Essay

Multifunctional agriculture: relevance for tourism in Mexico

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Abstract

The development of tourism activity is closely related to the attractiveness of tourist destinations. That is why, when analyzing the link between agriculture and tourism, it is possible to identify the potential that it has to offer in the tourist market. Thus, the objective of this paper was to analyze the multifunctional nature of agriculture and its potential for tourism in Mexico; in order to promote economic, environmental and social benefits for the interested parties (companies, community, government, tourists). Referring to examples of practices and strategies to promote stronger links between the agricultural and tourism sectors. Given the multifunctional nature of agriculture, the findings of this research indicate that there is a solid basis for the development of agrotourism or agricultural tourism in Mexico; with specific and potential actions, mainly related to promotional strategies for tourist products in different regions of the country. The above, based on the principles of sustainable development: protection of the natural environment, long-term gains and quality of life for farmers and their communities. Finally, this research raises the urgency of designing public policies that encourage agrotourism and promote regional development based on priorities and activities defined according to each territorial context.

Keywords: agrotourism, rural tourism, multifunctionality.

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The cities of Mexico continue to expand rapidly and vast tracts of land have already been absorbed by urban areas. The construction of large housing complexes with thousands of houses of minimal size, isolated from the city and the existing villages and devoid of equipment, use spaces of agricultural production and ecological preservation (Negrete, 2010). At the same time, according to Garza and Schteingart (2010), the total population of the country increased from 48.2 million in 1970 to 103.3 million in 2005, while the urban population increased from 22.7 to 71.5 million, with the latter contributing almost 90 per cent. percent of the national demographic increase. In addition, the cities increased from 174 in 1970 to 367 in 2005, which implies more than 677 thousand hectares of additional total urban fabric. Garza (2010) emphasizes that the higher increase in the urban population reflects an absolute decrease of 356 thousand rural inhabitants displaced by the crisis, which indicates that there was a notable exodus from the countryside to the city, and that in relative terms it was more intense in the agricultural sector.

In this sense, the rural population still engaged in agricultural activities now depends on a wide range of economic activities for their growth, which is why we speak of a multifunctional vision of agriculture. This new perspective is important for agriculture, because it reduces the concern not only of the production of food and fuel, but also combines other economic, environmental and social functions. In different countries agriculture incorporates different activities, such as: camping on the farm, a therapeutic retreat for people suffering from attrition disorders or other disorders or as a place of training and education, giving a new meaning to the term multifunctional agriculture. This type of practice is often driven by the need to diversify agricultural income, as such, also a subsistence strategy. So this approach continues in development, and little is known about its contribution to the territorial, economic, social and environmental space of tourism.

Together, the growing demand for differentiated destinations and products -environmentally, socially and culturally- as well as customized travel services (Accenture, 2008; Kim and Han, 2010; Galeano, 2012) are a global trend that provides an opportunity for the authorities of the Secretariats of Tourism and Agriculture of Mexico, work towards the common objective of adding value to both sectors. The strengthening of links and the creation of synergies between tourism and agriculture can increase the satisfaction of demand and the conservation of various agricultural practices. However, a key challenge is to ensure that the benefits derived from the increase in visitors are shared equitably with the population of the host communities.

In this context, the objective of this work was to examine the multifunctional nature of agriculture and its potential for tourism in Mexico; in order to promote economic, environmental and social benefits for the interested parties (companies, community, government, tourists). Referring to examples of practices and strategies to promote stronger links between the agricultural and tourism sectors.

In this way, the main body of this work is divided into two areas. In a first section, an analysis is made of the evolution of the definition of multifunctional agriculture and its current situation. The links between agriculture and the environment are also described; besides briefly examining the conditions of agricultural development in Mexico. The following section addresses tourism and its current environmental landscape -climate change and positive and negative effects on the natural environment- to make way for the analysis of the reciprocity that the sector has with agriculture,

based on the fact that The emergence of agrotourism in Mexico occurs in response to the economic crisis, such as shortages and increases in food prices, a decrease in the labor force and the seasonality of the sector.

The second section ends with the presentation of strategies to enhance tourism activities in different agricultural areas of the country, with the aim of counteracting the various environmental and social concerns that allow offering innovative and economically viable opportunities for farmers, consumers and other stakeholders. The strategies and lines of action mentioned above are based on the review of the data and the identification of the development potential of products and experiences, to improve market opportunities through the incorporation of agricultural activities in the tourist offer or vice versa; which would not only generate employment and business opportunities for rural communities; it would also increase the commercialization of tourist destinations.

