Original article

Agricultural and livestock manual activities. Some considerations on their performance in mountain conditions

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ABSTRACT

The article approaches a related problem with the formation of the half technician in the polytechnic agricultural institutes in the agronomy speciality of mountain, the manual agricultural activities. Your objective, offer some considerations on the realization of these activities in this context, it will contribute to raise the quality of the process of apprenticeship teaching, on the base of the exigencies of the third educational perfecting. In this way the need of your integration with the basic specific courses. Between the applied methods were: analysis, synthesis, induction, deduction, observation, analysis of the product of the activity and interviews. The better proposal the labor of orientation to the teachers.

Keywords: Research; Manual agricultural activities; Integration; Considerations; Agronomy; Mountain

Introduction

Education in Cuba is responsible for the comprehensive training of qualified workers and mid-level technicians with a broad preparation for life, both in theory and practice, to solve the problems of the economy and society, both individual and social.

At present, manual agricultural and livestock activities play a very important role in the training process of the professional in Technical and Vocational Education (TVE), all in order to raise the standard of living of the population. In addition to training a professional that guarantees sustainable, sovereign and resilient mountain agricultural and livestock production with a producer conscience. This corresponds to the current educational transformations, since its purpose is to train a patriotic, comprehensive, competent and broad-profiled professional of higher secondary level, who is fully integrated into society and is an active agent of its improvement. (Ministry of Education, 2023, p. 2)

Development

The aforementioned has motivated the development of a research aimed at enriching the training process of students in the specialty of Mountain Agronomy in agricultural polytechnic institutes where manual agricultural and livestock activities play a fundamental role due to the characteristics of the context.

The analysis takes into account the content system of the specific vocational training subjects, the bibliographic review (Ministry of Agriculture materials, normative documents of Technical and Vocational Education (TVE), technical instructions, Master's theses, doctoral theses, basic and complementary texts, Internet documents), as well as the experiences of technicians, teachers and farmers.

The above fully corresponds to the requirements of the III Educational Improvement that is being carried out in the current Cuban school. Hence, on the basis of the insufficiencies that are presented in this order, it is necessary to continue systematizing the experiences that are achieved, in such a way that the treatment of contents related to agricultural manual activities is achieved with a higher level of updating and contextualization, in correspondence with the conditions of the training process of the

agricultural technician in the specialty of Mountain Agronomy in the municipality of Yateras.

The main purpose of this article is to offer some considerations on the performance of agricultural manual activities in the mountain agronomy specialty.

The term "Activity" according to the Philosophical Dictionary of Rosental, Ludin (1981) is a concept that characterizes the function of the subject in the process of interaction with the object. Activity is a specific nexus of the living organism with its surroundings; it establishes, regulates and controls the mediated relationship between organism and environment, first of all, metabolism. (p. 4).

The Encyclopedic Dictionary (2006) defines activity as: a set of organized works and actions that are done for a specific purpose by a person, a profession or an entity. (p. 57)

The dictionary of the Royal Spanish Language (1968), states about "activity: 1. f. movement, action. 2. f. diligence, efficiency". As can be observed, the above definitions in one way or another reflect the action of the individual directed to a purpose.

From the psychological point of view, we must take into account the concept of activity proposed by Vigostki (1896-1934), developed by Leontiev (1984), all activity responds to a motive, this being everything that incites man to act, to satisfy a need. Likewise, every action pursues an end or goal consciously set that constitutes its objective, and the same relationship that exists between motive and activity, is the one that exists between objective and action.

Activity is defined as those processes through which the individual, responding to his needs, relates to reality, adopting a certain attitude towards it. (Brito, 1988)

In turn, action is the process that is subordinated to the representation of the result to be achieved, i.e., the process subordinated to a conscious objective (Leontiev, 1981). The action has functions of: orientation, execution and control, it is considered as its functional structure (Galperin, 1983; Talízina, 1988). For the concretion of the actions to be developed in the present research, we agree with Crespo (2005) when he emphasizes that action is the unit of analysis of cognitive activity and the central link in the direction of the training process. In turn, it is assumed that Talízina (1988) emphasizes that:

> Any human activity can be considered as an original micro-system of direction that includes the directing organ (the orientation action, in the Introduction), the "working organ" (the execution action, such as development), and the "tracking

> and comparison mechanism" (the control action, corresponding to the conclusions)". (p. 12)

It is through this that the learner faces the object, relates to it, starting from its deficiencies and in this relationship takes one or another position before the object, transforming it into itself.

