta Berg, *Senior lecturer*, SLU, Animal Welfare and behavior,