Finally, it is worth mentioning that this research is an effort to identify the ideas and practices that contribute to the generation of knowledge in this field of study, in order to clarify the importance of the topic for the study of tourism. Also, to suggest strategies and practical steps that may be appropriate for tourism companies in the advance towards sustainability. The development of the concept of multifunctional agriculture is still evolving, and the intention of this document is not to express a final or final declaration, but rather an invitation to continue the dissertation.

Multifunctionality of agriculture

Agriculture: concept and evolution

In a world in constant change, and in the XXI Century, biodiversity, rural development and food security continue to be issues that afflict the population. Under this argument, traditional agriculture has evolved and adapted to deep crises, such as: population explosion, vulnerability to climatic, health and market risks; the imbalance in regional development the degradation of natural resources; and government policies Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA, 2013). Likewise, the use of new technologies, the mechanization of work and the increase in the use of chemical products favored the maximization of production, although these changes had prominent costs that have resulted in: the depletion of fertile land, contamination of groundwater , decline of traditional agriculture, the abandonment of work - due to the poor conditions in which agricultural workers are found-, increase of production costs and disintegration of economic, environmental and social conditions in rural communities, among others (Agricultural Sustainability Institute, 2008).

According to Rivas (2014), agriculture is an activity in which social groups, in a given environment, manage their local landscape (soil, water, biodiversity, climate), available energy and the means of information, to produce and reproduce plant or breeding species that meet your needs. It was initiated based on a gradual accumulation of ecological and biological knowledge on natural resources used and was developed through indigenous systems of generation and transmission of such knowledge, adaptation and adoption of technological innovations in various areas of the world. Therefore, at the end of the last century, various academic disciplines expanded the recognition of the services offered by agriculture to human society, giving it a multifunctional character.

Thus, the concept of multifunctional agriculture is formally adopted from the multilateral trade negotiations of the Uruguay Round in the 1990s and since then it has received considerable attention in the research of disciplines such as economics, geography, ecology and of course tourism (Dieguez *et al*., 2009; Mir *et al*., 2011; Yang, Cai *et al*., 2011; Huber *et al*., 2015; Hwang and Lee, 2015; Cuevas *et al.*, 2015; OECD. 2018).

The Food and Agriculture Organization of the United Nations (FAO, 1999) deeply analyzes the multifunctional nature of agriculture; and points out that its main functions continue to be the production of food and the contribution that this makes to food security. In addition to these and from a sustainable approach, three other functions are recognized:

The environmental function. Agricultural activity and its use of soil have beneficial or harmful effects to the environment, so this approach helps identify opportunities to optimize the links between agriculture and the biological and physical properties of the natural environment.

The economic function. Agriculture continues to be a main force in maintaining the operation and growth of the entire economy, even in highly industrialized countries. Thus, the valuation of the various economic functions requires an evaluation of the benefits in the short, medium and long term. Some determinants of this function are the complexity and maturity of market development, as well as the level of institutional development of the organizations involved.

The social function the subsistence and dynamism of rural communities are basic for: the development of agriculture, the improvement of the quality of life and to ensure the survival of rural residents. In addition, the capitalization of local knowledge and the establishment of relationships between local and external sources of knowledge, information and advice are fundamental for the future of rural communities. Social viability includes the maintenance of cultural heritage, because in many cases societies still identify strongly with their historical origins and rural lifestyles.

The aforementioned functions combine a sustainable vision, which according to Baca (2015), considers the development of appropriate human and social capacities and progressively in marginalized rural areas, so that they can consider an integral and progressive development that help out of poverty and hunger in a sustainable way.

In the first place, the environmental function considers that unsustainable agricultural practices strongly influence the degradation of natural resources. This is relevant to address a series of critical environmental problems worldwide, including the massive loss of biodiversity, climate change, desertification, pollution and the quality and availability of water; being this last element, the main resource that has helped agriculture and all human activity -in general- to prosper and that has also been a limiting factor when administered incorrectly.

Regarding the economic function, it must be recognized that many agricultural communities are in the neediest places, therefore, agriculture presents an opportunity to rethink its importance in territorial development and involve public policies of economic development to integrate and stimulate more diversified agricultural production, as the economic base of the communities.

Finally, the social function must include aspects related to agricultural work conditions, social norms and legal protection; which requires policies and programs aimed at socially just and safe employment, offering adequate wages and working conditions, health benefits and possibilities for economic stability, work must be supported by government policies, and recognized as a component important when evaluating the impacts of new technologies and their practices.

The Sustainable Agriculture Research and Education (SARE) program of the United State Department of Agriculture (USDA), proposes a series of best practices for agriculture. These are (SARE, 2012):

Marketing. Farmers can increase their profits by using a greater diversity of marketing techniques, such as: the creation of value-added products and a strong brand identity; conduct market research to combine the product with the demand; sale through the Web and delivering their products directly to local restaurants.