Human activity is in every way fundamental and determining for work, which has its own characteristics based on objective activity. Therefore, the activity of the individual is determinant for its content, productivity of goods, change of conditions in the social environment, development of man himself, of his potentialities, skills and knowledge.

Within the framework of agricultural work, manual activity is distinguished, which is understood as the task carried out by the farmer with the use of his hands and the use of support tools. In the context of agriculture, it is a very important form of activity for the development of production, but there is a lack of a more complete concept in theory.

Albalat (2006), in this regard states that:

> Handicrafts and their elaboration are the ordered and previously planned process where creativity, inventiveness and knowledge learning are facilitated from the development of motor skills and abilities with the use of specific materials to build an object of pedagogical utility or other uses that can be used as didactic resources by teachers. In this sense, the manual activity involves specific actions. (p. 3)

As has been pointed out, man has the capacity to carry out any activity and, in fact, actions that are part of it on the basis of previously acquired experience. This criterion corresponds to the development of manual agricultural and livestock activities based on the teacher's knowledge of the existing procedures for carrying them out and, from this, that the student is able to put them into practice.

With the realization of the productive activity, an approach to a positive emotional and cognitive state is propitiated, making possible the materialization of ideas, visual and spatial configurations, together with the formation of skills for professional performance.

The above criteria show that manual agricultural and livestock activities are essential for the development of professional skills in students, since a link is achieved between theory and practice in that the use of motor skills, cognitive and spatial aspects are contemplated, ideas are materialized in the result of the productive activity and this also expresses a creative process to incorporate new knowledge and skills and to have the

opportunity to carry out a practice that transforms reality, based on the integration of knowledge.

The analysis carried out allows the authors of this paper to consider agricultural manual activities as: the set of previously planned and organized physical actions that are executed as part of agricultural work, through the use or not of tools for the transformation of a productive process for social benefit.

In this sense, in order for the student to achieve mastery and application of this knowledge based on the skills acquired, they must be stimulated in an organized and planned manner, through the transmission of knowledge and the guidance that the teacher provides as part of the teaching-learning process for professional training, which is aimed at achieving greater efficiency in the productive processes and advancing in the quality and rigor of the training of the Mountain Agronomy technician, in correspondence with social demand, definitively converting the ETP into a dynamizer of the country's economic growth and development.

As Bess (2023) says:

> The good development of the professional pedagogical process will be conditioned by the integration of the three areas of knowledge in which the contents are organized in technical and professional education: general training, basic professional training and specific professional training; each of them characterized by a balance between theoretical and practical contents. All this will be achieved through the development of the different actions conceived in the training process of the professional. (p. 3)

The above analysis of the role of manual agricultural and livestock activities in the training process of the intermediate technician in mountain agronomy coincides with the regulations of the Ministry of Education (2022) in Section I, Article 1, which defines practical education and the elements that compose it.

In this same resolution in its chapter II, the Practical Education, with its particularities, for the professional training of each of the specialties conforms its own modalities. For the interests of the research being carried out, the following are specified below: the practical teaching class and the integrating task.

The success of the development of the activities will depend on the level of fulfillment of the objectives conceived for each one of them, which means that the process of content integration will depend on the degree of preparation achieved by the TVE teachers.

The analysis carried out made it possible to select some agricultural manual activities that illustrate their integration with the specific basic vocational training subjects. These, together with their corresponding methodological guidelines, form part of a manual that facilitates their implementation by the teacher. The manual is structured according to the aforementioned subjects. The following are some of the details.

Manual agricultural and livestock activities in organoponics:

Vegetable production is one of the objectives of Urban, Suburban and Family Agriculture, which is supported by the Food Sovereignty and Nutritional Education Plan (Plan San), which is based on sustainable production, the use of natural resources and nutritional education. This type of agriculture promotes the use of endogenous resources in order to produce fresh food for self-consumption in small spaces for the assembly of organopónicos, intensive orchards and production areas of different crops in backyards of houses, plots of land for the use of unproductive soils.

The assembly of the aforementioned areas, due to the lack of material and financial resources, requires the use of new techniques to carry out agricultural development in a sustainable way and with it the training of the mountain agronomist, in which Technical and Professional Education plays a very important role.

It is appropriate for the teacher to discuss with the students some experiences of farmers in the use of techniques, which at present could be considered obsolete, given the scientific and technological development achieved; however, they take on great significance because of the limitations that are presented and the potential that they offer for the use of endogenous resources of the territory, which is a way to promote an adequate agroecological education. It is of great value to emphasize each of the steps to be taken in their use.

