

Entrepreneurial Promotion among Farmers: the Early Impacts

René Díaz-Pichardo, Cecilia Cantú-González, and Patricia López-Hernández

Abstract—The development of entrepreneurial competences of farmers has been pointed out as a necessary condition for the modernization of land in facing the phenomenon of globalization. However, the educational processes involved in such a development have been studied little, especially in emerging economies. This research aims to enlighten some of the critical issues behind the early stages of the transformation of farmers into entrepreneurs, through in depth interviews with farmers, entrepreneurial promoters and public officials participating in a public pilot project in Mexico. Although major impacts were expected only in the long run, important positive changes in the mind set of farmers and other participants were found in early stages of the intervention. Apparently, the farmers started a process of becoming more conscious about the importance of preserving the aquiferous resources, as well as more market and entrepreneurial oriented.

Keywords—entrepreneurial training, farmers, land development.

I. INTRODUCTION

RECENTLY, the necessity of an entrepreneurial culture in the agricultural land has been recognized. Farmers can increase their production through an improvement in their productivity, in order to ensure their survival and the enrichment of their environment. For these purposes, farmers can either get integrated vertically inside a chain of value or diversify their economic activities [1]. In spite of the importance of entrepreneurship in economic growth, it has been little studied in emerging economies, especially in the agricultural sector [1], [2].

In some countries, such as those composing the European Union, researchers have taken on the task of investigating the factors and educational processes that could contribute to the development of entrepreneurial capacities of farmers, with the aim of experiencing successful growth in the agricultural business [3].

However, developing entrepreneurial competences in the agricultural land appears to be a twofold problem. The first

question that arises is to what extend entrepreneurial competences can be transferred. The creation of a new business starting from the perception of an opportunity, the work that it implies, going from an idea to a concrete and valuable proposal, and obtaining the necessary resources for it, seems to be more an art than a science. Second, the heterogeneity of the agricultural sector hinders the teaching of behaviors, abilities and entrepreneurial attitudes [1], [3], [4].

Although, apparently, it is necessary to develop certain handling of diverse entrepreneurial techniques, such as marketing, production and accounting, these are not enough for a business to succeed; entrepreneurial attitudes, such as innovation, orientation to growth, and risk taking, could be equally important [3], [5]. The development of entrepreneurial and marketing skills, as well as an entrepreneurial orientation of farmers, has been seen with great interest in the process of restructuring the European land. Diversification in the agricultural sector seems to be associated with a stronger entrepreneurial orientation, a greater optimism and a bigger control over the activities of the agricultural business [4].

Innovation and learning capacities are of vital importance for the survival and success of an enterprise. In small businesses, such as those frequently composed by farmers, knowledge is developed through collaborative networks in productive chains. Innovation emerges from new combinations with diverse agents in both strong well-known networks and weak unknown networks. The innovative learning consists of making a balance between “the chaos of the uncertainty and the old grooves of experience” [5, pp. 283].

Additionally, the background and profile of a person, his/her cultural traditions and his/her social and institutional structures can impact strongly his/her desire and disposition to learn and develop entrepreneurial competences [3]. Considering the specific profile of farmers, Lauwere [6] developed a typology of agricultural entrepreneurs, identifying five basic types: prudent farmers (with a high financial conservatism), social farmers (with a high social orientation), traditional growers (with a high orientation to growth), new growers (with high levels of social and growth orientation) and indecisive farmers (without a clear orientation). The social farmers and the new growers showed greater levels of entrepreneurship than the other types. Lauwere also found that self-criticism, perseverance, leadership, creativity, initiative, and market orientation, positively affect entrepreneurship in the land; while love of

René Díaz-Pichardo was with Aceleradora de Negocios EGADE, Monterrey, 66269 Mexico. He is now with CIDIIR, National Polytechnic Institute, Unidad Oaxaca, 71230 Mexico (corresponding author, phone: +52-81-1620-1531; e-mail: rene Diazp@hotmail.com).

Cecilia Cantú-González is with Servicios Empresariales Canther, S.C., 06700, Mexico (e-mail: ceciliacantu00@hotmail.com).

Patricia López-Hernández is with Servicios Empresariales Canther, S.C., 06700, Mexico (e-mail: patylopez5@hotmail.com).

The authors are grateful to the National Commission of Water (CONAGUA) and the National Association of Irrigation Units (ANUR), who granted permission for using the data gathered during the evaluation of the Pilot Project “Entrepreneurial Promotion in Irrigation Units”, in Mexico.

ease and passivity affect it negatively. Moreover, a self-identification as "entrepreneur" seems to have a significant impact on entrepreneurial orientation of farmers [4].

In contrast, some potential barriers have been identified in the development of agricultural businesses: economies of scale, capital requirements of entry, access to distribution channels, position in the "experience curve", retaliation of existing businesses to new entrants in a market, legislation and regulation, poor management skills of farmers, lack of an entrepreneurial spirit, limited access to business support and, geography and proximity to markets [1].

Additionally, since business opportunities are not built into the vacuum, the agricultural entrepreneur should learn how to evaluate the context, in all its dimensions [3], [5].

The protective and paternalistic strategies implemented in the past, in Mexico and in other countries, have demonstrated their inefficacy. The agricultural modernization showed its negative consequences: overproduction, a continuous fall in the level of agricultural employment and, increasing social demand to produce food without environmental, health or animal welfare scandals. The agricultural sector requires structural changes; farmers must produce for a more competitive market, responding to the growing demand for quality and respect for the environment. Farmers should reach economic autonomy and, at the same time, remain adapted to their social environment. It is no longer about finding the "most productive" agricultural system, but rather, choosing among several strategies that assure a reasonable income. Markets and technology offer the possibility to identify specific niches where farmers could work. In order to enlarge the farmers' vision and change their behavior, the implementation of incentives it could be useful: either the expectation of greater revenues or the desire to avoid future sanctions [5].

Research on development of entrepreneurial capacities in the land is scarce and it is almost exclusively limited to diversification and farmers' entrepreneurial skills. Although its implications in public policy has been discussed thoroughly, several dimensions of the topic deserve in depth study, for example: business strategies, entrepreneurial capacities of farmers, entrepreneur women in the land, and the support required for farmers and agricultural organizations. Besides, farming is not a homogeneous sector; farmers operate in a tightly constrained and regulated, complex and multi-faceted environment, which acts as a significant barrier to the entrepreneurial activity. An important challenge for the agricultural sector consists on facilitating farmers' development of their entrepreneurial capacities and attitudes, which requires economic support and a greater emphasis on education and training [1].

This research aims to explore some issues in the enhancement of entrepreneurial competences of farmers in Mexico, through the evaluation of the early impacts of a public pilot project: "Entrepreneurial Promotion in Irrigation Units" (PROEUR). Through this project, a developmental model centered on the individual is being implemented. By

changing their mind set, farmers are expected to be able to work in an organized manner and develop competitive advantages, in order to compete successfully in regional, national and international markets. PROEUR, implemented by the National Commission of Water (CONAGUA) and the National Association of Irrigation Units (ANUR), is also looking for a more productive use of water in the agricultural sector. Both, the development of the land and the use of water are complex problems in Mexico that deserve greater attention.

II. THE PROBLEM OF DEVELOPMENT IN THE MEXICAN LAND

The sustainable development of the Mexican land is, undoubtedly, a complex topic. The agrarian policies adopted previously to the economic opening of the 1980s, the remarkable increase of the foreign debt, the capital flight, the recurrent inflation and devaluations, and the recent financial crises structurally weakened the land, provoking: an important decrease of the prices and the consumption of agricultural products; the brutal fall of the investment in rural regions, and; an abrupt reduction of the agricultural credit. Consequently, the production and the agricultural productivity have been declining, resulting in loss of alimentary sovereignty and in an increasing migration of the rural population to urban areas and to the United States [7].

