Technical and entrepreneurial training for horticultural production in Mexico

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Abstract

Technical and entrepreneurial training was provided for two groups of young adults to prepare them for commercial production of horticultural goods under greenhouse conditions. Most participants (90\%) had only basic formal education and no experience in agriculture. Both teachings were done simultaneously. Thus, they learn how to produce based on market demands, and how to operate as a business. This educational experience resulted in a high satisfaction for the participants, and gave them the skills needed for commercial production because they were able to produce and market one harvest. Their main challenge is to develop an enterprise.

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Introduction

Inequity is the main problem of Mexico. Its most regrettable outcome is poverty. CONEVAL (2013) reports in 2008 and 2010, 11.7 million of people in extreme poverty. However, the number of inhabitants with insufficient food access increased from 23.8 million (21.7\% of national population) in 2008 to 28 million (24.9\%) in 2010.

Poverty is widespread in rural areas. Chiapas is the state with the highest percentage of paupers (78.4\%). It also has six of the ten municipalities with the greater rate of poor people. The states of Guerrero (67.9\%), Oaxaca (67.2\%), and Puebla (61\%) are next in line (CONEVAL, 2012).

Several factors are contributing to the poverty concentration in rural regions. Most of their inhabitants are...
devoted to primary activities. They work part-time in a non-intensive way, with low or none value aggregation, and small productivity. Consequently, the rural average income is only 27% of the national one (SIAP, 2010), or 7% of the 2012 U.S.A. minimum wage.

An alternative to reduce poverty is self-employment with higher remuneration to promote arriangement in countryside communities, and the improvement of their way of life. Horticultural production under greenhouse conditions is a good option. It allows the production of several harvests per annum, with better yields, lower risks, best quality, and usually higher prices. It creates more jobs, with increased stability. It also uses water and input in a more efficient manner than open field cultivation (Velasco et al., 2011).

Greenhouse agriculture is more complex, and more man dependent than conventional one. Thus, training is the best strategy to increase the success of this cultivation technique. Manrubio et al. (2007) found 65% of greenhouse production units with Mexican federal or state subsidies were unproductive. The main cause was insufficient training or technical assistance.

The Mexican federal government program “Young entrepreneurs” recognized such fact. It provided technical and business training to augment the achievement of its supported projects. It runs on two stages. In the first one denominated, “school project” such preparation is provided. The objective of this paper is to analyze the planning, development, and results of the technical and the entrepreneurial training for horticultural production, within the “Young Entrepreneurs” Program, in two communities at the state of Puebla, Mexico.

2. Materials And Methods

Two nearby communities were selected for this study. They are located in near contiguous municipalities in the southern part of the state of Puebla, Mexico. The region is denominated “Mixteca Poblana.” The first one was San Martín Tecuautitlán, Piaxtla municipality. It is located at 18° 12’ latitude North, and 98° 16’ longitude West. Its altitude is 996 m above sea level (asl). The second one was San Pedro Yeloixtlahuaca, with the same name municipality. Its situation is 18° 07’ latitude north, and 98° 06’ longitude west. Its elevation is 996 m asl. The average temperature is 24.3° C. The mean maximum is 32.8° C, and the average minimum 15.8° C. The annual rainfall mean is 1,607 mm. It is concentrated from July to October. Only in those months, the precipitation is higher than the evaporation.

Those communities were selected to be benefited for the “Young Entrepreneurs” Program of the Ministry of Agrarian Reform of the Mexican Federal Government, because they could constitute groups of young people (18-39 years old) willing to participate in productive projects. Under the supervision of the program’s personnel, they decided to be involved in horticultural production under greenhouse conditions. At San Martín Tecuautitlán, the cucumber crop was selected. In San Pedro Yeloixtlahuaca, tomato was chosen.

The funds for the technical and the entrepreneurial training, and the scholarships for the Younger were provided by Program mentioned above. It also provided subsidies to construct a 300 m² greenhouse, and for the basic equipment and input for one crop cycle in each community.

The projects were monitored from the initial diagnostic of the participants, until the final evaluation of the technical and the entrepreneurial training. Surveys were done to determine the opinion about the activities performed.

