

Perception about Environmental Education in Agronomy Course in Agricultural Sciences Center of the Federal University of Alagoas

**Alessandra Keilla da Silva¹, Jonas Olimpio de Lima Silva¹,
Luiggi Canario Cabral e Sousa¹, Orlando Angelo Neto¹, Jhon Wilkson Batista¹,
Maria José de Holanda Leite^{1*}, Roberta Patrícia de Sousa Silva²
and Sérvio Túlio Pereira Justino²**

¹Federal University of Alagoas (UFAL), Alagoas, AL, Brazil.

²Federal University of Campina Grande (UFCG), Patos, PB, Brazil.

Authors' contributions

This work was carried out in collaboration among all authors. Authors AKS, JOLS, LCCS and JWB data collection and literature review. Authors JWB, MJHL and RPSS revision and confection of the manuscript. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JEAI/2019/v39i130323

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Complete Peer review History: <http://www.sdiarticle3.com/review-history/49646>

Original Research Article

Received 19 April 2019

Accepted 24 June 2019

Published 11 July 2019

ABSTRACT

Environmental education is an essential instrument for the formation of a critical conscience in society as a whole. The formation of the agronomy course must be intrinsically linked to environmental issues, since the activities developed by the future professional have direct consequences to nature, so the decisions must have as pillars, the understanding of environmental issues and the promotion of the sustainability in agroecosystems. The present research had as aim to perform a diagnosis on the environmental perception of students and professors of the agronomy undergraduate course of the Agricultural Sciences Center of the Federal University of Alagoas (CECA – UFAL). This work was carried out through a qualitative research, where the data collection was based on a questionnaire, with a sample of 95 students and 15 teachers. Therefore,

*Corresponding author: E-mail: maryholanda@gmail.com;

a deficient and inconsistent approach regarding environmental education in the agronomy course of the CECA-UFAL, thus it is recommended that more disciplines be inserted for environmental education, not only in the course of agronomy, but in all the course of the area of agrarian sciences.

Keywords: Education; environment; environmental issues.

1. INTRODUCTION

Man, since his emergence, enters history as being able to transform nature to satisfy his needs. It is currently a consensus that environmental problems are the result of social, economic and cultural factors, which makes it impossible to be predicted or resolved simply by the use of technology. Linked to this, the theme environmental education approached in the classroom helps to verify the main environmental problems caused to the environment.

To minimize the impacts caused to the environment, environmental Education (EA) is sanctioned as a national policy as a law of No. 9,975 on April 27, 1999. Thus, environmental education is understood by the processes through which the individual and the collectivity construct social values, knowledge, skills, attitudes and competencies focused on the conservation of the environment, well of common use of the people, Essential to the sound quality of life and its sustainability "national policy on environmental education-Law no. 9795/1999.

At the academic level, the university emerges as a space for discussion and formation of new ideas. Assuming that, its structure is built on an indissociable tripod between education, research and extension, according to article 207 of the Constitution of 1998. In this context, academic debates enable the comprehension of the social reality, with the university, through its members, the function of spreading the knowledge acquired in this environment BRAZIL, 1996.

It is noteworthy that the EA aims to encourage social participation in the processes of political decisions, building it through criticism of the capitalist forms of production that seek to expose the contradictions of the system, and seek to use it as a tool for to support the construction of the broad dialogue for the dispute of these corporate projects [1]. On the other hand, Zahar (1978) argues that the concepts of environmental education change through the experiences of

each individual, leading to a plurality of definitions regarding the theme.

Based on the premise that the EA is an important tool for the understanding and awareness of the subjects involved in the discussions on environmental issues, and that the university should have in their training bases the inclusion of disciplines that promote the EA of Integrated way, enabling the training of professionals who meet the most varied social demands in the area. And that through the study of environmental perception it is possible to analyze certain groups, starting from the reality experienced by them, and how these individuals perceive the environment in which they live and their dissatisfactions and satisfactions (Phaggianato, 2007).

In this context, this work seeks to understand a little about the understanding and vision of professors and students of the Bachelor's degree in agronomy on the issues pertinent to the environment, emphasizing the environmental education and posture of the professional on of the problems of their activities, with the premise of the importance of these agents in the modification of natural environments, in a rational or indiscriminated way.