With the declared purpose of preparing the land to respond to the economic, technological, and social requirements, demanded by its evolution, the reformation of the Agrarian Law of 1992 ended the land allotment, after almost eight decades, and recognized the full right of *ejidatarios* and *comuneros* to define their own form of property, of association and of circulation of their rights, through the rent, the sale and even the change of regime [8]. *Ejidatarios* and *comuneros* are both terms defined in the Mexican agrarian law to refer to men and women having property rights on a common territory called *ejido*. The intention was to induce the association of *ejidatarios* and *comuneros* with entrepreneurs, with the financial support of the World Bank and the International Monetary Fund. However, these reformations, in the global context, seemed to obey pressures from the United States and the international financial organisms, in the new restructuring of the international capitalism; rather than attending the necessities of the country and its agricultural sector. The privatization of the public land seemed to provoke a neo-latifundism and a massive expulsion of peasants from their land [7].

Today, two decades from the beginning of these reformations, the Mexican land continues collapsed in the backwardness. To the second quarter of 2008, 13% of the labor force was in the primary sector, producing only 4% of the added gross value of the country. During the period January – July, 2008, the net imports of foods ascended to 2.5 billion dollars, 160% more than the corresponding figure to the same period of the previous year [9]. In 2003, Mexico produced 2.5 tons of corn per hectare, on average, while the

United States, its main commercial partner, produced 8.9 tons per hectare, on average [10]. This low productivity in the Mexican land can be attributed mainly to: the adoption of erroneous logics of agricultural production, technologies and inputs that do not work in Mexican agriculture-ecosystems, provoking environmental imbalances; the lack of investment, credit, subsidies and tariffs; the deterioration of the competitive conditions due to the commercial opening; the opportunism of national and international entrepreneurial groups, and; the organizational deficiencies of the Mexican farmers, that prevent them from presenting a unique front for the defense of their interests, for example, in facing the intermediaries, or in reaching more efficient production models, such as those achieving economies of scale [7]. Up to now, the government's efforts to motivate the creation of cooperatives and other types of rural productive organizations have not yielded the expected results. The legal concepts created for organizing the Mexican land, from the *ejido* to the *Societies of Rural Production*, have only obeyed to political interests, rather than productive and market criteria. For a long time, the Mexican land has experienced a lack of an integrated strategy and a methodology of development, based on human and social capital formation. This has resulted in constant "jolts" that have only sowed confusing and disorder, deriving in a primary sector living in survival conditions, dispersed, and intensive in cheap workforce, that generates little added value [11].

III. THE PROBLEM AROUND THE AGRICULTURAL USE OF WATER

In this context, the Mexican land presents, equally, a low productivity in the use of water. In Mexico, 77% of the available water is used for agricultural purposes. Only between 33% and 55% of it is used effectively. Since water is a resource of strategic importance for the present and future life of the country, the Hydro National Program 2007-2012 settled, among other objectives, that all Mexicans use water in an efficient way and pay the fair amount for their consumption, and; that the aquiferous resources must be preserved, so that clean water exists in them, in order to guarantee the current and future wellbeing of Mexicans, as well as the conservation of the environment. Nevertheless, agricultural users are exempt from the payment of water [12].

The growth and the population's mobility, the hydrological characteristics of Mexico, the inefficacy in the use and conservation of water, as well as the over exploitation of aquiferous sources, have increased the problem of shortage of water. In 56 years, the availability of water per inhabitant fell from 18,035 to 4,416 cubic meters a year. It is expected that this situation worsens even more as a consequence of hurricanes and droughts, products of the climatic change [12].

Of the total surface dedicated to agricultural activities in Mexico, near 30% works with irrigation; the rest is seasonal. However, the irrigated surface generates more than half of the agricultural national production. Of the total irrigated surface, 3 million hectares (46%) correspond to Irrigation Units; the

rest corresponds to Irrigation Districts. 57% of the water used in Irrigation Units comes from underground sources; the rest is superficial water. Water is conducted to the parcels through an important infrastructure of channels and pipes [12]. Unfortunately, the practice of flooding the parcels, through the traditional "rolling irrigation" system, is still very common among Mexican farmers.

The National Hydrological Plan 2007-2012 intends to increase the productivity of water in 2.8% annually, through the modernization and improvement of the irrigation technology. The productivity of water is measured by dividing the kilograms obtained from a specific product between the cubic meters used in the process. In 2006, an average of 1.41 Kg/m³ was obtained. The practical difficulty of this objective rests in determining the volumes of water extracted from the aquiferous sources and those effectively used in the parcels. However, it is fundamental to introduce the concept of water as a productive input and its measurement in terms of value added by volume, in order to identify the more productive uses for the scarce resource (through the conversion of crops), optimizing their application, and enlarging the vision towards industrial and service activities [12].

IV. DEVELOPMENT AND CONSOLIDATION OF ORGANIZATIONS OF AGRICULTURAL USERS

One of the strategies related to the operation and conservation of the hydro infrastructure, inside the National Hydrological Plan 2007-2012, consists of the development and consolidation of organizations of agricultural users. The objective is to impel the organizations of users in Irrigation Units, in the form of Societies of Limited Responsibility, with the purpose of they obtaining a wider benefit from the existent programs; for instance, those for the acquisition of machinery and equipment. In this plan, it corresponds to CONAGUA conserving, operating and developing the hydro infrastructure in Irrigation Districts and Units, in coordination with the agricultural users and the government institutions involved; articulating the concurrence of programs and financial resources, offering technical and administrative consultancy to the agricultural users and; promoting the development and consolidation of associations of users [12].

CONAGUA wants agricultural users to participate in the established programs; to operate, to conserve and to administer the hydro agricultural infrastructure; to make an efficient use of water and to increase the productivity of their parcels; to use exclusively the granted volumes of water and to respect the unique permits of sowing they have received from the agricultural authorities [12].

In order to increase the effectiveness and the efficiency in the use of water in Irrigation Units, CONAGUA encourages organizations of farmers to take advantage of the established programs and infrastructure. With this concern, in 2007, the project "Strategic Development of Human and Social Capital Operating in Irrigation Units" was developed, deriving in the current PROEUR, a pilot project whose learning experience is documented in this paper. The novelty of this project resides

in its entrepreneurial approach, centered on the farmer as a human being. It aspires to transcend in form of public policy for the efficient and effective use of water, as a contribution to the sustainable development in the agricultural land.

PROEUR aims to contribute to the development of entrepreneurial competences in farmers by helping them identify water as a productive and strategic resource that should be used effectively and efficiently, becoming responsible for its handling, and maximizing its yields. At the same time, the project seeks to offer the farmers the necessary basic elements for their transition to sustainable (in economic, social and environmental terms) models of agricultural businesses.

Certainly, the structural conditions of the land will be decisive in this transition; however, the development of entrepreneurial and organizational competences of farmers will facilitate their active participation in the political and social mechanisms that contribute to the modification of those structural conditions, in the search of a sustainable development of the Mexican land.

The road towards a sustainable land necessarily goes through the development of human and social capital. Farmers must assume responsibility of their own development by adopting new principles, values, attitudes and behaviors that drive to a liberation of the social energy, with synergistic results, with the purpose of detonating an integrated development of the agricultural arena [11].