Activity 1 Survey of flower beds:

- Operative technique for the preparation of the material
    - Select the material to be used: bamboo as straight as possible.
    - Measure the width and length distances to be established: 1m to 1.20m wide and 7m long.
    - Take the saw and cut the bamboo in such a way that the cut is as uniform as possible.

- Operative technique to raise the plant bed
    - Select the area where the flower bed will be located.
    - Observe and determine the cardinal points so that the flower bed is located from north to south.
    - Take the tape, stick or string and measure 1m wide.
    - Place the stakes on both sides of the measurement and fix it with the help of the wooden mallet.
    - Taking the first stake as a starting point, measure a distance of 7m long using the tape measure or string, placing a stake at the end of the measurement and others approximately every 1m.
    - Place the previously prepared stakes at the head and sides of the flower bed.
    - Fix each one of the steps using the stakes which will be fixed to the ground by hitting with the wooden mallet to a depth of 10-15cm, so that it is level with the height of the step.
- Operative technique for substrate preparation
    - Select and prepare the area where the mixture will be deposited.
    - Take 2 shovels of soil and 2 shovels of worm humus and deposit them in the selected area: at the rate of 50%.
    - Using the shovel, stir the soil and organic matter until it is completely mixed.
    - Take the mixture with the help of the wagon or wheelbarrow and move it to the bed until the desired height is reached.
    - Take the rake and smooth the substrate.
    - Establish phytosanitary measures (repellent plants, phytosanitary cordon).
- Operative technique for the maintenance of flower beds
    - Identify the damaged bamboo strands.
    - Take the tape, measure the sections of bamboo damaged in the flower bed and remove them by cutting them with a saw.
    - Measure the bamboo with the tape, cut it and place it in the previously extracted section. Measure that it is at the same height.
    - Fix the Guarderas by placing the stakes inside and outside of them.

Means to be used: shovel, pickaxe, hoe, machete, string, tape measure, bamboo, substrate, organic matter, stake, gibe, saw, wagon or wheelbarrow.

After the planting of the beds, it is necessary to carry out the planting of different crops, for which it is necessary to take into account the operating technique with its logical steps for the execution.

Activity 2 Planting:

- Operative technique for the start-up and manipulation of the posture
    - Observe the posture and select those in good phytosanitary condition, good development, with good coloration.
    - Take the posture by the neck as close as possible to the ground and exert a slight upward pressure to extract it, avoiding damage to the root system of the posture.

Placing up to 100 postures in the decks at the most.

Transfer to the planting area.

- Operative technique for planting
    - Ensure that the soil structure is adequate for planting.
    - Place the posture according to the planting frame for the crop to be established.
    - Open the hole to place the posture with the index finger.

Place the posture in the hole and bring the soil close to the stem of the plant by pressing on it with the index finger and thumb of each hand.

- Watering with a watering can
    - Take the watering can, fill it with water.
    - Spread the water evenly until the soil is completely wet.
    - Operative technique for the extraction of weeds
    - Identify the weeds.
    - Take the plant by the stem and extract it in such a way as to remove the whole plant without affecting the root or leaf system of the specific crop.
    - Remove the weedy plants from the area to prevent their spread and leave the area clean.

- Operative technique for scarification
    - The scarifier is taken in the right hand with the left foot in front and the right foot behind, with the body semi inclined and with the spine straight to avoid physical damage.
    - The tip of the scarifier is placed pressing it and dragging it from front to back so as to break the crust or hard layer that forms on the surface of the flower bed.
    - Operative technique for cleaning the corridor between the flowerbeds
    - Identify the weeds.
    - Take the hoe by the handle at a distance of 15 to 20 cm between them.
    - Place the left foot in front and the right foot behind.
    - With a slight inclination of the trunk forward, lift the hoe and let it fall perpendicularly in the direction of the non-target plant.
    - Pull until the weed plant is decapitated.

Examples of agricultural manual activities in their integration with specific basic vocational training subjects:

Integrative task:

Objective: to execute the construction of an organoponic in the area of the institution with the use of local resources and taking into account the integration of agricultural manual activities with the specific basic vocational training subjects (Integrating task and Work in Agricultural Production) to achieve the formation of knowledge, skills and professional values.

Methodological guidelines

It is important to explain to the students that the following aspects should be taken into account for the construction and location of an organoponics:

- The area should be unproductive and flat, with no interspersed trees to avoid shading.
- It must have good surface drainage, be protected against water flow and flooding.

- The area should be easily accessible with availability of water for irrigation and electricity.
- The area should be as close as possible to the recipients of the final production, to avoid transportation and deterioration of the products.