2. MATERIALS AND METHODS

2.1 Characterization of the Research Site

The study was carried out at the Agrarian Sciences Center of the Federal University of Alagoas (ECSC-UFAL), Campus Delza Gitai, located in the municipality of Rio Largo-AL, metropolitan area of Maceió-AL (Fig. 1). The ECSC was created in (DATA) through the resolution 05/75 of the University Council, having its initial operation in the city of Viçosa – AL.

The CECA is the main training center for professionals in the agrarian environment of the state of Alagoas, counting in 2019 years with six undergraduate courses: Bachelor in agronomy, Zootecnia, agroecology, surveying engineering, renewable energy, Engineering and Forestry engineering.

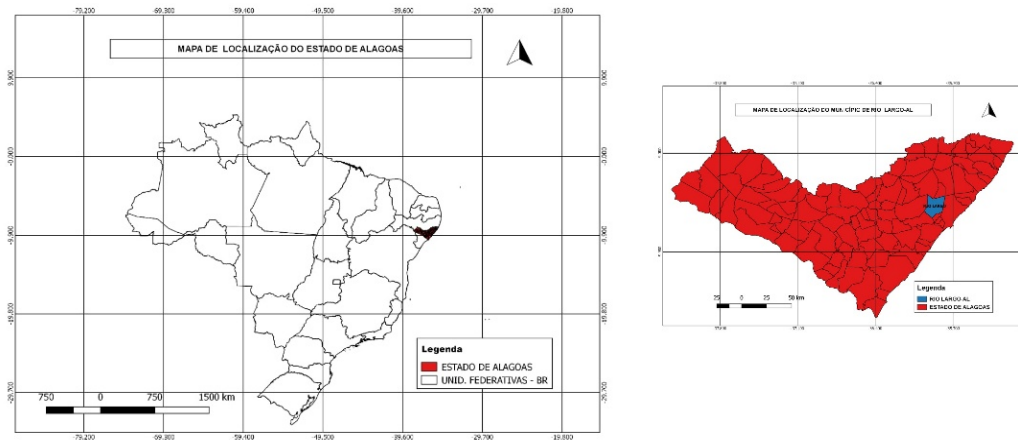


Fig. 1. City where the questionnaire was applied, Rio Largo-AL Source: Authors (2019)

2.2 Methodological Aspects of the Research

The methodology employed is aimed at a qualitative approach, so that the systematic used is based on descriptive and exploratory research. The descriptive study describes a social phenomenon that involves structure, activities and changes in environmental education, being even more relevant when presenting information about poorly studied subjects, usually develop a database for possible comparative studies and theory creation [2].

Exploratory research allows greater familiarity with the problem, making it more explicit besides objectify the improvement of ideas and discovery of intuitions. In many cases, it involves the bibliographical survey, interviews with people who had experience with the research problem

and the analysis of examples that stimulate comprehension [3].

The research was divided into two phases. In the first stage, data were collected, which occurred in the period from November to December 2018, where 114 semi-structured questionnaires and discursive questions were applied to students and professors of the Bachelor's degree in agronomy (Chart 1). It is worth noting that, during the research period, the course of agronomy had 361 students regularly enrolled, and with the staff of composite students with 52 professionals, according to the document requested in the direction of the center.

This study seeks to understand in more detail the perception of teachers and students about environmental education, in order to improve education in universities.

Chart 1. Questionnaire model applied

Questionnaire model applied to students

1. Do you feel prepared against problems related to the environmental issue?
() Yes () No
2. Do you think it is important to approach this topic?
3. How do you see the attitude of the agronomist/forward the environmental issue?
4. What you understand about environmental education?

Questionnaire model applied to professors

1. What is your academic background?
 2. Do you find it important to address environmental issues and rational use of natural resources in agriculture?
 3. How do you see the agronomist/the front environmental issue?
 4. What are the main environmental problems encountered with in the agricultural production?
 5. Do you address this topic as students? How they are addressed?
-

The qualitative data collected were subjected to content analysis, following the Bardin methodology (2006), with adaptations when necessary. Three phases are necessary for data processing, which are:

1. Pre-analysis, moment of organization of the questionnaires, through a superficial reading, syllable asides contained therein;
2. Exploration of the material: at this stage the material was coded through affinity categories, and a single response perhaps contained in more than one category
3. Treatment and Interpretation: the categories created in the previous phase are synthesized according to the necessity and affinity, for later tabulation and interpretation.

For the students, semistructured questionnaires were applied, containing two objective questions and two subjective questions, addressing the topics: importance and understanding of environmental issues, preparation and posture of the agronomy professional for the facing environmental problems. The distribution of the questionnaires was made to cover equally all the periods, being possible to reach 96 students, totaling 27% of the student.