V. THE PILOT PROJECT "ENTREPRENEURIAL ORGANIZATION IN IRRIGATION UNITS"

The National Development Plan 2007 - 2012 outlined the search for a human sustainable development, under the vision that all Mexicans must have a worthy life without committing the patrimony of future generations.

With this purpose, and in support to the strategies formulated in the National Hydrological Plan 2007-2012, related to the development and consolidation of the organizations of agricultural users, CONAGUA, through the General Sub bureau of Hydro Agricultural Infrastructure (SGIH), and ANUR established a series of strategies directed to promote the efficient use and the responsible management of water in agricultural organizations. Consequently, in March, 2007 the Project "Strategic Development of Human and Social Capital Operating in Irrigation Units" was implemented. With this, CONAGUA and ANUR sat down the bases to establish a developmental model pursuing the consolidation of Irrigation Units.

The specific objectives of this Project, during 2007, were:

1. To identify the main problems affecting the performance of the Irrigation Units, in order to define a strategic position capable of overcoming them.
2. To design the public policy that governs the new relationship that CONAGUA should establish with its users, to promote their organization and the profitability in the handling of water.

3. To design a training program for public servants, in such a way that they become promoters of entrepreneurship in Irrigation Units, facilitating the impelling, in 2008, a pilot group that validates the new relationship.

4. To select the pilot group of Irrigation Units to work with during 2008.

As a result of this project, the main problems affecting the performance of the Irrigation Units were identified, and the limits for the design of the pilot project "Entrepreneurial Promotion in Irrigation Units" were established.

It was found that, frequently, the organizations had only functioned to obtain financial assistance, impacting very little in the entrepreneurial and organizational competences of their members, and; although the organizations had internal regulations, these had not been known by the majority of the partners, and no minutes had been taken during meetings. In spite of this, valuable leaders who could actively participate in the development of strategies of improvement were identified. In fact, some organizations showed good performance, and one of two showed a great conscience of the economic value of water, assuming its responsibility in the maintenance of the hydro infrastructure. Another major outcome was the focus on economic activities, although, in most cases, it was centered on the product itself and almost no market orientation was showed. A third finding was the lack of correlation between the water infrastructure and the level of development in Irrigation Units [13].

Objectives of the Pilot Project

Based on these results, CONAGUA and ANUR started PROEUR, with the objective of implementing a developmental model centered on the promotion of rural entrepreneurs, aware of the strategic value of water.

The specific objectives during 2008 were:

1. To improve the performance of organizations in Irrigation Units as a means to detonate development in the land.
2. To promote a change from economic models towards an entrepreneurial orientation, under market and sustainability criteria.
3. To promote the efficient and effective use of the hydro infrastructure.

Logical framework of PREUR

PROEUR visualizes the farmer as an agricultural entrepreneur, capable of being organized and of developing competitive advantages that allow him/her to participate in a profitable way in national and international markets.

This change in the vision of the farmer should exceed the own farmer and include the public officials in charge of giving them support and guidance. Inside the project, the local participation of officials from CONAGUA is a key issue. The relationship between CONAGUA's officials and farmers is decisive in the way farmers see themselves. A complete adoption of an entrepreneurial approach in all different levels inside CONAGUA is an indispensable reinforcement in the change of mentality that is intended in farmers. If this is not

given in practice, in each municipality, the only result of the project will be that of transmitting confusion and frustration to farmers.

In PROEUR, a Society of Rural Producers is advised and accompanied during the whole process by a promoter, which is a person or a firm with wide experience in the creation of companies that, after going through a selection process, has been trained in the methodology of the developmental model centered on the individual.

In this entrepreneurial vision of the agricultural activity, water is seen as a strategic resource that should be used with wisdom, effectiveness and efficiency, in order to obtain the biggest yields per unit of scarce resource, inside a framework of economic, social and environmental sustainability.

The purposes are: the creation of agricultural business models with high profitability that attract the required investments to the land; the generation of economies of scale, through the organizational efficiency of farmers, and; the recovery of the aquifer resources, through an efficient and effective use of water. It is expected that these elements, as a whole, contribute in a systematic way, to the sustainable development of the Mexican land.

The implementation of this model demands the use of tools of thinking that facilitate the farmers to build a future vision that guides the development of their organizations and improves their life conditions. A central element in this process is the use of participatory intervention tools, through which, the actors become involved in a process of personal and communal reflection, so that they identify those aspects that should be improved in their organizations and, at the same time, obtain elements to acquire an integrated vision of development. From the effective use of these tools, the participants will develop the motivation and the necessary commitment to improve themselves, their organizations and their communities.

The developmental model is centered on the individual and on the development of his/her entrepreneurial and organizational competences. Development, inside this approach, consists of a state of continuous improvement that brings us near to the execution of our personal mission. It is cultivated, mainly, through educational processes, and it is based on the search of superior purposes, in the economic, socio-cultural and environmental dimensions. This intervention model aims to arouse in the participants the quest for a mission and vision as human beings (O. Tenopala, April 2007. Promoters Workshop *Modelo de Desarrollo Humano Integrador*, offered in the Colegio de Ingenieros by Pensamiento Creativo Desarrollo y Empresarialidad, S.C., Mexico City).

The economic development is achieved by the adoption and evolution of productive models focused in adding value to concrete, and previously identified, markets. Farmers learn how to build a firm, how to understand the factors that impact in their sector, how to evaluate and take risks, how to invest and wait for obtaining yields from that investment. Also, farmers understand the importance of making strategic

alliances in the search of a greater competitiveness under the current prevailing market conditions. Also, farmers value the convenience of being organized with other farmers to generate economies of scale and to defend their interests through the formation of a common front.

The socio-cultural development is obtained through the adoption and strengthen of the human values, with a sense of transcendence; in the identification of farmers with their community, recognizing and valuing the roles each person plays in his/her social environment, and; manifesting himself/herself in the active participation of the farmer in community tasks of social benefit.

The environmental development is obtained when farmers are aware of their responsibility in the handling of the natural resources and their commitment with its preservation, through business decisions, in benefit of the future generations.

The route towards development is not exempt of obstacles; problems in the Mexican land are complex as previously described. Irrigation Units present particular characteristics that hinder even more the obtaining of results, some of them are: the paternalism of the public policy, that has characterized the government's attitude towards the land, inhibits the emergence of entrepreneurial attitudes and behaviors; the individualism, disorganization, resistance to change, indifference and dependence, are true barriers for the change of mentality; most organizations of farmers lack entrepreneurial competences and have been configured exclusively to gather financial assistance from the government; the support given by the government has been distributed unequally, concentrating the financial assistance on those farmers who need the support less; it is still possible to find "caciques" (local political leaders) leading the organizations of farmers and channeling the benefits from the public assistance to personal or political interests; the distribution channels are controlled by the intermediaries or "coyotes", that conform a mafia around the farmers and gain a disproportioned profit of the business benefits while impeding the farmer's connection to the market.

However, it is necessary to recognize that some organizations have adopted appropriate technologies regarding their circumstances and have learned how to market their products successfully, and even to export.

Towards a change of mentality: entrepreneurship

The economic opening that began in the 1980's and received an important impulse with the North American Free Trade Agreement, has impacted significantly in diverse sectors of the Mexican economy, including the agricultural sector. Soon, after the reformations implemented in land property in 1992, a process of deep transformation of the structures that had characterized the Mexican land during the *agrarian allotment* began [8].

These changes, along with the phenomenon of globalization, require a necessary change of mentality in farmers that help them compete in national and international markets, with high quality products and competitive prices.