Prosperous communities -rural and urban-. They are key to everyone's quality of life. When farmers hire aid, and sell in nearby communities, they contribute to the local economy. In turn, they have a nearby center to serve their families and a market for their products.

Ecological management of insects and weeds. The ecological management of pests avoids the use of chemicals that can harm beneficial insects; here other strategies can be combined, such as: biological controls for the physical elimination of weeds and insects.

Grazing. Intensive or rotational grazing systems keep animals moving from pasture to pasture to provide high quality forage and reduce feed costs. Another advantage is that, with a little attention from the farmer, the grazing animals distribute manure through the field, which favors soil fertility and reduces the need for purchased fertilizers.

Conservation tillage. Many soil conservation practices -contour tillage, reduced or zero soil, to name a few- help prevent soil loss due to wind or water erosion. Conservation tillage systems also help minimize the compaction of soil, water and store carbon to help offset greenhouse gas emissions.

Cover crops. Growing plants such as rye or peas after harvesting a commercial crop can provide multiple benefits, including weed and insect removal, erosion control and improved soil quality.

Diversity of crops, breeding animals and landscape. Cultivating a greater variety of crops and raising more variety of animals make a farm more resistant to diseases, pests and market conditions. Certain agroforestry techniques -such as interspersing planting trees and plants- help conserve soil and water, and provide habitat for beneficial insect populations.

Nutrient management. Well-managed and properly applied sources of nutrients on the farm, such as compost and legume cover crops, help create soil, protect water quality and reduce the costs of purchased fertilizers.

Conservation and production of energy on the farm. Farmers are using energy saving devices, windmills and solar energy, they create and process their own fuel. These practices not only make agricultural operations more profitable, cleaner and more efficient, they also help reduce dependence on foreign fuels and greenhouse gas emissions.

A complete approach to the farm. The management of the whole farm combines the practices listed above in an integrated system that favors: nature; the reduction of tillage, the careful application of nutrient sources; the development of organic matter, reduced energy costs for fuel produced from renewable sources, the control of pests by the diversity of plants and the income from the more efficient use of resources on the farm.

Agriculture and the environment

The Department of Foreign Affairs and Trade of Ireland (2016) explains that the environment is necessary for the development of agriculture, because it forms the basis of the food systems. In contrast, agriculture can have positive effects -conservation of habitat for wild species- or negative effects on the environment -contamination and environmental degradation due to the use of excessive chemicals-, being the lack of access to environmental assets that undermines the food security and deepens poverty.

In order to coexist in harmony with nature, solutions must be found that face the greatest challenges of current sustainability. The first step of this perspective will be to understand how the environment is linked to the development of the agricultural sector. Through interdisciplinary and multidisciplinary research, associations with specialist farmers and other professionals related to the sector must identify innovative ways to conserve and regenerate natural resources that are in a critical situation, while maintaining agricultural productivity in the farm and regional development.

Agricultural development in Mexico

According to Damian (2010), despite the economic boom observed by Mexico until the beginning of the 1980s, characterized by growth rates of the gross domestic product (GDP) of 6%, the majority of the rural population was marginalized and, in some regions, literally in oblivion. Investments in irrigation infrastructure and roads to promote agricultural activity benefited a small portion of medium and large producers, leaving the majority of small farmers and agricultural workers in a situation of misery. At present, agriculture contributes about 4% to GDP in Mexico; and provides employment to approximately 13% of the labor force, representing some 3.3 million farmers and 4.6 million workers and unpaid family members. Even more relevant, it is the fact that almost 24% of the total population lives in rural areas (OECD, 2011).

With regard to the recommendations to improve the design, implementation and evaluation of rural policy, the OECD (2007) emphasizes taking advantage of the heterogeneity of rural areas and the opportunities related to abundant resources scarcely used; additionally, Mexican rural youth are often considered entrepreneurs and more familiar with market opportunities and technological advances. Thus, rural tourism activities have potential for development in the South-Southeast and

the Baja California Peninsula regions, which contain rural areas where tourism represents a significant proportion of employment and added value. In particular, in the South Southeast region, which is the poorest region of the country, its richness in natural and cultural resources, with emblematic archaeological and historical sites is extraordinary. Finally, consider that the financing needs of the tourism sector are 280 billion pesos, of which 40% is related to rural tourism businesses (Albarran, 2017).