When the questionnaires were applied to the professors, the unstructured model was used, containing five dissertative questions, having as topics addressed: academic training, understanding and importance of environmental education, forms of approaches to E. A in the classroom and main impacts caused by agriculture to the environment. Data from 18 professors were obtained, totaling 35% of the teachers' staff, some were not found in the institution during the collection period or did not return the questionnaires.

The data tabulation occurred through spreadsheets in the excel software (2007), where the discursive responses were separated into categories, according to the similarity between them. This categorization was performed so that a response was inserted into one or more categories, according to the scope of the objects presented in the answers. The classes were created collectively, allowing the answers to be analyzed on the different points of view of the researchers involved. Regarding the closed questions, the counting was performed and the percentage of the same was later calculated.

In the second stage, the bibliographical study was carried out, which aimed to effect the results of the research, being developed based on material already elaborated, consisting mainly of books, scientific articles, monographs and sites.

3. RESULTS AND DISCUSSION

The result reveals that 96% of the students affirmed positively about the understanding the importance of EA and only 3% are of same view while 1% of the students are undecided.

The result also shows that 55% of the students reported negatively, compared to 43% who stated they were technically trained to work with problems of environmental issues while, another 2%, (Fig. 2).

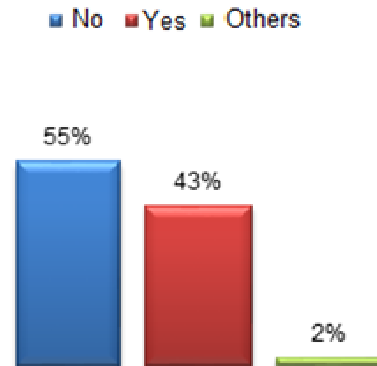


Fig. 2. Technical capacity for environmental problem solutions

It is perceived that although the majority consider the important theme for professional training, only a part of the students consider themselves apt to act in the area. This perception of students with little technical preparation maybe linked to utilitarian academic training to serve the labor market. Without a profound criticism and reflection of the subject [4]. It is worth noting that the teaching of agronomy in Brazil is based on the study of Science and technology, which most often disregards social and environmental issues, which makes it visible the need for a more attenuating basic formation in the environments of training, to change the behavior of future Professionals [5].

A similar research conducted by Soares, Pimentel and Cavalcante [6] in the agrarian courses at the Federal Rural University of Rio de Janeiro (UFRRJ), found that there is a shallow approach of the EA theme during graduation, being many of the times confounded with

conservationist, which may explain the cause of little professional know ledge.

This perception of little technical preparation may be linked to the responses obtained in the internal self-assessment questionnaire of UFAL, held in 2018, where the students of agronomy when asked whether the course provides a articulation of theoretical knowledge with practical, 63%responded that sometimes or never. When approached if the practical classes were sufficient, the answers were identical, 63% stated that sometimes or never.

Regarding the posture of the agronomist in the face of environmental problems, the students present sever al points of view, which can be grouped into seven categories: 1-Fundamental agent of preservation 26%; 2- mediator between production and conservation 26%; 3-technically prepared 10%; 4-No technical preparation 13%; 5-responsibility attributed to each professional 33%; 6-oblivious to environmental issues 26%; 7- Other 2% (Fig. 3).

It was possible to observe the most varied opinions about how the professional graduated in the Agronomy course should be positioned in the face of environmental issues, from his technical preparation and responsibility, until there conciliation of productive interests environmental conservation. It is understood from the approach that there sponsibility of each professional, as the choice of the agronomist (a) in relation to its theoretical-ideological, conservationist, develop-

mentalist or unrelated to environmental issues and concerned only with Production.

A similar questionnaire conducted by Malafaia et al. [7] with students from eight higher education courses at the Federal Institute of Goiás, observes that among the 20 most serious and worrying problems related by the students, all are cited by ECSC students, highlighting the inadequate use of water resources and soil pollution. Confirming the great impact potential of the agronomist's performance in the field.

When asked about what they understood about AE, they reported answers that were included in six categories: 1-awareness tool 50%; 2-Preservation and sustainability actions 30%; 3-respect and notions of preservation 14%; 4-environmental study 13%; 5-recognition of belonging to nature 5%; 6-did not know 6% (Fig. 4).

