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RABBIT BREEDING AS A SUSTAINABLE PRODUCTION ALTERNATIVE IN THE ITAMARATI / MS SETTLEMENT

CRIAÇÃO DE COELHOS COMO ALTERNATIVA DE PRODUÇÃO SUSTENTÁVEL NO ASSENTAMENTO ITAMARATI/MS

CRÍA DE CONEJOS COMO ALTERNATIVA DE PRODUCCIÓN SOSTENIBLE EN EL ASENTAMIENTO ITAMARATI/MS

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Abstract: Energy residues from livestock represent a valuable and available resource for the agronomic sector, mainly in organic agriculture, which requires non-chemical fertilization. Thus, animal waste when used appropriately has the potential to replace the fertilizers commonly used, due to their valuable nutritional composition for vegetables. Cuniculture is an activity that presents several benefits, co-products, and by-products, such as feces that can be transformed into organic substrates used for fertilization. To use these wastes, as of January

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2020, an initiative was implemented in the creation of rabbits in the community with the donation of females capable of reproduction, from the Experimental Farm of Agricultural Sciences at UFGD. In addition to donations, the emphasis was placed on composting the waste to be used in the garden. Monitoring of the production of the settlement was carried out and until the present date, the animals continue to receive vegetables daily as a complement to their food and the collection of manure and compost has already been carried out. It can be seen that rabbit farming gains extreme social and environmental importance, as it can contribute to the improvement of the population's diet by offering a high-quality nutritional source of protein and through the composting of organic waste produced by farming that makes the production of vegetables possible. organic. The manure from the production of rabbits proved to be highly efficient for the production of vegetables in an agroecological system, ensuring greater sustainability in the cycle of animal and vegetable production.

Keywords: Cuniculture, Rural Extension, Waste, Horticulture.

Resumo: Os resíduos energéticos oriundos da pecuária representam um recurso valioso e disponível para o setor agrônomo, principalmente na agricultura orgânica, que demanda fertilização não química. Dessa forma os dejetos dos animais, quando utilizados de maneira apropriada, tem o potencial de vir a substituir os fertilizantes comumente utilizados devido a sua valiosa composição nutricional para os vegetais. A cunicultura é uma atividade que apresenta vários benefícios, coprodutos e subprodutos, como suas fezes que podem ser transformados em substratos orgânicos utilizados para adubação. Com intuito de verificar o aproveitamento destes dejetos, estes foram coletados da criação de coelhos implementada no Núcleo de Agroecologia do Assentamento Itamarati com a doação de fêmeas aptas à reprodução, oriundos da Fazenda Experimental de Ciências Agrárias da UFGD e foi dada ênfase a compostagem dos dejetos para serem usados na horta. Foi realizado um acompanhamento da produção do assentamento de janeiro a abril de 2020 e os animais continuam recebendo diariamente hortaliças como complemento em sua alimentação e já foi efetuada a coleta de dejetos e compostagem. Pode-se observar que a cunicultura ganha extrema importância social e ambiental, pois pode contribuir para melhoria da alimentação da população, pois, além de oferecer uma fonte proteica de alta qualidade nutricional oriunda de sua carne, por meio compostagem de restos orgânicos produzidos pela criação, viabiliza a produção de hortaliças de modo orgânico. O esterco oriundo da produção de coelhos se mostrou

altamente eficiente para produção de vegetais em sistema agroecológico, garantindo maior sustentabilidade no ciclo de produção animal e vegetal.

Palavras-chave: Cunicultura, Extensão Rural, Dejetos, Horticultura.