Current panorama of tourism

Although the average annual temperature is highly variable year after year, a significant upward trend is observable. During the period between 1970 and 2000, the total temperature increase was 0.7 °C. Mexico is one of the countries where climate change has impacted different ecosystems; perennial springs have dried up and subsistence agriculture is in decline due to recurrent droughts (Cárdenas, 2010, Instituto Nacional de Ecologia, 2010, Martínez and Fernández, 2014). Recent reports of the Goddard Institute for Space Studies (GISS, 2012) of the United Nations Framework Convention on Climate Change (UNFCCC, 2016) or the National Institute of Ecology and Climate Change in Mexico (INECC, 2010), indicate that in the country has produced 0.85 ºC of increase in average seasonal temperature and winter temperatures of 1.3 ºC, there is also a projected increase of 1.78-2.2 ºC by 2060 in many areas around the world. On the other hand, the INECC (2016) projects as a consequence of climate change, impacts such as the decrease in the productivity of maize by 2050, together with 25% of the production units with loss of soil fertility and the evidence of that most crops would be less suitable for Mexico by 2030.

The peri-urban area of fast-growing cities in Mexico is under great pressure from the demand for urban expansion, with the loss of crop lands, environmental deterioration and the exclusion of rural communities. The recent development of agrotourism companies offers a means to promote urban and rural development, as well as an alternative that can counteract some of the negative impacts of urbanization. Rural companies must implement business models that combine agricultural production and tourism services, which promote a demand-supply relationship between urban and rural areas. In such a way, that the quality of agricultural products and services be improved, while developing multiple functions of agrotourism with wider social, economic and environmental benefits, creating opportunities for sustainable urban development.

On the other hand, tourism generates a wide range of functions and/or impacts in social, economic and natural environments, for which reason there is a growing awareness of the negative impacts it can cause in its environment (table 1). From this perception, a high degree of affinity between agricultural and tourism activities is shown. Regarding the mitigation and prevention of these negative impacts, it is necessary to consider a sustainability and permanence approach for both sectors, since, as mentioned above, agriculture depends on the natural environment in which it is developed, on sustainable practices of land and water management, as well as institutional and local environmental management systems; jointly, for tourism, local knowledge about the environment must be taken into account, since the local community possesses -ancestral- knowledge and methods for the conscious manipulation of nature (water, habitat and ecosystems).

Table 1. Impacts of tourism.

Positive impacts	Negative impacts
It generates income, employment opportunities and infrastructure also used by the local population.	In the economy, rising prices, lack of equitable sharing of benefits, etc.
It provides marketing points for food production and for a variety of other local products such as crafts.	In cultural values, it generates decomposition and lack of respect for traditional and religious customs.
Trade and communication with external partners is enhanced.	In local societies, it gives rise to delinquency, prostitution, increased differences among stakeholders, conflicts over the use of resources, etc.
The conservation and enhancement of the natural, cultural and historical characteristics of the host communities can be stimulated.	On the environment, by the excessive consumption of water, pollution, pressure on habitats and ecosystems, etc.

Source: elaboration based on World Tourism Organization (UNWTO, 2010).

Rural tourism

The intensification of traveling to rural areas is the result of a series of important changes, including the use of free time or changes in transport networks and technologies that attract rural experiences. As populations converge in urban and metropolitan areas, where work styles are fast, highly mechanized and technological, lifestyles are generally more absent from cultural attachments and with fragmented or lost identities; which leads to the desire to seek new experiences, that is, integrity in different things that they cannot see in their daily lives (Martínez, 1999, George *et al*., 2009, Ayazlar and Ayazlar, 2015). As a result of these factors, there is a movement for activities or experiences related to nature, thus, some traditional activities such as walking, horse riding and bird watching have become increasingly popular.

In this sense, people are interested in knowing landscapes and local rural communities, with their different characteristics of life and culture, which leads to associating rural areas with agriculture. Meanwhile, to understand the relationship and importance of the binomial agriculture-tourism, it is essential to take into account that the agrotourism segment is part of the so-called rural tourism; which is respectfully linked to nature, considers interaction activities related to the culture and traditions of the local population and outdoor relaxation, among others, located in natural and cultural spaces not degraded or unaltered (Ayazlar and Ayazlar, 2015).

Agrotourism is only one aspect of rural tourism, which is based on agriculture and aims to contribute to development. In fact, there are many rural communities in which tourism provides a new vital economic activity (Yang *et al*., 2011; Saroyo and Tatik, 2014; Ayazlar and Ayazlar, 2015; Hwang and Lee, 2015). Tourism is based on the assets of the community, its people, its heritage and its unique character, in other words, on the commodification of the local.

Reciprocity tourism-agriculture

Around the world, human communities have a central role in shaping ecological diversity and its associated functions. Jointly, biodiversity has contributed in different ways to the economic and cultural development of society. Humanity has influenced -in a positive and negative way- nature, and tourism is a clear example of the multitude of uses and functions given to natural resources, both wild and cultivated, that have been combined in different environments -terrestrial and aquatic- for the creation of services capable of differentiating the supply of Mexico and other countries.