It is noted that a significant portion of the students understands the theme in their environmental aspect, as atool of awareness and sustainability, which reflects the information obtained in the academic environment, which advocates the environmental aspect. De Moura Carvalho [8] reports that EA mainly recalls the idea of nature, in which it is reaffirmed by television program, which act as acommon means of disseminating information, making it necessary to broaden this knowledge to a thought Critical, inview of the various aspects that it expresses.



Fig. 3. Agronomist's performance with environmental issues



Fig. 4. Definition of EA by students

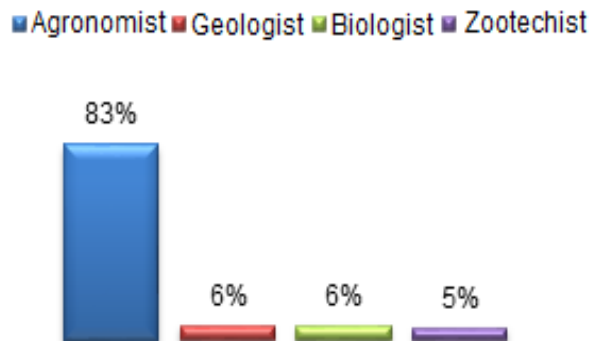


Fig. 5. Professional training of teachers

Analyzing the questionnaires of the professors, when asked about the academic education, it is noted that there is a dominance of agronomists, where they total 83% of the interviewees, followed by Zootechnista, biologist and geologist with 5%, 6%, 6% respectively, which can be seen in Fig. 5.

The course of agronomy is grounded in multiple areas of knowledge, permeates the biological and exact sciences, walking through the humanities, forming an interdisciplinary course with unique possibilities of analysis, interpretation and formation of solutions to the rural environment. According to Japiasú [9], interdisciplinarity is necessary for intercommunication between disciplines, which results in modifications between them through comprehensible dialogues.

Thus, although agronomic professionals are trained for the most diverse situations, it is of paramount importance to contact professionals

from other areas within the faculty framework to fomentation theoretical and methodological bases of the course itself, as well as future professionals and their decision-making.

Differentiated responses were observed when asked about the agronomist's posture against the environmental question, these responses were grouped into six categories: 1-prioritizes production 6%; 2-oblivious to environmental issues 11%; 3-responsibility attributed to each professional 56%; 4-Mediator between production and conservation 28%; 5-Little technical preparation 28%; 6-Other 6% (Fig. 6).

It is observed that most of the interviewees report that it is the responsibility of the agronomist to think about how to solve the environmental problems, however some professionals report on the lack of technical preparation in the face of these problems. This lack of preparation and knowledge related to as is common, due to the

training of professionals in this area is mainly related to the demands of agribusiness [10].

Since professionals are trained to investigate the acute sciences, they have a very technical training, focused solely on production, and an integral training, with emphasis on professionals with knowledge of some environmental issues [11].

On the other hand, when questioned about the environmental problems associated with agricultural production, it was found that the use of agrochemicals was reported as one of the main causes of the problems, regarding the use of natural resources. Problems such as soil degradation, ecosystem degradation, irrational use of water resources, monocultures, excessive

mechanization, transgenic and damage to human health were also reported (Fig. 7).

It is observed that the use of pesticides is reported with expressiveness (78%) Among the problems caused by the agriculture pointed out by the professors, being easy to understand, since Brazil has become the largest consumer in the world in the last decade, while the global increase was 90% in Brazil was 190% (ANVISA, [12]). It is noteworthy that the monoculture and the transgenics caused great demand for agrochemicals, because they are more dependent on these products [13], for example, soy, sugarcane, maize and cotton are responsible for the consumption of 80% of these Products (ABRASCO, [14]).