Resumen: Los residuos energéticos procedentes de la ganadería representan un recurso valioso y disponible para el sector agronómico, principalmente en la agricultura orgánica, que demanda fertilización no química. De esta forma, los desechos de los animales, cuando se utilizan de manera apropiada, tienen el potencial de sustituir a los fertilizantes comúnmente utilizados debido a su valiosa composición nutricional para los vegetales. La cunicultura es una actividad que presenta varios beneficios, coproductos y subproductos, como sus heces, que pueden transformarse en sustratos orgánicos utilizados para la fertilización. Con el fin de verificar el aprovechamiento de estos desechos, estos fueron recolectados de la cría de conejos implementada en el Núcleo de Agroecología del Asentamiento Itamarati con la donación de hembras aptas para la reproducción, procedentes de la Hacienda Experimental de Ciencias Agrarias de la UFGD, y se hizo hincapié en el compostaje de los desechos para ser utilizados en la huerta. Se realizó un seguimiento de la producción del asentamiento de enero a abril de 2020 y los animales continúan recibiendo diariamente hortalizas como complemento en su alimentación, y ya se ha efectuado la recolección de desechos y el compostaje. Se puede observar que la cunicultura adquiere una extrema importancia social y ambiental, ya que puede contribuir a la mejora de la alimentación de la población, pues, además de ofrecer una fuente proteica de alta calidad nutricional procedente de su carne, a través del compostaje de restos orgánicos producidos por la cría, viabiliza la producción de hortalizas de modo orgánico. El estiércol procedente de la producción de conejos se mostró altamente eficiente para la producción de vegetales en sistema agroecológico, garantizando una mayor sostenibilidad en el ciclo de producción animal y vegetal.

Palabras clave: Cunicultura, Extensión Rural, Desechos, Horticultura.

INTRODUCTION

The Agroecology Center of the Itamarati Settlement, in the municipality of Ponta Porã, MS, was created in 2006. Its creation was motivated after a visit by some producers to the

Creole Seed and Organic Products Fair held in the Municipality of Juti, MS. During this visit, after listening to various lectures focusing on the theme of organization, interest and the need to carry out differentiated work with an emphasis on organic agriculture was awakened. This shift in vision occurred in a generalized way by the community members settled in the Itamarati Settlement, composed of almost 3,000 families in its two phases of implementation known as Itamarati I and Itamarati II (NEVES & KOMORI, 2011).

The income source of farmers is characterized by an integrated contribution of resources obtained through farm production systems and with income external to it (SCHEMBERGUE et al., 2017). Food cultivation is often for both subsistence and commercialization. In the case of production for subsistence, consuming the product that is planted reduces the demand for consumption in the market and, therefore, reduces family expenses per property. Combined with this, when the residues of this cultivation are used for animal husbandry, family expenses can be further reduced, and their income can be increased through commercialization (ZACHOW et al., 2018).

It is important to mention that the search for natural fertilization processes, without chemical fertilizers and pesticides, has been constant in agricultural sciences (CARVALHO et al., 2017), and the waste from rabbit breeding can be included in this context. The use of this material as fertilization can bring generous economic, socio-environmental and sustainable benefits to the small producer, especially in low-income countries and with a focus on growing vegetables with a natural fertilizer. Furthermore, as mentioned by Valentim et al. (2018), rabbit breeding has several advantages, as it is an activity that requires little space, relatively simple management, little physical effort, low initial investment cost, high prolificacy, in addition to being a very interesting activity from the point of view of environmental sustainability, due to the low production of waste, but of good quality, the high degree of use of by-products and low water consumption.

Organic residues, vegetable or animal, generated by agricultural activities are important sources of biomass (ORRICO et al., 2007) that can be reintegrated into the production chain by incorporation into the soil, adding economic and environmental value to production, due to the lower expenditure of industrial inputs (LOSS et al., 2009), as it favors soil fertility by releasing nutrients during the crop cycle (SEDIYAMA et al., 2009).

The manure of some animals, such as cattle, poultry, swine, goats and rabbits, are sources of organic matter, favor the improvement of chemical, physical and biological attributes of the soil and can be a source of nutrients (MORAL et al., 2005), whether used separately (NICOLAU SOBRINHO et al., 2009) or as one of the raw materials used in the composition of

substrates with industrial fertilizers (SILVA et al., 2011) or even with other vegetable sources (SERRANO et al., 2011).

Rabbit compost used as plant fertilizer is of high quality, due to its unique composition rich in nitrogen and also contains a large amount of phosphorus, important for the growth of flowers and fruits. This residue has a dark brown color, a homogeneous texture, a humidity of around 40%, and an intense ammoniacal odor, coming from urine (FERREIRA, 2017).

Thus, the objective of this work was to generate information about rabbit production in the Agroecology Center of the Itamarati Settlement, with an emphasis on the use of rabbit manure as a source of plant fertilization in an agroecological system.