The development of distribution channels, in substitution of the traditional “coyote”, and the adoption of a market orientation will be key pieces in the future development of the Mexican agriculture. Also, it will be fundamental to increase the productive investment in the land, as well as to facilitate the adoption of appropriate technologies to improve their productivity, significantly. Finally, the improvement in the organizational capacities of farmers will lead them to work in a coordinated way to defend their interests and to achieve economies of scale that favor the profitability of the agricultural businesses. All these competences are related in a direct way to the adoption and development of an entrepreneurial orientation.

Organizations with a high entrepreneurial orientation are distinguished in constantly innovating their products and markets, as well as looking for sustainable competitive advantages; making decisions proactively, competing aggressively with other firms, and; taking risks in business. The entrepreneurial orientation is the aggregate of these three dimensions [14].

The development of capacities as a source of sustainable competitive advantages has been broadly studied from the resource based view theory, which basically proposes that a firm or organization will be able to compete successfully as it develops and maintains unique capacities that allow it to take advantage from opportunities and neutralize the risks. In order to maintain these competitive advantages, the competences that originated them should be strange and difficult to be copied and substituted [15].

Among those capacities required by a firm to succeed, market orientation has been widely mentioned in the entrepreneurship literature [16], [17]. Traditionally, however, the Mexican farmer has concentrated almost exclusively on production, waiting for the commercialization to flow automatically. This situation has opened the door to the opportunism of the “coyote” who takes most of the margin in exchange for “solving the problem” of selling the farmer’s production. On the contrary, the farmer and, more specifically, the organization of farmers, should see the market as the aim of its desires and concerns, in which it can identify specific market niches and define its products, packaging, quality and prices.

Additionally, organizations of farmers need to evaluate the context, local, national and international, in which they want to compete, to be able to identify the sources of possible comparative advantages, for example, cultivating vegetables during the winter to market them in countries that suffer snowfalls during this period. Also, organizations need to know how to recognize the characteristics that will allow them to compete in the elected markets, in order to know how to identify and develop concrete sustainable competitive advantages throughout time, for example, the capacity to innovate in packaging or making deliveries in a quicker and more flexible way.

Technology is a key element in the sustainable development of the land; the productivity of the resources, including that of

water, greatly depends on the adoption of appropriate technologies. For this, farmers should open their minds in order to accept new forms of making things; they should develop new social networks for the technological transfer, and; they should be able to negotiate the necessary financial resources to carry out the corresponding investments.

In this entrepreneurial focus, the capacity of appropriately administer the available resources, including water, becomes critical. An example of this can be seen in the correct entering in the books, through which the farmer can obtain accurate and opportune information about sales and margins. Also, the measurement of the water consumption can give elements to improve the productivity of land. Having this information allows the organizations of farmers to identify the most profitable products and to channel to them their critical resources, such as investment, workforce or commercial effort.

A quality control of the whole process and the final product is fundamental in the implementation of a continuous improvement. It is necessary to guarantee that the organization is satisfying the demands of the market and that it is showing entrepreneurial competitiveness. A continuous improvement allows the organizations of farmers to have a self-critical vision and constantly reconsider their objectives and goals, looking for a constant innovation in products and processes.

VI. THE IMPLEMENTATION OF PROEUR

At the center of the developmental model, the farmer is seen as the undisputable main character of the process. The farmer defines his/her enterprise in the way he/she wants it, in conformity with his/her own vision. The work with farmers is based on two assumptions: thinking in a conscious way, and acting under previous reflection. General strategies during the project implementation include: training, planning, organizing, taking of initiatives, and working as a team. These elements should be translated in concrete action plans that must include: objectives (expressed in a quantifiable way), deadlines, specific activities to reach the objectives, and the definition of people in charge of them. These action plans help give cohesion to the teamwork, establish initial commitments, identify leaderships and settle down the bases for the continuity of the process.

The implementation of PROEUR began in 2008, with the participation of 41 organizations of farmers, from 26 States of the Republic (out of 32), the corresponding public officials from CONAGUA, also called *links*, and 27 promoters.

Organizations of farmers

The organizations of farmers in the Irrigation Units participating in PROEUR were selected by CONAGUA, based on the following criteria: acceptance of the corresponding link to participate in the project; organizational capacity of farmers, in opinion of the local links of CONAGUA, and; the voluntary acceptance of the organizations of farmers as an indicator of the opening of its members to adopt new ways of thinking and doing which is

indispensable in the implementation of the developmental model. Being a pilot project, it was important that the first experiences were given in a favorable atmosphere, in such a way that, possibly, their example contributed to a widespread acceptance of the concepts related to entrepreneurship in Irrigation Units. Nevertheless, some organizations were selected because of a particular problem they were facing at the moment of the selection.

Once the organizations of farmers were selected, a call for participation was carried out among their members, inviting them to attend a meeting in their Irrigation Unit. These meetings were chaired by the corresponding links in each municipality, accompanied by the assigned promoters and also, in some cases, by officials from the Central Office of CONAGUA, and personnel from PECED (the firm in charge of training promoters and links in terms of the developmental model, hired by ANUR).

From those organizations of farmers selected by CONAGUA, four decided not to participate in PROEUR, arguing that they were not interested in beginning any reflexive and changing process. These organizations were substituted by others who manifested their interest in the project.

The common characteristic among participating organizations is that all of the grouped farmers belong to Irrigation Units, inside the national territory. However, not necessarily an Irrigation Unit corresponds to an organization or vice versa.

In PROEUR, an organization of farmers is that group of farmers participating in a regular basis in the project, belonging or not, in a formal way, to a particular Society of Limited Responsibility. In the same way, people belonging to a society that are not participating regularly in the project are not considered as members of the organization of farmers.

The developmental model behind PROEUR identifies four different performance levels: subsistence (preoperative), management (objective oriented or operative), strategic, and, responsible. These performance levels are an adaptation to the entrepreneurial development context of the four levels of conscience proposed by Bernard Lonergan [18]: empiric, intellectual, rational and responsible. In his reflection, Lonergan suggests that each one of these levels of conscience is determined by the kind of relationship a subject establishes with the object, through a series of conscious operations. Each level overcomes the previous ones and it is not possible to choose a level to be located. The subject's conscience is transformed due to a mutual operation between the subject that knows and the object that is sought to know. To know is to begin a process that intends to embrace the four levels and finishes in the transformation of the subject and reality.

In practice, the initial performance level of each organization of farmers was determined through a diagnosis elaborated by the promoters and validated by PECED. In the beginning, it was planned to have a similar number of organizations in each performance level; however, most of the organizations participating in the project presented levels of

subsistence and poor management capabilities. Nevertheless, they were above the line of extreme poverty, since they possessed lands and irrigation systems. In fact, some of them were successful entrepreneurs. Frequently, the farmer's family was involved in the cultivation work, especially in the lowest economic levels. However, most of the farmers that used modern watering infrastructure hired day laborers.

Most farmers in PROEUR were men, older than 50 years, married, with 4 to 5 sons/daughters, many of whom did not want to work the land. Many farmers wanted to be able to help their sons/daughters study a bachelor degree and get a job different from farming. However, frequently, the farmers' son/daughters, as they grew up, took part in the productive process or became in charge of specific functions. The participation of women in PROEUR was very limited; only in four organizations (almost 10%) was a significant participation of women. This proportion might be that of women in Irrigation Units, since the selection of organizations did not include any criteria related to the gender of participants in the pilot project.

The organizations of farmers usually had a leader that fitted one of the two following profiles: the first, and more common, a leader that worries about their people's development, or; the second, a cacique that takes advantage of the organization to his own benefit. Unfortunately, it was possible that the leaders were tempted by the political organizations, in such a way that they abandoned their original purposes of favoring the development of their unionized. On the other hand, the organizations without a strong leadership were easy prey for caciques, "coyotes" and some politicians that tried to use them to pursue their own benefit.