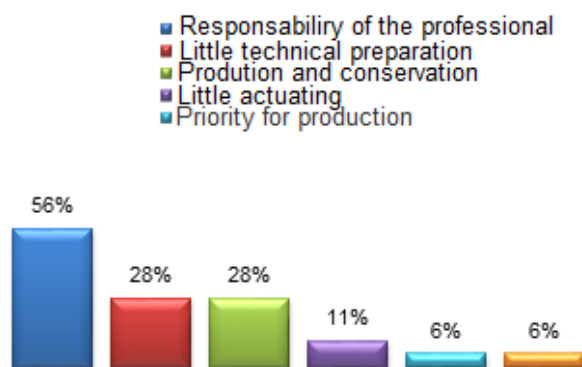


Fig. 6. Teachers' understanding of the agronomist's posture

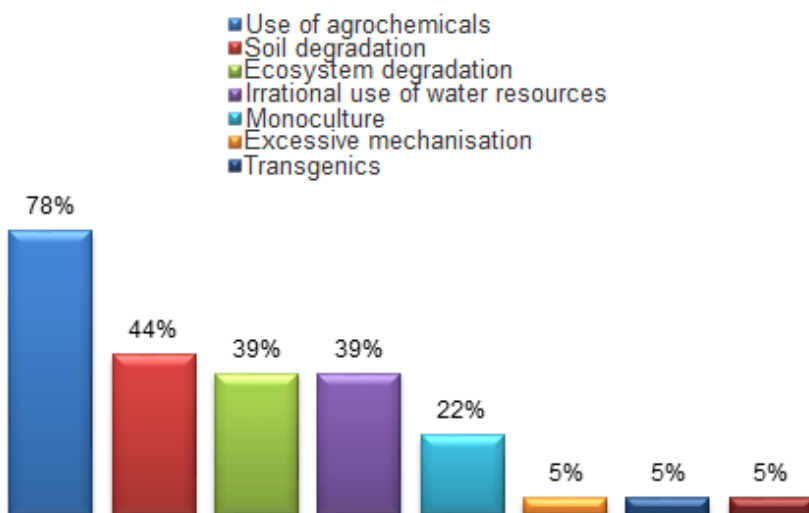


Fig. 7. Main problems pointed out in agricultural production

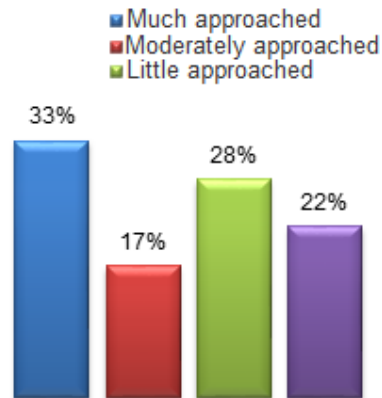


Fig. 8. How the problems of agricultural production are addressed in the classroom

The teachers' understanding of the harm caused to human health may be related to the large number of cases of intoxication by different foods, since in Natura as processed, with associated cases of cancer, abortions and infertilities [13].

Completing the questionnaire, the teachers reported how the problems mentioned in the agricultural production are approached in their subject (s) in the classroom, having these answers grouped into four categories, varying from much addressed 33, 4%, moderately approached 17%, Little approached 28% and do not approach 2% (Fig. 8).

It is observed that 28% of the professors approach the theme in the classroom little. This is a reflection of the curriculum of the agronomy course, this can be explained considering that in the course, only three disciplines emphasize the theme. This lack of information can form future professionals without critical sense about the social and environmental impacts of their activities, as well as a realistic understanding of nature [15].

It is also noted an effort by some professors to demonstrate in their disciplines more conservationist content, so that in the 17% who discuss the themes moderately, they express that in their disciplines there is no focus on the area, but in their classes they try to include the themes. Thus, we can then confront the data of the students' unpreparedness against the environmental problems 55% with the approach of 33% of teachers in the classroom as very good, the students express in the collected data and questionnaires that the subject exposed in the room of Class almost never has an

environmentalist character, this partly explains its insecurity to formulate solutions to the detriment of any problems that may arise as future professionals.

According to Cavallet [11], university education should promote the student's critical sense and knowledge to act in a model of sustainable and efficient development. Thus, the approach of the subjects in the classroom should be interdisciplinary, with professionals from different areas, generating an eclectic knowledge in the students, which is not currently present [5].

4. CONCLUSION

When analyzing the context of the ECSC and how the agronomic formation is constructed, we can expose a reality based on the molds of the sugarcane agroindustry and that this construction reflects in the modes of perception of environmental factors. Although there are students and teachers who care about the importance of the theme of EA in the academic environment, it is possible to observe a deficient and inconsistent approach of environmental education in the agronomy course of the CECA-UFAL. It is concluded, therefore, that it takes a change in the form and frequency of the exposure of students and teachers with environmental issues in the classroom, so that, in a critical way, they can establish concrete relationships with respect to professional responsibility Actions and decisions in the coherent management of agricultural systems. From the results of the research, we can conclude that there are needs of more disciplines and extension programs aimed at this strand in universities.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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