In addition to this, the success of the rural development policy depends, among other things, on designing and implementing integral strategies to face climate change, drought, desertification and natural disasters; therefore, it is noted that it shares common interest with the objectives of multifunctional agriculture, since both integrate environmental concerns in order to avoid the risks of environmental degradation and improve the sustainability of agroecosystems (United Nations, 2009; European Commission, 2014; Organization for Economic Co-operation and Development, 2018).

In the same line, Segrelles (2007) points out that the multifunctionality of agriculture is not only to enhance rural tourism, local crafts or the beauty of landscapes, but also requires a budget to fight rural poverty and provide the field of infrastructures, equipment and public services (especially educational and health), promote rural employment, try to shorten the technological gap that separates large and small agricultural enterprises, avoid the loss of resources in rural areas, decontaminate the water, land and air, opting for the promotion of a sustainable and respectful agriculture with the environment and diversifying as far as possible exports that are excessively concentrated in the raw materials and basic and undifferentiated products, which are sustained in the indiscriminate exploitation of natural resources, as happens in most Latin American countries.

With increasing frequency, farmers in different parts of the world develop innovative strategies to produce and distribute food sustainably. Although these strategies vary widely, all of them must consider three general objectives, the three pillars of sustainability: 1) long-term gains; 2) administration of land, air and water; and 3) improve the quality of life of farmers, their communities and consumers. A farmer could try a new marketing approach, such as selling directly to restaurants in a nearby city to get better profits from his production. In the same way, they can increase their financial sustainability with the creation of value-added products for the tourist's consumption; as well as a strong brand identity or sale through the Web -to name just a few techniques-. It should be noted that no formula works in each region equally, for this it would be necessary to make an analysis of the current situation of rural communities.

One advantage of this approach is that rural areas are popular as holiday destinations and excursions, especially for the cultural landscapes that still provide an idea of what the past was like. Agrotourism is the form of tourism that takes advantage of rural culture as a tourist attraction (Blanco, 2011, Saroyo and Tatik, 2014) understanding rural culture as a general framework of norms, attitudes and behaviors that guide and define what should be done by individuals that are part of a collectivity (García, 2003). This form of tourism can also involve staying or visiting a

farm, where the visitor sees or helps people with the harvest, to process fruits and vegetables, to take care of animals; or even participate in agricultural fairs, fruit festivals, food and crafts (Caribbean Tourism Organization, 2012). Together, the agrotourism seeks to contribute with the increase of income of the population and promote regional development. To ensure that it also helps conserve diversity, the rural population must have recognized biodiversity as valuable and worthy of protection.

Strategies for the development of agrotourism in Mexico

In fact, in Mexico the primary and tourism sectors are the main engines of the economy. In 2016, the primary sector grew 4.1% annually, while tourism did so at 3.7% (Institutional Trusts in Relation to Agriculture, 2018). In addition, the SAGARPA (2009) points out that the natural and cultural wealth that exists in rural areas of Mexico offers a range of possibilities for the inhabitants of these regions, who have the opportunity to develop companies that provide professional tourism services aimed at raise their quality of life. Given the dynamics that rural tourism has taken, the Secretariat considers this strategic segment as it provides opportunities and development alternatives for the rural population, for this reason, in 2014 SAGARPA and SECTUR present the strategic plan of agrotourism, in which different states may highlight according to their potential; like the case of Michoacán, which has the possibility of forming routes such as avocado.

In the same sense, recognizing such importance, in 2017 the Ministry of Finance and Public Credit (SHCP) joined to the Ministry of Tourism (SECTUR, 2017), publicize the Financing Program for rural tourism; whose objective is to promote modernization and improvement in the quality of services in the tourism sector, mainly for the benefit of rural areas and their communities. Basically, the program presents two differentiated products to meet, on the one hand, the demand for financing the activities of the tourism sector in rural populations of up to 50 thousand inhabitants in the country through rural pride credit and on the other, the financing needs for the supply of national foods in the tourist value chain with Del campo al Plato.

To exemplify the above, the Ontario Ministry of Agriculture and Rural Affairs (2011) lists the suggested activities that may occur in an agricultural area:

Traditional markets; food activities help in the collection and preparation of food; agricultural activities; threshing, plowing, shearing sheep, collecting eggs; animal feeding and care areas; ride in cart or on horseback; food and accommodation. vacation on the farm.; sale of specialty agricultural products: wine, cider, flowers, medicinal herbs; seasonal parties: spring, autumn harvest, etc.; indigenous dances; organization of celebrations. like birthdays, weddings, family reunions; photography/painting; school visits and summer camps; historical interpretation; wildlife observation (birds, deer, etc.); shows theatrical or puppet shows and musical events; community charity events; and outdoor movie projection.