The distribution channels were usually controlled by the intermediaries, who, in occasions, have shown an open opposition to PROEUR. This attitude was expected, since the promotion of entrepreneurial competences in the organizations of farmers will necessarily affect their interests by providing them of better negotiation weapons. Nevertheless, it is necessary to remark the importance of the function that the intermediary carries out inside the productive chains in which farmers currently participate. The project does not pursue the elimination of the intermediary, but the development of the entrepreneurial competences in farmers that allow them to have a more equal position in the distribution of the business benefits.

It is necessary to mention that, at the end of 2008, three organizations of farmers were discarded from PROEUR. Two of them neither assimilated the objectives of the project during the intervention process nor did they show disposition to a process of reflection and change. The third organization was discarded because of disagreements on the scope of the project between the leaders of the organization and the farmers. These disagreements were identified through the evaluation of impacts of the project.

Promoters

Promoters in PROEUR were chosen because of their experience and capacities in the entrepreneurial promotion, particularly, among agricultural businesses. Each promoter received a direct invitation to participate in the project. According to the results obtained in the evaluation of their profile, the selected promoters were invited to participate in a series of workshops about the developmental model and its implications on organizations of farmers. The selection of the promoters was in charge of the Committee of PROEUR, composed by Irrigation Units Management in CONAGUA and PECED. The selection criteria were based upon the curricular analysis of applicants and their performance in the exams they presented on the exposed methodology during the workshops.

Two approved promoters did not continue in the project: one of them was working with two organizations of farmers during a month, abandoning the project to pursue other interests. The other one did not show up in the first meeting with one of the two organizations of farmers that were assigned to him, and was ruled out from the project. In both cases, the organizations of farmers were assigned to other promoters operating in the corresponding regions.

Selection of links

The links from CONAGUA were selected by the Irrigation Units Management. It is appropriate to mention that although four links openly manifested their nonconformity with the project in its beginnings, practically all continued throughout the year.

Evaluation of impacts

The objective and opportune measurement of the impacts of PROEUR is very important, since it aims to achieve a significant improvement in the organizations of farmers. On one hand having accurate, sufficient and opportune information will allow CONAGUA to adapt the pilot project to the particularities, circumstances and necessities of the organizations of farmers and Irrigation Units. On the other hand, it is important to evaluate objectively the advances and impacts of the project, in order to offer recommendations for the continuity and amplification of PROEUR in 2009, and the creation of a Public Program in 2011. Being a public project, it is necessary to evaluate its impact/cost ratio, in order to facilitate the taking of decisions in the assignment of resources inside CONAGUA, in terms of a responsible and transparent use of public resources.

Unfortunately, in Mexico, it is very common for public projects in social development not to carry out any systematic evaluation of impacts nor perform an initial diagnosis of the conditions of the beneficiaries in order to develop or implement a project. The consequences of these lacks are multiple. First, it is not possible to know if the implemented developmental models correspond or not to the reality of people they seek to benefit. This can provoke, in the worst scenario, that the projects not only fail to improve the conditions of their presumed beneficiaries' life, but rather, that

they harm them, introducing elements that overturn the economic, social or environmental structures in which they live. Second, when lacking an initial diagnosis, it is not possible to foresee the effects of the intervention and to know whether the corresponding investment is more productive than any other. Third, when appropriate indicators of effectiveness are missing, other measures that offer little information about the achievement of the objectives of the project are used. Some statistics, such as the number of beneficiaries or the duration of the support, that are completely useless in the execution of the project, are thrown out.

Moreover, management indicators cannot replace impact indicators. Management indicators only speak of the advances in doing the programmed activities, while impact indicators reflect the effects of those activities in the variables they are intended to affect, for instance, the effects of a particular intervention in the productivity of water. Clearly, impact indicators are more important than management indicators, and the former cannot be substituted by the latter. Finally, when no measures of impact are used, there is not information at all to adjust the direction of a project, and the project managers become obsessed by fulfilling every single activity in their program, adopting a rigid attitude which could be critical in uncertain and changing environments, such as those in Mexican land.

Foreseeing these risks, the implementation of a monitoring system was considered, since the beginning of PROEUR, as an important part of the project. It will allow CONAGUA and ANUR to evaluate impacts and to document the experience during the implementation process. This paper is an outstanding result from this care. Three basic indicators were established: organizational practices, entrepreneurial orientation and productivity in the use of water. The individual performance is measured in the project in terms of the four levels of consciousness proposed by Lonergan. The definition of the variables included in these indicators and the according descriptions for each one of the four levels were designed in the project under the expectation of a continuous improvement derived from the learning process during the three years of the pilot project. Also, those three years are the minimal period in which relevant impacts on organizations of farmers were assumed to be achieved by PROEUR.

VII.METHODOLOGY

The basic observation unit inside PROEUR is, essentially, the farmer, who is the recipient of the benefits in every single program from CONAGUA. Farmers are supposed to be integrated in a Society of Limited Responsibility in order to receive the government support.

A *project* in this program is considered every peculiar arrangement of farmers (in one or more Irrigation Units), a link, and a promoter. Each project is registered in the information system on the Internet, which is used to report advances to the Central Office of CONAGUA.

An *Irrigation Unit* is that territory identified as such by CONAGUA.

A *link* from CONAGUA is the local official that maintains a direct relationship with the organization of farmers and who serves as a link between this one and the Central Office of CONAGUA.

A *promoter* is the person or organization in charge of training the farmers. The promoter accompanies the organization of farmers during its participation in the project.

In order to evaluate the impacts of PROEUR, in depth interviews with farmers, promoters and links were carried out, between October, 2008 and February, 2009. For this purpose, three different interview guides were developed (available under request). The interviews were recorded in audio in order to carry out a meticulous analysis of their content. All interviews were done by an external element, unaware of the rest of the processes inside the project. In order to improve the impartiality of the comments, the interviewer assured a confidential handling of the interviewees' contributions.

Eight projects were selected to participate in the evaluation process (see Table I). In general, the aim was to have diversity in the sample in terms of: location inside the national territory, performance level and size of the organization of farmers, experience and capacity of the promoter, and commitment of the link.

TABLE I
 PROJECTS SELECTED FOR EVALUATION

Performance Level	Zone	State	Name of the Project
I	North	Sinaloa	Don Pablo Moreno Mendoza
I	North	Nuevo León	La Motita, Espíritu Santo
I	South	Oaxaca	San Pablo – Huixtepec
II	North	Tamaulipas	El Mante
II	South	Puebla	Alta Luz Cuatro Rayas
III	North	Baja California	Desierto del Colorado
III	South	Chiapas	Mazatán
IV	North	Zacatecas	Auprineza

However, because of logistical difficulties, it was not possible to interview farmers, promoters and links from all selected projects. Instead, other participants were interviewed. Participants from Mante and farmers from the Desert of Colorado and members of Don Pablo Moreno Mendoza organization were not interviewed. In substitution, farmers from Hidalgo, in Chiapas, and coordinators of the program at national level were added to the sample. In total, 31 participants were interviewed: 13 farmers, 9 links and 9 promoters.

Each recorded interview was transcribed into a matrix in order to analyze all comments according to the different topics that were proposed or emerged during the interviews. Later, a content analysis was performed. It was considered appropriate to separate the points of view of farmers, links and promoters, since the differences and similarities among their visions could contribute to understand better the implementation processes and their impacts.

