



***Extensionismo forestal en sitios degradados en la zona
semiarida de la provincia Guantánamo***
***Forestal extensionismo at places degraded at the semiarid zone
Guantanamo's province***

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Enviado: 2 de junio de 2022

Aprobado: 12 de septiembre de 2022

Resumen

Se enmarca el estudio en un proceso de extensionismo forestal en sitios degradados en la zona semiárida de la provincia de Guantánamo en función de la restauración ecológica. Se basó en los principios de la Investigación-Acción-Participación. Se articuló con técnicas participativas de la metodología de la educación popular. El extensionismo forestal generó cambios, comportamientos y actitudes positivos en sitios degradados de la zona semiárida de la provincia de Guantánamo. Posibilitó la formación de una ética ambiental sustentada en valores forestales con los estudiantes del círculo de interés, agricultores, directivos y actores sociales en lo general en estos ecosistemas degradados.

Palabras clave: Extensionismo; Forestal; Zona semiárida; Sitios degradados

Summary

The study in forestall extensionismo's process at places degraded at the semiarid zone of Guantanamo's province in terms of the ecological restoration is delimited. You were based on the beginnings of Investigation Action Participation. It was articulated with communicative techniques of the methodology of the popular education. The forestall extensionismo generated changes, behaviors and positive attitudes at places degraded of the half-way arid zone of Guantanamo's province. You made possible the formation of an environmental ethics held in forestall moral values with the students of the circle of interest, farmers, executives and social actors in what's general in these degraded ecosystems.

Key words: Extensionismo; Forestal; Semiarid zone; Sitios degradados

Introduction

Habitat loss and fragmentation, joined with invasive species and the effects of climate change, are considered among the greatest threats to biological diversity in Cuba. This loss of forest cover led to the extinction and deterioration of many plant and animal populations, as highlighted by Mancina and Cruz (2017).

Guantanamo province is not exempt from this situation, such is the case of the southern coastal zone, where forests are scarce and rare, a situation caused by the indiscriminate logging of previous years for the construction of ships, houses and furniture; the expansion of livestock and the use of firewood for the sugar industry, domestic and artisanal uses as expressed by Urquiza et al. (2003). This area, due to its topography, presents a markedly different situation, since part of it is formed by hills covered by xerophytic scrublands, mainly dedicated to grazing under an extensive exploitation system, whose rotation possibilities were limited by the available financial resources according to Limeres et al. (2015), situation for which it has been identified in the National Program Against Desertification and Drought as one of the nine threatened areas.

Regarding this type of ecosystem, Figueredo and Reyes (2015), highlighted the need to,

Establish conservation actions, because at the national level, it constitutes one of the highest priority habitats, due to the decrease experienced by the coastal terraces (approximately 8.8%), an ecosystem that is highly degraded or destroyed, and has lost its regeneration mechanisms, so it is necessary to assist them to overcome stressors that prevent regeneration and ensure the development of recovery processes. (p. 35)

The Ministry of Science, Technology and Environment, (Citma, 2021), in the Territorial Environmental Strategy in Guantanamo province, identified soil degradation as one of its fundamental problems, and adopted as its vision:

To reach a higher level in the conservation, protection and rational use of natural resources, in the environmental quality in human settlements and in the confrontation and adaptation to climate change, with an ecosystemic approach, ensuring the constitutional right of Guantanamo's people to live in a healthy and balanced environment.

Regarding extensionism (Figueredo, 2022), he points out that extension directed towards working with forest resources is known as forestry extension, and its emergence, closely related to technology transfer, has found a space for development in the concrete needs that respond to the conservation and sustainable protection of natural resources and forest ecosystems.

The experiences acquired on the subject, constitute valuable tools for the awareness of individuals and the development of morally appropriate behaviors that benefit the environment, and thus, humanity.

In this regard, (Fernandez, 2019), refers that "It is essential to ensure that there is a participation of professionals from various disciplines that achieve a balance and a holistic vision".

From a sociological point of view, the objective of this study is to develop a process of forestry extensionism in degraded sites in the semiarid zone of Guantanamo province to promote the development of knowledge and skills for ecological restoration.

Development

Methodological aspects

From the methodological point of view, an exploratory, descriptive and non-experimental research result is shown (Sampier, 2013). It was based on the principles of Action-Participatory Research (Bustillo, 1999). It was articulated with participatory techniques of the methodology of popular education (Inerarity, 2017 and Lezcano, 2018), to insert social actors in the activities.

Theoretical and empirical research methods:

Historical logical: for the study of the evolution of the researched problem and its essence to contribute to the transmission of values and deepen the environmental education of social actors.

Analysis and synthesis: to comprehensively analyze the object of study and determine its relationships and characteristics and organize the results achieved in a coherent body.

Induction and deduction: to reach generalizations and conclusions regarding the problem under research.

Observation: allowed to capture the most relevant actions of the social actors, and at the same time facilitated greater articulation among people.