METHODOLOGY

To start the extension project, contact was made with the farmers and the project was presented, identifying the multiplying agents. The activities described here are inserted in the period from January to April 2020, being developed in two stages. The first stage refers to theoretical explanation with a focus on the use of feces as fertilizer and the second is the actual breeding of the animals.

Thus, as a rural extension activity, since 2019, the UFGD Rabbit Breeding Research and Extension Group has been developing rabbit breeding as a diversification strategy in the activities of small producers in the Itamarati Settlement, Ponta Porã, MS. These community members develop horticulture based on organic production techniques, where there are leftover vegetables that were used as part of the animals' feed.

The donated animals came from the Experimental Farm of Agricultural Sciences (FAECA) of the Federal University of Grande Dourados (UFGD), located in the municipality of Dourados 1 – MS (Figure 1). Therefore, on one hand there is a rabbit breeding housed at the Experimental Farm of Agricultural Sciences that guarantees support in obtaining the animals to be donated and on the other hand there is a public that will receive the extension action that has a significant amount of waste from organic horticulture to supplement the rabbits' feed.



Figure 1. Breeders housed in the Rabbit Breeding sector of UFGD.

The actions began previously with the formation of a group (total of 06 families) and recently 05 crossbred does of the California breed, aged 5 months, all ready to be mated, were distributed. These were placed in simple wooden installations with a screen, suspended, with a container to place the concentrate, water and a place to place the foliage which, in this case, were the vegetables grown organically by the participants themselves.

Visits occurred once a month, through meetings attended by teachers and students from UFGD, a technician from the Association of Organic Producers of Mato Grosso do Sul (APOMS) and the members of the group (collectively), who were guided with a practical focus, based on reviews of the theory, when the first stage, rabbit manure as a complement to fertilization, was explained.

The contents emphasized in the second stage involved: other breeds used for meat production, production systems considering the facilities, reproductive management, feed management and zootechnical control, so that at the end of the actions, those involved can continue the breeding.

As a way of evaluating the proposed and executed actions, a questionnaire was created, where participants answered questions about the use of rabbit feces, topics presented, performance of teachers and students, general organization and expectations. The data analysis was performed with the aid of electronic spreadsheets, using Microsoft Office Excel® 2007. The data from the collections were tabulated and transformed into percentage values, 1 from these, a figure was built with the objective of facilitating the interpretation of the results obtained.

RESULTS AND DISCUSSION

One of the focuses of extension work, involving rabbit breeding on small rural properties, is the correct and adequate use of products from the breeding of these animals, which in this case refers to the use of feces. Organic fertilizer can be highlighted as having great economic value, which can be divided into composting or Humus (from worm breeding). Assuming that for the cultivation of an organic garden, the fertilization structure is originally based on rabbit feces, the sustainability of a system involving breeding-by-product-environment becomes clear.

Collaborating with this idea, Ferreira et al. (2013) found that the practice of composting is still very present in rural areas for organic fertilization of gardens and small farms. In Figure 2, it is possible to verify the increase and maintenance of vegetable production in the organic production system of the Agroecology Center of the Itamarati Settlement for 8 weeks using manure from rabbit production as fertilizer.