VIII. RESULTS AND DISCUSSION

As participants reported, the intervention activities were carried out between June and December of 2008, and, in general, they consisted of biweekly meetings between the farmers and the promoters. In most cases, the promoters presented different topics related to the developmental model for discussion in the group of farmers. In some cases, these meetings counted also with the participation of the links, although many of them were not able to assist on a regular basis because of their habitual work. Nevertheless, the relationship between the links and the organizations of farmers was very important for PROEUR since farmers usually trusted links because of their support in other programs from CONAGUA. Actually, links invited farmers to participate in the pilot project, and they introduced promoters to farmers.

Although some interviewees considered that the impacts of PROEUR would be visible only in the long run, a process of change in the mentality of the farmers and other participants in the project was widely recognized. Indeed, practically all interviewees agreed on the necessity and in the convenience of the continuity of PROEUR, and considered it was important that this could start within in the first three months of the following year and would last at least eight months.

Being PROEUR a developmental model centered on the individual, the relationships among farmers, links, and promoters are important in its implementation. The following three paragraphs capture the feelings and thoughts around the relationship between each possible pair of participants.

Farmers - Promoters. For farmers, the relationship was very good. There were good communication and disposition; promoters were really committed to the project, they understood the situation, deficiencies, and way of expression of farmers, who trusted them and even saw them as friends. For promoters, trust improved as the project advanced; at the end of the year, there were respect and openness. The relationship was characterized by collaboration.

Farmers - Links. For farmers, the relationship was very good, a professional one, and even of friendship. There was cordiality and a lot of trust, because of the contact they had had through other programs from CONAGUA. In links' opinion, the relationship had improved as a consequence of PROEUR, things were no longer looked at exclusively from a technical point of view; rather, it was about motivation.

Links - Promoters. In links' point of view, there was a good communication; the problem was that promoters were not paid on time, but there was commitment and disposition. For promoters, links had too much work and they could not be devoted enough to the project. However, the relationship was cordial. Sometimes, the expected feedback was not received; there was not in-depth communication. The links saw the project as if it was infrastructure, and this was considered a mistake. Finally, promoters reported that some links were used to pass the problems from one to another without solving anything, in a bureaucratic way.

These three agents, farmers, promoters and links, shared a vision of the Mexican land as at standstill, in a subsistence level (see Table II). The financial cycle of the farmer was a very hard one, inputs were costly, and results uncertain. Organizations of farmers were frequently ineffective and lacked an entrepreneurial orientation. Although farmers recognized the importance of water, most of them did not know how to exploit efficiently the available hydro infrastructure, and they felt little control over the irrigation technology. For promoters and links, farmers were reluctant to adopt new technologies, including pressurized watering systems.

For those involved in the pilot project, an entrepreneurial approach in the agricultural land could contribute significantly to take the farmers out of the poverty cycle. The development of organizational competences was recognized as a key element in taking advantage of the hydro infrastructure and in minimizing the risks of the market. PROEUR has been seen as an innovative project that complements other programs from CONAGUA, traditionally focused on infrastructure, and that could help eradicate the paternalism in the Mexican land by building human and social capital.

Related to immediate impacts of the pilot project, all participants identified an enlargement of the vision of farmers and the shift towards a more reflexive attitude to their economic activity. Seemingly, farmers have been in the process of becoming more conscious about the importance of preserving the aquiferous resources, and more market and entrepreneurial oriented.

Despite of the benefits, farmers, promoters and links considered that the project advanced too slowly. The concept itself appeared to be difficult to assimilate, and many administrative difficulties had to be overcome during the first year of operations.

Additionally, some leaders of farmers, and “coyotes”, considering that PROEUR could damage their interests, had been against the project.

When asked about the conditions that might facilitate the implementation of PROEUR, promoters and links suggested that farmers must have a good disposition to the project, they should be already organized, and count with pressurized watering systems.

TABLE II
 POINT OF VIEW OF FARMERS, PROMOTERS AND LINKS

Topic	Farmers	Promoters	Links
Development of the Mexican land and current productive models	The agricultural land, in Mexico, is stagnated; many farmers work in the subsistence level. Farming is not a very profitable activity because of several conditions: the high costs of inputs, including fertilizers and credits (up to 15% monthly); the uncertainty of achieving a good crop (droughts vs. hurricanes) and a good price (supply vs. demand) at the end of the production cycle; the lack of appropriate technology, including pressurized watering systems, and; corruption, that reduces the real benefits from public programs.	The economy of the land is one of subsistence. In fact, in some places, the development achieved in the past has been lost; new generations do not want to work in the land. The financial cycle of the farmer is a very hard one: the money lender and the “coyote” are the winners, while the farmer takes all the risks in a completely uncertain business. Besides, the farmers are reluctant to adopt new technologies and the lack of resources, knowledge, and vision prevent them from increasing their production or quality. Organizations of farmers are frequently ineffective and lack an entrepreneurial perspective.	The economy of the land is one of subsistence, although in the North, the lack of water has forced farmers to make a more profitable use from their resources. Many farmers only know that they do not make money and expect help from the government. Agriculture techniques are traditional and farmers do not want to adopt new technologies. In order to be profitable, a farmer must have pressurized watering systems and supply specific production chains due to his comparative advantages. Most farmers do not know how to exploit efficiently the available hydro infrastructure.
Importance of water	Everything in their job depends on water supply; however, farmers do not know how to improve its productivity. In some regions, farmers say that macro infrastructure is required; in others, they denounce illegal taking of water or pollution in the aquiferous sources, such as rivers.	Farmers do not value water enough because they have it. They do not want to pay for water and do not even accept that their water consumption is measured. Consequently, it is very difficult to improve the productivity of water. Some farmers, aware of the importance of water in the productivity of land, are changing to pressurized watering systems.	Many farmers waste water and refuse to accept that their consumption of water is measured and charged. They consider that the cost of water is the cost of the electric power required to pump it. They seldom think of the profitability of water and less about its conservation. There is also a lack of technology in the land; traditional methods of watering, such as the “rolling irrigation” system, are very inefficient.
Convenience of an entrepreneurial approach for the development of the land	An entrepreneurial approach in solving the problems of land will allow the farmers to adapt their production to the demands of the market. It will also facilitate them to generate alternative products, to diversify their activities, and to add value to their products, minimizing the risks of the market. This entrepreneurial approach might be the key to leave paternalism, and face the challenge imposed by globalization. An organizational approach is also required to work together, improve their marketing tasks, reduce their costs and solve their problems with order.	The entrepreneurial approach would solve many of the problems of farmers and might contribute to take them out of the poverty cycle. However, the particular conditions of farmers do not always contribute to this.	An entrepreneurial approach in the land is fundamental. Actually, farmers are already entrepreneurs, but they are not aware of that. However, a farmer alone cannot do much. Farmers must become integrated in entrepreneurial organizations in such a way that they could take advantage of the hydro infrastructure and develop their human and social capital. Entrepreneurship and infrastructure come together and complement each other.