Tools and procedures used:

Qualitative and quantitative techniques were applied to learn about the state of knowledge of the environmental promoters and continue forestry extensionism in these ecosystems.

The techniques used in the process were used to analyze the constituent elements of reality. The processes and problems, the perception that people have of it, and the life experiences in order to undertake actions that subsequently facilitate change).

Techniques of popular education: To facilitate the insertion of actors in the activities carried out through active, conscious and transforming participation. Likewise, for the activities of identification of promoters.

Conferences: from the perspective of environmental education, to farmers of the Basic Unit of Cooperative Production Eliomar Noa of the community Los Cerezos and the Basic Business Unit in Cajobabo community.

Sample

The extensionism was carried out with the participation of 78 social actors, of which 17 were female and 61 were male, with an average age of 43 years. These social actors reside in the study areas of the communities of Cajobabo and Los Cerezos in the municipality of Imías in the province of Guantanamo. Capacities were developed through a circle of interest in the Pre-university Vocational Institute of Exact Sciences (IPVCE) Antonio Maceo with 15 students of the Imías municipality.

Statistical analysis

For the quantification and processing of the data, the SPSS statistical package in its version 26.0 will be used to store, display and analyze information.

Results and discussion

According to (Zamora, 2016),

In forestry, extensionism constitutes a mechanism to make available to producers the technologies available in the academic sector in a timely, clear and efficient manner; through a permanent dialogue that favors the exchange of ideas and knowledge that lead to the implementation of joint actions and the establishment of commitments that are the guarantor of the adoption of technological innovations that conclude in the sustainable management of forest resources, as well as in the improvement of productive processes, in general. (p. 5)

Hence, the scope of the research is to carry out several activities, the most important of which are the following:

Identification of promoters

In this first session, a process of identification of social actors with knowledge of forestry issues and communication skills to carry out forestry extension work was carried out, where there were expectations on the part of these cooperative members and 14 people were selected, nine of whom were women, giving value to the knowledge that women have regarding forestry activities.

They coincide with the results presented (Alonso, 2000 and Zamora, 2016), when referring that it is necessary to work with the community so that they feel part of the environment and its natural resources, given that perceiving the role of community participation in the management of forest resources allows understanding the problem to be solved through participation, conscious, committed and transformative.

Formation of social actors

Regarding the process of training social actors, (Figueredo et al., 2022), states:

It is also necessary for the extensionist to know the history of the community on which he/she is going to act, its customs and traditions. He/she must be able to identify the leaders of that community, who will serve as support and guide him/her in carrying out his/her work. The interaction with the environment and the socialization of his knowledge in a simple, easy to understand way will allow the local actors to see in him one more member, interested in their needs and problems, willing to collaborate with his best resource: knowledge.

From a subjective point of view, this study develops a training process for forestry extensionists through exchanges (Image 1 and 2), in situ and group workshops to promote awareness of attitudes and values regarding the ecological restoration of these ecosystems and, at the same time, to make them aware of the responsibility they assume as promoters.

Image 1 and 2. Training of social actors.



Source: Own elaboration

In this stage, nine training actions were developed (Table 1), which were based on the social construction of knowledge through the interdisciplinary approach, that is, the articulation of the people who work in the research and the people who live in these rural communities, with the conception that one learns with and from the people, by valuing the knowledge, practices and experiences of the local actors.

Table 1. Training actions

No.	Training topics.
1.	Development of technical and social skills on forestry extensionism.
2.	Ecological restoration in degraded sites.
3.	Selection of appropriate species for ecological restoration.
4.	Seed collection of native species.
5.	Management of exotic and invasive species.
6.	Soil conservation measures and evaluation of their effectiveness.
7.	Propagation methods.
8.	Fire protection measures.
9.	Cultural care of established plots.

Source: Self-made

We mean that changes were brought about in their behavior and attitudes with active, critical, committed and transforming participation.

The extension provided greater familiarization among community actors, encouraged reflection of all participants on actions towards ecological restoration and set conditions for the development of future actions aimed at improving the culture in a harmonious relationship between human beings and their environment and apply good environmental practices in these degraded sites.

The systematization of knowledge is an essential aspect in the training process of forestry extensionism; therefore, the proposed topics are in line with the project activities.

The interventions carried out by the promoters mark greater mediations in activities three, four and five, referred to practical training, giving a measure of how much knowledge these farmers have and what can be done in this sense with the articulation of the family, the community and

local organizations, so that they consider forest resources as an imperative need in these ecosystems.

Environmental issues are of vital importance today, and in this sense we must join forces in the effort to conserve the environment and make life on the planet more sustainable. Extensionism is a process of working with people, which involves communication, training, socialization of knowledge, good practices, lessons learned and, logically, the positive transformation of social actors for forestry activities.

Forestry extension through circles of interest

In general, the development of capacities through circles of interest in different teachings in Cuba is an activity developed by the education system. In recent times, actions towards this sector are increased by the Ministry of Science, Technology and Environment, among other sectors of society, given that knowledge management integrated not only by the educational system favors the behavior of students and helps in turn to their vocational training.