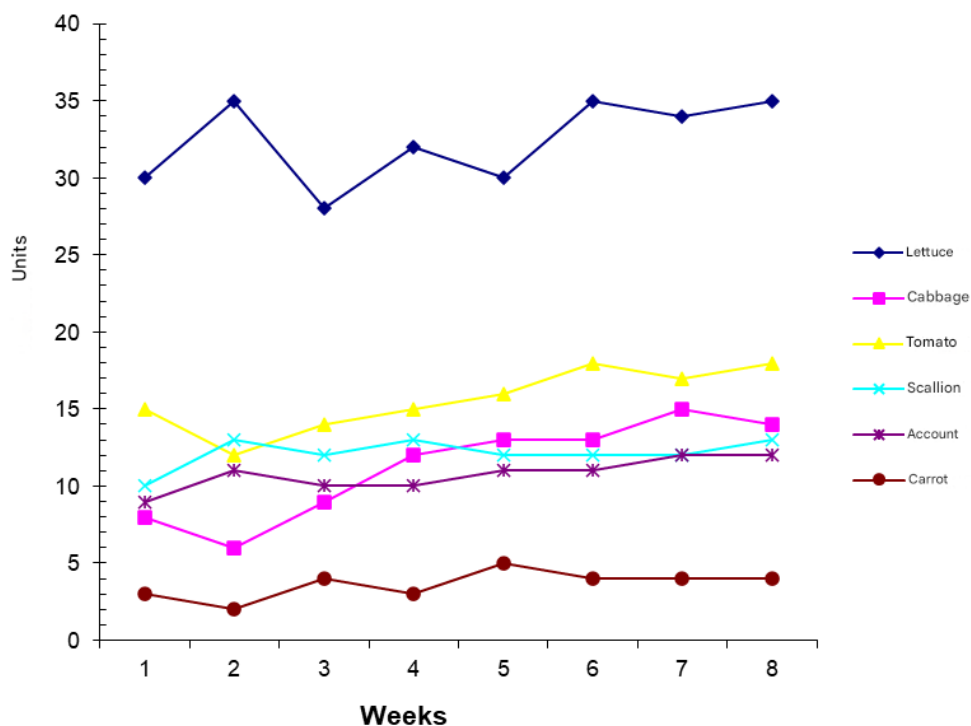


Figure 2. Vegetable production in an Agroecological system using rabbit manure as fertilizer.

This maintenance of production is due to the farmers' awareness, thanks to the information shared by the project participants, UFGD faculty and students, APOMS technicians, and the producers' commitment to spreading the learned knowledge and following the productive recommendations for each crop.

The producers are concerned about not using agrochemicals on crops intended for their own consumption, that of their families and friends, due to the high prices of inputs for small-scale applications and the responsibility of properly disposing of organic waste in suitable environments.

The excellent production of vegetables, greens, and legumes in the assisted settlement is due, in addition to proper agronomic management, to the nutritional characteristics of rabbit manure. Barbieri et al. (2014) used rabbit feces in their experiment because they have a rounded and firm shape, do not dirty the ground upon contact, thus facilitating their handling. Its main characteristic is that, in addition to contributing by eating vegetable scraps and producing organic matter for composting, a rabbit is ready for slaughter around 90 days of age, producing meat that can be consumed or sold, and also the sale of offspring, ensuring income generation.

Thus, it can be inferred that this association of surplus from the garden with the breeding of herbivorous animals, such as rabbits, has proven to be a promising activity, where these residues can supply part of the rabbit's feed, and thus there will be a productive activity that provides income generation and a source of protein, allowing for improvement in the families' conditions and, especially, group autonomy, as observed by Gabriel et al. (2019).

University extension, when worked in this production approach, brings generous economic, socio-environmental, and sustainable benefits to the small rural producer, especially in situations where they have low income. These actions involve the participation of scholarship students and faculty from UFGD, combined with integration into the Center for the Participatory Construction of Knowledge in Agroecology and Organic Production of UFGD and the Vocational Technological Center in Agroecology and Organic Production in Mato Grosso do Sul.

Oliveira et al. (2017) concluded that it is essential for producers to organize and be assisted by technicians and public institutions in a prioritized and permanent manner, as the development of family farming certainly goes against the interests of agribusiness sectors committed to the agro-industrial complex of conventional agriculture, but will allow the sustainable success of their activity through quality of life and, especially, their permanence in the field.

According to Menegat et al. (2019), the exchange of knowledge provides settlers with new perspectives on production possibilities, and thus a new arrangement has been possible, based on product diversification, taking advantage of the potential of the place, and adopting cultivation and production techniques. These are the ingredients of university extension in rural communities. In summary, the settlement is breathing new airs of hope and knowledge,

promoting changes, made possible through dialogue with the university, given the positive responses in the evaluations regarding the topics presented about rabbits, the performance of faculty and students, general organization, and expectations.

CONCLUSION

It can be observed that rabbit breeding gains extreme social and environmental importance, as it can contribute to improving the population's diet by offering a high-quality nutritional protein source and through composting organic waste produced by the breeding, which enables the production of vegetables organically. Rabbit manure has proven to be highly efficient for vegetable production in an agroecological system, ensuring greater sustainability in the animal and vegetable production cycle.

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