For the development of this activity, the group should be organized in teams that will rotate through the different work stations set up for this purpose, which will allow them to go through the different stages proposed. The methodological preparation of the teachers will be necessary for the application of the technical instructions of each of the crops to be established.

The students will be guided to make the corresponding observations and notes of the different activities they carry out, so that at the end of the rotation through these activities they can enrich the report.

Activity “Construction of the organoponic”:

Location: Horacio Matheu Orihuela IPA Center Area.

Construction design:

Technical information of the activities to be carried out.

The teacher will explain to the students that there are different variants for the construction of the flower beds in the organoponico:

- For technified flowerbeds, blocks, bricks, concrete or concrete posts are used to facilitate construction,
- For more economical variants of construction of rustic flowerbeds, stones, wood (costaneras), bamboo, use of gutters will be used. Precisely these are the variants that will be used in this particular.

It will be explained that the drainage of the beds should be favored with gravel, pipes or other materials that can fulfill this function.

The orientation of the beds should be from north to south whenever possible, and they should be less than 30 m long, 1.20 m wide maximum, with a depth of 0.30 m of substrate and a width of 0.50 m of aisle.

Whenever the terrain allows it, lanes with a width of 2-3 m should be built to facilitate the transport of inputs and harvested products.

In the construction of the organoponico, bovine and equine animals will be used in the preparation of the soil and the pulling of materials for the construction of the beds and the transport of the harvested products. Tools such as picks, shovels, rakes, tridents, hoes, machetes, scarifiers, as well as sacks, wagons for the transportation of organic material, substrates, harvested products, etc., are used.

To achieve the above purpose, the teacher should explain during the class which crops are established in this productive entity (examples of crops: carrot, beet, radish, chard, lettuce, etc.) and why they are not others, since these are aspects that, if not taken care of correctly, are detrimental to future production and yields. It is important to have a technical sheet of the crop to be established.

Sowing, planting and harvesting will be carried out taking into account the technical instructions for the crop, as well as the type of substrate to be used in the beds, the cultural work to be done, pest control, the use of alternative fertilizers for crop nutrition and thus achieve high production and yields.

At the end of the activity, the area guides the students to continue researching to deepen their knowledge of the contents analyzed, which will allow them to enrich the final report of the integrative task that they will have to carry out.

The students are informed that they will deepen this knowledge in the practical teaching class of the subject Work in agricultural production. In the introductory phase, the information on this content will be deepened on the basis of the independent work done by the students, doubts will be clarified and proposals will be made to consult new literature or clarifications on the subject.

In the development phase (practical exercise), which is very important at this time, the students will have the opportunity to continue developing skills in the design and construction of the organoponics, as part of the necessary agricultural manual activities to be carried out. As its name indicates, these activities make possible the integration of all the actions developed in the area of manual agricultural and livestock activities.

It is necessary to remember that it is mandatory to take advantage of the educational potential offered by each of the activities, in order to emphasize the care and protection of the environment and the protection of animals, among others, a matter that is addressed by many countries and Cuba is a standard bearer in this regard, since there are

laws that establish it and the context in which the training process of this professional is developed, so merits it.

Bibliography for the realization of the integrative task:

It is important that when consulting the book by Rodríguez Nodals et al. the characteristics of the organoponics studied are specified, as well as those of other materials for their construction.

Rodríguez Nodals, A., Companioni Concepción, N., Fresneda Buides, J., Estrada Ortíz, J., Cañet Prades, F. et al. (2011). *Manual Técnico para Organopónicos, huertos intensivos y organoponía semiprotegida*. La Habana. Ediciones Caribe. Séptima Edición.

Ruíz, C. D. (2019). *Manual para la enseñanza de las actividades manuales agropecuarias*. Revista Cubana Hombre Ciencia y Tecnología, 23(4) ,1028-0871.

By analyzing Ruiz, they will have the opportunity to verify other experiences of farmers about the construction of the organoponic in an agroecological and sustainable way with the use of endogenous resources.

The consultation of other materials on the Internet is very important in this activity, according to the possibilities that may arise. It would be of great significance, the gradual approach of both teachers and students to the use of artificial intelligence for this purpose. It could be a suggestion for those students and teachers who have the technology for such purposes.

Conclusions

The considerations offered on the performance of agricultural manual activities in the specialty of Mountain Agronomy constitute a way of orientation for the preparation of TVE teachers in this specialty, making possible the integration of this content with the subjects of specific basic professional training, which contributes to raise the quality of the training process of the professional in this context.