3. Results And Discussions

3.1. Initial diagnostic

In order to increase the efficiency of the training, an initial diagnostic of the participants was conducted in the two groups. The occupation, the education, the knowledge about the crop to be installed, and about greenhouse agriculture, were questioned. Furthermore, their entrepreneurial experiences, and their expectations about the training were inquired.

Thirty people formed the San Martín Tecuautitlán group. Forty-five percent were women. Most of them had household occupations (70%). Fifteen percent were involved in construction. Only 10% were peasants. There were

big differences in schooling, from people with no formal education, up to one with a bachelor degree. The majority did not know about greenhouse agriculture (60%), or about the cucumber crop (75%). No one worked in a formal business. Only 25% had entrepreneurial notions, and 30% concepts about marketing.

The group of San Pedro Yeloixtlahuaca had the same number of members (30). Sixty percent were women. Half had a household labors. Almost one-third were wage earners. One tenth was students, and a similar proportion was self-employed. For 60% greenhouse agriculture was unknown. However, 7% have been working on greenhouses. Only 40% had some knowledge about the tomato crop. One fifth have participated in an enterprise. Half had some marketing notions. All participants had some formal schooling. The students were getting a bachelor's degree.
3.2. Training development

Both groups hired their trainers based on an analysis of proposals submitted by professionals. The former Ministry of Agrarian Reform, the entity responsible of the “Young Entrepreneurs” Program, accredited those selected. The process involved review of academic records. A bachelor degree and training experience in a similar endeavor was a minimum requirement.

Due to the scarce knowledge about greenhouse agriculture and entrepreneurial aspects of most participants, the training was planned to start since the basic concepts of both areas. The horticultural production in soil under hydroponics was selected, because it had lower production costs and require fewer specialized skills. Therefore, it is easier to obtain and to market products with profits. The soil acts as a buffer. It helps to compensate for possible mistakes in nutrient solution formulations.

The technical training was provided jointly with the business education. This allowed focusing the production on market demands. Another objective was to teach them how to operate as an enterprise. The group’s members had productive or family-related activities during weekdays. Thus, the training was conducted in weekends. The participation of students of elementary and secondary schools, sons and daughters of the groups’ adherents, were encouraged to participate in the sessions. This helped some mothers of the San Martín Tecuautitlán group, with no schooling, to learn better. The children read them the manuals provided and collaborate to answer the exercises and homework.

The technical training was 30% classroom theory, and 70% practice in the in the field and greenhouse. The skills needed for commercial production were developed this way. The entrepreneurial classes were conducted as workshops in order make them more amenable. It also developed a business plan for the next phase.

In the technical training, the following subjects were taught:

- Soil identification and profiling
- Soil and water analysis
- Greenhouse construction and operation
- Soil tillage
- Bed preparation
- Greenhouse sanitation
- Planting and nursery care
- Mineral nutrition
- Tutoring
- Harvest and packaging
The entrepreneurial classes included:
- Emotions management and communication styles.
- Twelve skills for conflict resolution
- Norms and rules
- Team work
- Leadership and communication
- Marketing
- Business plan
- Organization manuals, and work organization
- Quality assurance, continuous improvement
- Management
- Book keeping
- Result's analysis

The training was conducted under a positive and enthusiastic environment with great participation of both groups. They have the hope to develop a business with the potential to provide them with remunerative jobs. An option seldom found in the region. Similar experiences have been developed in Mexico (Cuevas-Contreras).

The final evaluation showed high satisfaction among participants regarding the knowledge learned and instructor’s performance. In a scale from 0 to 100, the average grade for the training was 91.2.

4. Conclusions

The technical and entrepreneurial training provided to the members of the groups of San Martín Tecuautitlán, and San Pedro Yeloixtlahuaca, at the state of Puebla, Mexico, was planned and conducted based on their knowledge. It resulted in a high satisfaction of the participants, and gave them the skills needed for commercial production because they were able to produce and market one harvest. Although they have the basic knowledge, the major challenge is to develop it as an enterprise.

References