In order to classify and better understand the previous activities, three main themes are proposed: fixed attractions, events and services (Figure 1).

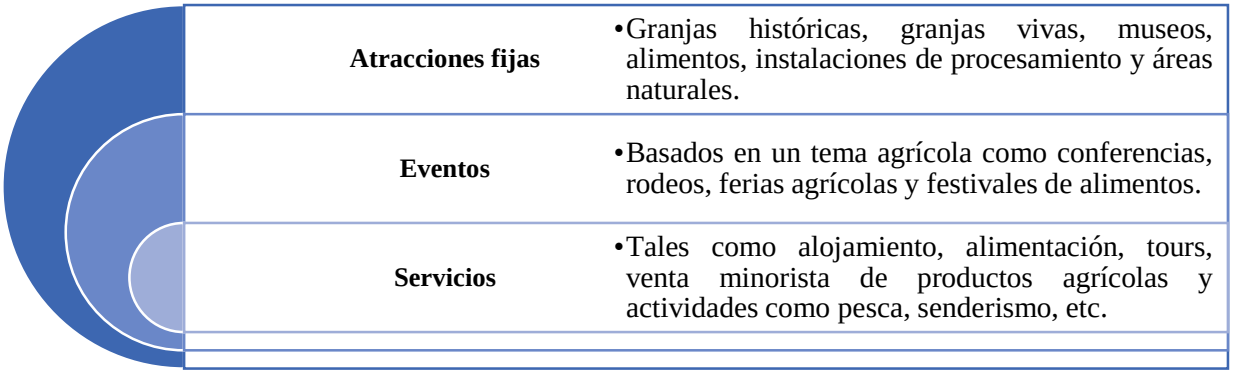

Figure 1. Classification of agricultural activities. Elaboration based on the Ministry of Agriculture and Rural Affairs of Ontario, (OMAFRA, 2011).

From the analysis of the potential of agrotourism in Mexico, some strategies are outlined below, which should be based on the priorities of each region, according to their particular needs:

Design programs, at a local level, to empower the different segments according to each type of demand. Propose a promotion program, through advertising that shows the characteristics and nature of the offer. Create a logo as a distinctive according to the characteristics of the offer of each zone. Organize training courses for interested farmers, with the aim of efficiently developing the agrotourism offer.

Conclusions

This article is part of an investigation that aims to contribute to the scientific knowledge of the tourist area and its relationship with agriculture; It also contemplates aspects that may be useful for the design and implementation of an Environmental Policy that contributes to the sustainable development of agrotourism. The key strategies that are proposed for the design of the policy are: 1) mainstreaming, in which the environment is recognized as part of sustainable development and policies, programs, activities and investment decisions are taken into account; and 2) partnership, that is, working with national governments, international organizations or civil society organizations.

The analysis of agrotourism in Mexico, shows that the main objective of the agricultural sector, is oriented to two lines: the first, the maintenance and sustainable development of the activity- including the protection of cultural and wild landscapes- and the second, the training of the agricultural structure capable of providing food security through insufficient financing and supplementary support. Therefore, in the first instance, a new agricultural policy and a determined strategy for the development of the agri-food sector are required, including a system, vision, structure, strategies, tactics, training of human resources personnel, aimed at each of the problems identified, but above all the willingness of the staff to execute it.

Rural development planning for agriculture must be related to environmental costs; there is a need to ensure the design of adequate public policies. In addition, multifunctional agriculture must be able to create and improve the living conditions of communities and simultaneously provide high recreational opportunities for the population in urban areas. To address this, stakeholders are encouraged to: develop national initiatives to address the problems of resource management and the sustainable use of resources; conduct research to build an information base and encourage the exchange of information; and, finally, administer programs that promote the wide adoption of sustainable management practices of natural resources.

In general, rural regions face difficulties of economic decline, with problems of emigration, population aging, insufficient skills and low labor productivity, which limit the critical mass necessary to have public services, infrastructure and business development, creating a vicious circle. However, there are rural regions in the south and southeast of Mexico, which are beginning to take advantage of opportunities to offer differentiated activities, based on their assets, such as their location, natural resources, cultural wealth and social capital. Ultimately, tourism must be associated with the improvement of social, environmental and other areas that stimulate agricultural work; It should also be borne in mind that a productive, competitive, profitable, sustainable and fair agrifood sector will seek sustained socio-economic growth and development.

Cited literature

Albarrán, E. 2017. Impulsan turismo rural con crédito de 2,100 mdp. El Economista. https://www.eleconomista.com.mx/sectorfinanciero/impulsan-turismo-rural-con-credito-de-2100-mdp-20170627-0083.html.