Topic	Farmers	Promoters	Links
	Unfortunately, some leaders of farmers, who exercise an excessive control in their organizations, think that farmers cannot become entrepreneurs.		
Positive aspects of PROEUR	It is an interesting and innovative project from CONAGUA. The development of a more entrepreneurial profile in farmers can be very useful in the quest for improving their wellbeing. PROEUR complement very well other programs from CONAGUA and other government's instances. The training has shown a good quality and a good adjustment to their particular circumstances.	It is an alternative for the development in the Mexican land, especially, for the poor farmers that have small parcels and limited resources. The focus on a change in the mentality of farmers points to wider objectives, after years of paternalism. The central point of the project is its human and social perspective of development, through entrepreneurship.	It is an ideal mechanism to give importance and attention to the human and social perspective required in the agricultural land. Not only do farmers need infrastructure, but also they need to know what to do with it; PROEUR is an excellent complement in the CONAGUA's set of programs. It has allowed the Irrigation Units to receive a greater attention from CONAGUA. PROEUR is also the possibility of having the farmers making development proposals in the Mexican land.
Negative aspects of PROEUR	The objectives of PROEUR are not clear. The same happens with its limits and operation rules. The project advances very slowly and, frequently, agreements are not documented.	The schedule of the project, in several aspects, has not been adequate. Promoters did not have enough time to make a good initial diagnosis. Administrative procedures inside CONAGUA have been very complex, deriving in delay in the promoters' payment. The indicators used in the project do not allow appreciating the advances; actually, it goes too slowly.	The project itself is difficult to be assimilated by farmers, who are used to receive physical facilities or money, instead of training. On the other hand, the project goes slowly and the response of farmers has been limited. Finally, some promoters do not have the required experience to work with farmers and assimilate the administrative procedures of CONAGUA.
Impacts of PROEUR	They are more conscious about the importance of being market oriented: consumer preferences, prices, and quality, for instance. They also have improved some organizational capacities, such as that of having more order in their assemblies or revised their statues as organization. Some farmers have learned how to establish objectives and how to calculate the profitability of a crop; they have realized that it is possible to produce other things and to change their production systems. Now, they have the dream of growing.	Entrepreneurial vision of farmers is enlarging; now, they have a more complete idea of what an agricultural business is and what variables they must consider to succeed. They also understand the importance of being focused on the market; they are thinking of complementary businesses and about how to add value to their products. Some organizations are now capable of carrying out meetings and reaching agreements; they are acquiring an entrepreneurial vocabulary and are thinking as a group. They are buying the idea of becoming entrepreneurs, and are more interested in using the water efficiently. Some officials from CONAGUA have also positively changed their mind.	There has been a change in the thinking of farmers; now, some of them are becoming more reflexive: they are trying to avoid "coyotes" by identifying alternative markets for their products; they discuss their problems openly and propose solutions. Farmers are assimilating entrepreneurial concepts and developing a new language. Now, they know that their products must satisfy the necessities of somebody, they are aware of costs and quality; they are willing to explore new cultivations and are open to new forms of organization; they are more conscious about the necessity of conserving the aquiferous resources; they already realized that having land and water and not working with these resources is losing money.
Conditions that facilitate PROEUR's implementation	Farmers must have the necessary supply of water before entering the project; they must be free to participate or not, and those who decide to participate must value the project and understand its objectives.	Farmers must have a good disposition to the project, and they must be organized. It is also important that they count with pressurized watering systems, belong to the same region, and share the same problems. During the project, it is fundamental that farmers adopt the dream of becoming entrepreneurs. CONAGUA enjoys an excellent reputation among the farmers; it is good that the project comes from it.	Farmers must count with pressurized watering systems and with an appropriately constituted organization before entering the project. There must be no opposing groups and farmers must have the vision of going further and be conscious of requiring support to achieve their goals.
Problems in PROEUR's implementation	In the beginning of the project, farmers did not understand the objectives and spirit of PROEUR; they were expecting money or infrastructure, like in other programs from CONAGUA. Some farmers are very egoistical; it has been very difficult to get a good teamwork. Some promoters lack the necessary knowledge to do the job; others, use words and expressions that farmers do not understand.	Diverse groups oppose to the project because it damages their interests: some officials of CONAGUA, leaders of farmers, advisors of organizations of farmers, and "coyotes". There was a lack of communication among the involved agents. The delay in the payment forced promoters to finance their operations for too long, limiting seriously their capacity of action. Frequently, inside the organizations, farmers see each other as competitors, making difficult to collaborate in a common project. Some promoters recognize that there is still a lack of entrepreneurial culture among	Functions, responsibilities and communication lines among the diverse agents involved in the project are not very well established. The idea of entrepreneur farmers is new in CONAGUA, which is a very huge institution; it is hard to shift from the traditional paternalistic approach. The participation of farmers is limited and some leaders are against the project.

Topic	Farmers	Promoters	Links
		promoters. Finally, it has been difficult to accomplish the information requirements due to technical problems with the system on Internet.	
Suggestions to improve PROEUR	Clarifying the objectives of the project from the beginning, as well as its operation rules. Balancing the content of the training between production and commercial issues. Diversifying the training methods, including visits to other organizations, experiments, and learning of processes to add value to their products. They also suggest avoiding the use of complicated terminology during training.	Focusing the project on the commercial aspect of agricultural entrepreneurship, which is the major problem in most cases. Doing a deeper initial diagnosis. Selecting those organizations with more probabilities of success; farmers in one project must share a region and a problematic. During their training, promoters must learn participatory community techniques. Sharing experience and knowledge among promoters on a regular basis. Offering a feedback to promoters during the implementation process.	Initiating the project by convincing the farmers of becoming entrepreneurs. It is also necessary to do a much deeper initial diagnosis. The project must be explicitly used to improve the productivity of other programs from CONAGUA. Inter-institutional coordination among entrepreneurial programs in the land must be achieved. Finally, promoters must be selected better and evaluated in order to keep only the best of them.
Expectations about PROEUR in the long run	Evaluating new business opportunities and developing projects that will allow them to grow and to achieve economic stability. Enhancing their entrepreneurial capacities both in production and commercialization. Experimenting with new crops. Improving their organizational capabilities: solving problems together; obtaining discounts by consolidating purchases, and; having a significant presence in the market, acting as a whole.	Reducing migration and facilitating the intergenerational transition. Developing business plans for specific projects. Current participants might transmit a new entrepreneurial culture to the next generation of farmers. Farmers must benefit from integration and from a better commercialization of their products. A more efficient use of water.	A change in the mentality of farmers: that they become architects of their own destiny. Farmers should become good marketers, and use the hydro infrastructure appropriately.

During the pilot project, in 2008, positive and significant impacts have been detected: a change of mentality is operating in farmers; they are in the process of convincing themselves of the necessity of adopting an entrepreneurial approach in the Mexican land as an effective means to escape from poverty and to develop human, social and economic welfare, while taking advantage of the hydro infrastructure and receiving orientation in future projects of growth and diversification.

Regarding this, strong expectations have been generated among farmers who claim the continuity of the pilot project. They expect that, in the short run, it will contribute to improve substantially the way they market their products. On the other hand, although farmers recognized their deficiencies and, in most cases, lack of appropriate means of production and watering systems, they had also realized that many of their problems were derived from insufficient information and market orientation.

Farmers also recognized the convenience of working in group to overcome their problems, facilitating the obtaining of government support. They began to visualize other derived benefits from a good organization, like scale economies and a greater control of prices.

PROEUR had also contributed to the generation of a curiosity in the farmer about knowing how efficiently he/she is using the water and how it can affect his/her earnings because of both the decrease in costs derived from the adoption of modern watering systems, and the improvement in the control of the production cycles. However, the possibility of being charged because of water or suffering shortages were latent concerns for farmers.

From the government institutions, farmers expected receiving: assistance to create business plans; training;

cancellation of interests in credits; financial resources for productive projects at a very low rate of interest, and adjustment of payments to the cycle of crops; support for genetically improving their plants and controlling plagues; machinery to modernize production, and; subsidies to buy seeds and fertilizers. Surprisingly, some farmers asked the government no to give money to farmers, since this kind of support only corrupts people. Instead, they said, the government should help create favorable market conditions so that farming becomes a profitable business.