When referring to the circles of interest, Ramirez (2017), states that "they constitute a space for research, reflection on the present and to project the future of each of the interacting members".

While Ching (2018), affirms that

They are formed by children, adolescents or young people who are attracted by a common theme, but each one of them is interested in some specific aspect of the topic, in which they expand their knowledge and research practice approaching the future professional or technician they wish to be.

In this sense, we consider that it is a space for communication, mutual help and collaboration that develops scientific curiosity, solidarity and collectivism among its members.

In this stage of work, a training process was carried out with students of the IPVCE Antonio Maceo who live in the municipality of Imías in the communities where the project carries out its transformation. A presentation of the project was made with this youth group (Image 3), for its socialization and articulation with the scientific day that the educational institution carries out with different students, as well as with the local radio station.

Image 3. Project presentation



Source: Self-made

Forestry extension work with this youth group was an opportunity to expand knowledge about forestry and environmental education, aspects that will be useful for the socialization of knowledge, hence the motivational and vocational importance of these students in their training and as graduates of better quality in the instructional, affective and creative aspects on a transformative basis in terms of sustainable development.

We worked with concepts associated with climate change, popular-environmental education, and the task of life, which were built from the experiential processes of the students for better learning.

About the trainings

Training is a process that enables the trainee to appropriate certain knowledge, capable of modifying the behavior of individuals and the organization to which they belong. In this case, it is aimed at farmers who live and work in degraded sites in the semiarid zone of Guantánamo province.

Raffino (2020), argues that:

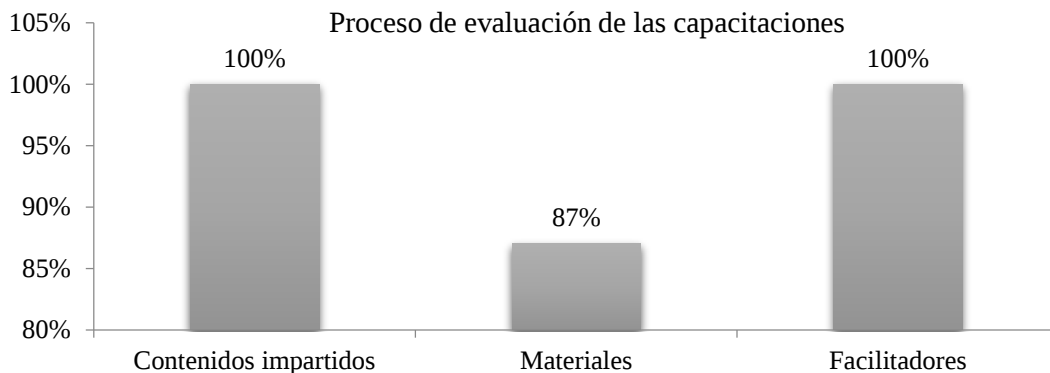
In the labor world, training is the set of didactic activities or teaching and improvement of work skills, they aim at the transmission of new knowledge, the development of new skills or learning in the handling of new tools.

Every June 17, the World Day to Combat Desertification and Drought is celebrated to raise awareness about international initiatives to combat these phenomena. At the same time, it is an opportunity to carry out actions on ecological restoration and the search for alternatives in these ecosystems.

The main principle in the training process was "learning by doing". Discussions were held with active, conscious, critical and transformative participation, and practical demonstrations were carried out, where farmers reported that they understood clearly and precisely that from now on the commitment is to make and build a path towards ecological restoration in these intensely affected sites.

The training foresees a change in the knowledge, skills and attitudes of the social actors regarding their present and future needs, therefore an evaluation process was carried out, taking into account the quality of the contents, the materials and the people who facilitated it (Graph 1).

Graph 1. Evaluation process of the trainings



Source: Self-made

100 percent of the people who received training were satisfied with the content, given that the topics were of interest, promoted knowledge and updated them on the advances in science and technology in aspects related to soil conservation and reforestation.

In this regard, Pavón (2014) refers "that in any training process the educational needs and expectations of individuals, communities and organizations must be addressed". And in this project the training process is fundamentally based on the demands of the people who are involved in restoration actions.

Eighty-seven percent said that they should bring audiovisual materials, brochures, maps and other materials to facilitate a better understanding of what is being explained and thus make the training process more dynamic. In this sense, the criterion of Inerarity (2017) is shared, on the positive impact that training activities have on the use of new techniques and resources have been demonstrated in various scientific researches.

The totality referred that facilitators hold a clear, direct, simple and contextualized language to farmers. These aspects are elemental in the transfer of knowledge.

Conclusions

Forestry extension generated positive changes, behaviors and attitudes on ecological restoration in degraded sites in the semi-arid zone of Guantánamo province. It made possible the formation of

an environmental ethic based on forestry values with the students of the circle of interest, farmers, managers and social actors in general in these degraded ecosystems.

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