Ayazlar, G. and Ayazlar, R. 2015. Rural tourism: a conceptual approach, en tourism, environment and sustainability. Avcikurt, C.; Dinu, M.; Hacioğlu, N.; Ere, F. and Soykan, A. (Eds.). Tourism, environment and sustainability. St. Kliment Ohridski University Press. Bulgaria, 167-184 pp.

Baca, J. 2015. El proyecto estratégico de seguridad alimentaria, la cruzada contra el hambre y las sinergias para potenciarlas, en México. Sámano, M. y Baca, J. (Coord.). Agricultura multifuncional y políticas públicas en México. Universidad Autónoma Chapingo. 67-82, pp.

Blanco, M. 2011. Agroturismo y rutas agroalimentarias como herramientas de promoción de productos con IG. 2° Taller regional calidad de los alimentos vinculada al origen y las tradiciones en América Latina, Lima. http://www.nacionmulticultural.unam.mx/empresasindigenas/docs/2052.pdf.

Cárdenas, M. 2010. México ante el cambio climático: Evidencias, impactos, vulnerabilidad y adaptación. Greenpeace México. http://www.greenpeace.org/mexico/global/mexico/report/2010/6/vulnerabilidad-mexico.pdf.

CTO. 2012. Caribbean Tourism Organization. Agro and culinary tourism getting to the next level. http://www.onecaribbean.org/content/files/eharveyculinarytourism.pdf.

Cuevas, V.; Baca, J.; Espejel, A.; Barrera, A. y Sosa, M. 2015. Agricultura multifuncional y sistemas de producción bajo un contexto de agricultura diversificada. Sámano, M. y Baca, J. (Coord.). Agricultura multifuncional y políticas públicas en México. Universidad Autónoma de Chapingo. México. 35-51. pp.

Department of Foreign Affairs and Trade de Ireland. 2016. What we do? https://www.irishaid.ie/what-we-do/.

Diéguez, M.; Gueimonde, A. y Sinde, A. 2009. Turismo rural como estrategia de diversificación: factores determinantes y resultados en Galicia. Cuadernos de Gestión. 9(2):31-54.

Equipo de Trabajo Interinstitucional en Sistemas de Información Geográfica. 2009. Revista Express. 291. Ed. Federal, SA.

European Commission. 2014. Agriculture and rural development. Agriculture and the environment: Introduction. https://ec.europa.eu/agriculture/envir-en.

FAO. 1999. Drylands and the MFCAL Approach. Background Paper 3: Drylands. Paper prepared for the 1999 FAO/NL Conference on the Multifunctional Character of Agriculture and Land. 12-17 September, Maastricht, Netherlands.

FAO. 2012. La Niña y sus consecuencias sobre el sector agropecuario en América Latina. AgroNoticias América Latina y el Caribe. http://www.fao.org/agronoticias/agro-editorial/detalle/es/c/121917/.

FIRE. 2018. Fideicomisos Instituidos en Relación con la Agricultura. Programa de Financiamiento para el Turismo Rural. https://www.gob.mx/fira/acciones-y-programas/programa-de-financiamiento-para-el-turismo-rural.

García, B. 2003. Sociedad Rural y Desarrollo Ministerio de Agricultura, Pesca y Alimentación. Revista Internacional de Sociología. 61(36):245-250.

Garza, G. 2010. La transformación urbana de México, 1970-2020. In: Los grandes problemas de México II. Desarrollo urbano y regional. Garza, G. y Schteingart, M. (Coord.). El Colegio de México. 31-86 pp.

Garza, G. y Schteingart, M. 2010. Los grandes problemas de México II. Desarrollo urbano y regional. El Colegio de México. 11-28 pp.

George, E.; Mair, H. and Reid, D. 2009. Rural tourism development localism and cultural change. Ed. MPG Books, Great Britain. 288 p.

Giner, R.; Fierro, L. y Negrete, L. 2011. Análisis de la problemática de la sequía 2011-2012 y sus efectos en la ganadería y la agricultura de temporal. Documento de circulación interna de la Comisión Nacional de las Zonas Áridas (CONAZA), SAGARPA. Saltillo, Coahuila.

GISS. 2012. Instituto Goddard para Estudios Espaciales. GISS surface temperature analysis (GISTEMP). http://data.giss.nasa.gov/gistemp/.

Huber, R.; Flury, C. and Finger, R. 2015. Factors affecting farm growth intentions of family farms in mountain regions: Empirical evidence for Central Switzerland. Land Use Policy, http://dx.doi.org/10.1016/j.landusepol.2015.04.006. 47:188-197.

Hwang, J. and Lee, S. 2015. The effect of the rural tourism policy on non-farm income in South Korea. Tourism Management. http://dx.doi.org/10.1016/j.tourman.2014.07.018. 46:501-513.