Farmers hoped that CONAGUA continued giving the necessary support to guarantee the water supply and to solve the related problems, such as maintenance of the hydro infrastructure, control of concessions, and coordination among users. They thought that if watering systems change to micro aspersion, the productivity of water will increase significantly. They also expected a model of integrated development to be adopted. Finally, farmers applauded PROEUR and claimed their continuity until matching their expectations.

In spite of the benefits the participating farmers have recognized in the project, many others have not wanted to participate. Seemingly, some of those reluctant farmers distrust the effectiveness of the pilot project or do not share its vision. Besides, some farmers that joined the project at the beginning desisted from it when they saw that they would not receive any money from PROEUR, and that they would keep receiving the current support from CONAGUA, even if they leave the project.

For links, PROEUR will succeed if it induces farmers to use efficiently the available hydro infrastructure. However, some officials of CONAGUA considered that the project could radically change the relationship between CONAGUA

and farmers, in such a way that farmers could lead the developmental strategies in the agricultural land, accompanied by the promoters.

For the promoters, PROEUR is a project of big challenges that offers them the opportunity to contribute substantially to the development of the land and, at the same time, an opportunity to learn a very valuable development methodology, centered on the individual, through entrepreneurship. However, promoters have felt alone during the process: they did not receive the expected feedback and follow up during the implementation of the project. In fact, the administrative procedures required to get paid, as well as the fulfillment of the formats and the generation of reports had been, as a promoter said, a "torture".

Besides, the information system on the Internet had been suffering delays and flaws that had inhibited its potential as a means of control and learning during 2008. For the following period, it is hoped to overcome these difficulties and that the system facilitates the tasks of all those involved, becoming an invaluable receipt of data that helps capitalize the experience achieved during the pilot phase of the project.

IX. CONCLUSIONS

In spite of the reformation of the Agrarian Law of 1992, that aimed to prepare the land to respond to the economic, technological, and social requirements, demanded by the economic liberalization, an important part of the Mexican land remains at standstill, in a subsistence level.

The adoption and development of an entrepreneurial culture in the land can contribute to take the farmers out of the poverty cycle, building human and social capital, and increasing their production and productivity, helping recover the alimentary sovereignty of the country and reducing the migration of the rural population to urban areas and to the United States.

In order to implement a developmental model centered on the promotion of rural entrepreneurs, aware of the strategic value of water, CONAGUA and ANUR started the pilot project "Entrepreneurial Promotion in Irrigation Units", PROEUR, in 2008, with the purpose of improving performance of organizations in Irrigation Units as a means to detonate development; promoting a change from economic models towards an entrepreneurial orientation, under market and sustainability criteria, and; promoting the efficient and effective use of the hydro infrastructure.

During 2008, PROEUR showed positive outcomes, both in farmers and in CONAGUA's officials. The entrepreneurial approach, focused on the individual, has been perceived as a feasible alternative to abandon the paternalism and boost the human, social, and economic development in the Mexican agricultural land. It is significant that, practically, all interviewees recognized a positive balance in this pilot experience and plead for the continuity of the project until the achievement of its ultimate objectives.

In terms of theory, the findings suggest that the development of entrepreneurial capacities in farmers begins with a change of attitude towards a more open vision of the agricultural activities, especially, facing the market, and with the construction of a self concept as an entrepreneur. The continuity of this project in 2009 will allow us to confirm, in a second part of this investigation, whether this particular intervention really helps develop entrepreneurial competences in farmers.

As particular recommendations to improve this project, we suggest: a close, formal and systematic tracing of the promoters' project implementation; the adaptation of the promoter to the entrepreneurial level and the characteristics and necessities of the organization of farmers; a more width and depth development of the commercial topic in training; to homologate the administrative procedures inside CONAGUA, in order to avoid delays in substantive tasks during the project; to look for the coordination among institutions of the entrepreneurial programs in the agricultural land, and; to establish the means for the creation of a learning community among all those involved in the project.

Limitations in this research include the small number of interviewed farmers, the fact that only seven different organizations participated in the evaluation, and the type of data considered on the analysis, which is basically only qualitative data. These limitations are tightly associated to the also limited budget assigned to the evaluation of the pilot project. Nevertheless, the interest and effort in evaluating the impact of this kind of projects is a notable progress in the public sector in Mexico.

REFERENCES

- [1] G. McElwee, "Farmers as entrepreneurs: developing competitive skills," *Journal of Developmental Entrepreneurship*, vol. 11(3), pp. 187-206, 2006.
- [2] G. D. Bruton, D. Ahlstrom, and K. Obloj, "Entrepreneurship in emerging economies: where are we today and where should the research go in the future," *Entrepreneurship Theory & Practice*, vol. 32(1), pp. 1-14, January 2008.
- [3] J. Pyysiäinen, A. Anderson, G. McElwee, and K. Vesala, "Developing the entrepreneurial skills of farmers; some myths explored," *International Journal of Entrepreneurial Behavior Research*, 12(1), pp. 21-39, 2006.
- [4] K. M. Vesala, J. Peura, and G. McElwee, "The split entrepreneurial identity of the farmer," *Journal of Small Business and Enterprise Development*, vol. 14 (1), pp 48-63, 2007.
- [5] L. F. M. Nieuwenhuis, "Innovation and learning in agriculture," *Journal of European Industrial Training*, vol. 26(6), pp. 283-291, 2002.
- [6] C. C., Lauwere, "The role of agricultural entrepreneurship in Dutch agriculture of today," *Agricultural Economics*, vol. 33(2), pp. 229-238, August, 2004.
- [7] J. F. Cortés, *El agro mexicano, ¿Siempre lo mismo?* Guadalajara, Mexico: Universidad ITESO, 1993.
- [8] Secretaría de la Reforma Agraria, *Actualidad de las políticas agrarias*. Mexico: Colección Editorial del Gobierno del Cambio. Fondo de Cultura Económica, 2006.
- [9] INEGI, retrieved on September 30th, 2008, from <http://www.inegi.gob.mx>
- [10] FAOSTAT, retrieved on September 30th, 2008, from <http://faostat.fao.org>
- [11] A. Espinosa, *Formación de capital humano y energía social en el campo mexicano*. Mexico: Fundación Miguel Alemán, A.C., 2007.

- [12] CONAGUA, *Programa Nacional Hídrico 2007 – 2012*. Mexico: Comisión Nacional del Agua, 2008.
- [13] PECED. Diagnóstico sobre el nivel de organización de Sociedades de Responsabilidad Limitada visitadas para el proyecto: “Desarrollo Estratégico del Capital Humano y Social que Opera las Unidades de Riego”. Pensamiento Creativo Empresarialidad y Desarrollo, S.C., unpublished, 2007.
- [14] P. M. Kreiser, L. D. Marino, and K. M. Weaver, “Assessing the psychometric properties of the entrepreneurial orientation scale: a multi-country analysis,” *Entrepreneurship: Theory and Practice*, vol. 26(4), pp. 71-94, Summer 2002.
- [15] J. Barney, “Firm resources and sustained competitive advantage,” *Journal of Management*, vol. 17(1), pp. 99-120, 1991.
- [16] W. E. Baker, and J. M. Sinkula, “The complementary effects of market orientation and entrepreneurial orientation on profitability in small businesses,” *Journal of Small Business Management*, vol. 47(4), pp. 443-464, 2009.
- [17] S. F. Slater, and J. C. Narver, “Market orientation and the learning organization,” *Journal of Marketing*, vol. 59(3), pp. 63-74, 1995.
- [18] B. Lonergan, *Método en Teología de Bernard Lonergan*. Salamanca, España: Ediciones Sígueme, 3rd Ed. 2001.