INECC. 2010. Instituto Nacional de Ecología y Cambio Climático. Cambio Climático en México. http://cambioclimatico.inecc.gob.mx/comprendercc/queeselcc/queeselcc.html.

INECC. 2016. Instituto Nacional de Ecología y Cambio Climático. Efectos del Cambio Climático. http://www.gob.mx/inecc/acciones-y-programas/efectos-del-cambio-climatico.

Martínez, J. y Fernández, A. 2014. Cambio climático: una visión desde México. Ed. Instituto Nacional de Ecología. 189-200 pp.

Martínez, T. 1999. Panorama actual del turismo rural en México y su evaluación. Centro de Documentación Turística. CEDOC México.

Mir, C., Martí, C. y Loyola, D. 2011. Evaluación en materia de Diseño del Programa de Ecoturismo y Turismo Rural. Ed. Secretaría de Turismo, SECTUR. 76-80 pp.

Negrete, M. 2010. Las metrópolis mexicanas: conceptualización, gestión y agenda de políticas. En: Los grandes problemas de México II. Desarrollo urbano y regional. Garza, G. y Schteingart, M. (Coord). El Colegio de México. 173-212 pp.

OCDE. 2007. Organización para la Cooperación y el Desarrollo Económicos. Estudios de política rural: México. OECD. http://www.oecd.org/centrodemexico/medios/ 39076610.pdf.

OECD. 2018. Organisation for Economic Co-operation and Development. Understanding rural economies. http://www.oecd.org/cfe/regional-policy/understanding-rural-economies.htm.

OMAFRA. 2011. Ministerio de Agricultura y Asuntos Rurales de Ontario. Agritourism Development Strategy and Marketing Plan Southwestern Ontario Tourism Corporation. http://swotc.ca/wp-content/uploads/Agri-tourism-Strategy.pdf.

Prayag, K.; Dookhony, K. and Maryeven, M. 2010. Hotel development and tourism impacts in Mauritius: Hoteliers' perspectives on sustainable tourism Girish, Development Southern Africa. 27(5):697-712, DOI: 10.1080/ 0376835X.2010.522832.

Rivas, A. 2014. Contribuciones conceptuales y metodológicas para estudios multifuncionales de la agricultura familiar campesina en programas de ciencias agrarias en la Universidad Nacional de Colombia. Rev. Escenarios Latinoam. 63:29-44.

SAGARPA. 2009. Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación. Turismo rural, oportunidad natural de desarrollo. http://www.sagarpa.gob.mx/ desarrollorural/asistenciacapacitacion/documents/boletin/b58/resenas/resena3.htm.

SAGARPA. 2013. Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación. Programa Sectorial de Desarrollo Agropecuario, Pesquero y Alimentario 2013-2018. http://www.sagarpa.gob.mx/ganaderia/documents/2015/manuales%20y%20planes/programa-sectorial-SAGARPA-2013-2018%20(1).pdf.

SAGARPA. 2014. Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación. Será Michoacán punta de lanza en nueva estrategia de agroturismo en el país. https://www.gob.mx/sagarpa%7Cmichoacan/articulos/sera-michoacan-punta-de-lanza-en-nueva-estrategia-de-agroturismo-en-el-pais-136628.

SARE. 2012. Sustainable agriculture research and education. What is Sustainable Agriculture? United State Department of Agriculture (USDA). https://www.sare.org/Learning-Center/SARE-Program-Materials/National-Program-Materials/What-is-Sustainable-Agriculture.

Saroyo, P. and Tatik, G. 2015. Analysis of prospect of agro-tourism attractiveness based on location characteristics. Agriculture and agricultural science, 3:72-77. http://dx.doi.org/10.1016/j.aaspro.2015.01.016.

Segrelles, J. 2007. La multifuncionalidad rural: realidad conflictiva en la Unión Europea, mito en América Latina, Ería. 72(XX):89-99. DOI: https://doi.org/10.17811/er.0.2007.89-99.

UN. 2009. United Nations, decisions by topic: rural development. Sustainable development knowledge platform. https://sustainabledevelopment.un.org/topics/ruraldevelopment/ decisions.

UNFCCC. 2016. United Nations Framework Convention on Climate Change. http://unfccc.int/essential-background/convention/items/6036.php.

UNWTO. 2010. World Tourism Organization. Manual on tourism and poverty alleviation practical steps for destinations. Ed. World Tourism Organization, Madrid, Spain. https://www.e-unwto.org/doi/pdf/10.18111/9789284413430.

Yang, Z.; Cai, J. and Sliuzas, R. 2011. Agro-tourism enterprises as a form of multi-functional urban agriculture for peri-urban development in China. Habitat International. Vol. 34(4):374-385. http://dx.doi.org/10.1016/j.habitatint.2009.11.002.