



Marketing of Rootstock and Citrus Seedlings in the Community of Santa Luzia of Induá, Capitão Poço/Pa-Brasil

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JEAI/2019/46244

Editor(s):

(1) Dr. Mohammad Reza Naroui Rad, Department of Horticulture Crops Research, Sistan Agricultural and Natural Resources Research and Education Center, Iran.

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Complete Peer review History: <http://www.sdiarticle3.com/review-history/46244>

Received 26 September 2018

Accepted 02 January 2019

Published 18 January 2019

Original Research Article

ABSTRACT

The objective of this research was to make a survey on the marketing of rootstock and citrus seedlings due in no 48 of 2013 the map, in the community of Santa Luzia of Induá, municipality of Capitão Poço/Pará. The study was developed based on the application of structured questionnaires founded in 48, where they were interviewed at random 50 producers of seedlings assets. Finally, it was performed the analysis of the information obtained. marketing is the latest step in the system of cultivation of seedlings production, which allows the sale of citrus seedlings for different regions. In addition to the final changes, the marketing of the rootstock is also carried out in the community. The time of marketing of the same varies between 18 and 24 months, for both small and medium producers, being that the big nursery realize the marketing only in the period of 18 months. The producers stated that there was a significant increase in the demand for different varieties of citrus.

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The small and medium producers stated that the adequacy in 48 would be the main bottleneck faced in the community, once the appropriateness requires an understanding and in-depth analysis of how they will work, as they are not accustomed to develop the activity according to some criteria established in this normative. The marketing of rootstock is held by a small minority of Community producers of Santa Luzia Of Induá in accordance with the IN 48, where it was found that the majority of producers sell seedlings of the canopy formed and dipstick type, however, in other regions to change type gauge is more commercialized.

Keywords: Citrus cultivation; producers; nursery.

1. INTRODUCTION

Citriculture is one of the sectors of agriculture in constant expansion in the country, which has become increasingly a power of great socioeconomic importance and recovery in the foreign market, and the fruits are exported in the form of natural juice. This enhancement is related to the assessment by the taste of the fruit, the citric aroma for manufacture of cosmetics, use in cooking, among others. It is a commodity responsible for generating direct and indirect jobs.

The municipality of Capitão Poço, in the state of Pará, is considered the land of orange, having citriculture as the main source of income of the producers. Among the sectors of the citrus production, the production of seedlings, this is heavily cultivated and marketed in the community of Santa Luzia of Induá, rural area of the municipality.

The marketing of seedlings is the last process of the productive chain after care in the production and maintenance of the viability and quality of citrus seedlings. This process is the result of the hard work of producers and of investments entered for the guarantee of a material in good condition, which tends to obey rigors that, adjusted to the needs of the consumer market, conquer more and more space and value within the commercial scenario that every day is even more competitive and demanding.

However, in 2013, approved by the Ministry of Agriculture, Livestock and Food Supply (MAPA) Normative Instruction (IN) No.48 that comes to establish rules for the production and marketing of propagating material of citrus to obtain seedlings of better quality with lower susceptibility to attack by pests and diseases, where producers have to adapt the regulatory framework.

So Normative Instruction 48, will cause major changes in the dynamics of the production of seedlings of farmers, this being a factor of overall relevance to be studied, since there is no related searches that bring equivalent results, as well as information necessary to address this theme and allowing a higher compression of adequacy of producers to this normative.

In addition, IN has rules and rules that compete with seedling producers for the adequacy and correct marketing of the final seedlings. Thus, non-compliance and irregularities provide penalties related to prohibition of product marketing, banning of the nursery, seizure of product, destruction of product and fine of standards may prevent the commercialization of seedlings.

It is important to emphasize that the surveillance of trade is a very efficient means to curb the use of seeds and seedlings that were not produced within the system, and therefore, may not meet all the criteria of identity and quality established by the MAPA [1].

In this sense, the research had as objective to make a survey on the marketing of rootstock and citrus seedlings due in no 48 of 2013 the map, in the community of Santa Luzia of Induá, municipality of Capitão Poço /Pará.

2. MATERIALS AND METHODS

2.1 Location of Study Area

The field research was carried out in the period from 02 December 2017 to 12 January 2018, the community of Santa Luzia of Induá, belonging to rural area of the municipality of Capitão Poço/PA (Fig. 1), with approximate distance of 13 km from the headquarters of the municipality. This community features prominently in the production of citrus seedlings, these being produced by small, medium and large producers, which

configures as well, the main agricultural activity undertaken in the community.

The municipality of Capitão Poço is located at a latitude of 01°44'47" S and longitude 47°03'34" W), and it belongs to the microregion of the Guamá, birthplace of northeastern Pará and is 226 km from the capital, Belém, presents a range of 25.7 to 26.9°C with an annual average of 26.2°C, only 1.2°C variation. According to the Köeppen classification, the climate type Ami [2], with annual rainfall around 2,500 mm and with a short dry season between September and November (monthly precipitation around 60mm), in addition to a relative humidity between 75% and 89% in the months with a lower and higher rainfall, respectively [3].

2.2 Data Collection

Initially, the survey was made of the total number of producers obtained based on the information collected with the nursery owners themselves. With this, it was possible to define the sample is representative of the Community.

The research was developed based on the application of structured questionnaires based on IN 48. They were part of the scope of the questionnaire some aspects such as:

- Identification of the nursery: Aimed to obtain information regarding the type, characterization and certification of same;
- Production System: The survey was how is

performed the production and management of citrus seedlings in nurseries, as well as aspects related to technical assistance;

- Production of rootstock: We sought to collect information about the choice, production, management and classification of rootstock, as well as the production of grafting;
- Proper marketing of seedlings: Took into consideration the criteria imposed in 48 and approached the socioeconomic importance, suitability of market and limitations encountered during the marketing process.

In addition, the use of other resources as photographic records recording, audios, annotations in books of field and direct and indirect observations, which also served as a support for the rationale of the research.

To have the accuracy of the information, were interviewed 50 producers of active seedlings randomly, an approximate total of 100 nursery, which ensures a representative sample unit. The interviewees were divided into classes according to the number of seedlings produced and identified by small, medium and large producer, as shown in Table 1. The framework of producers of seedlings was defined with the aim to organize them based on similar characteristics, thus facilitating the manipulation of data.

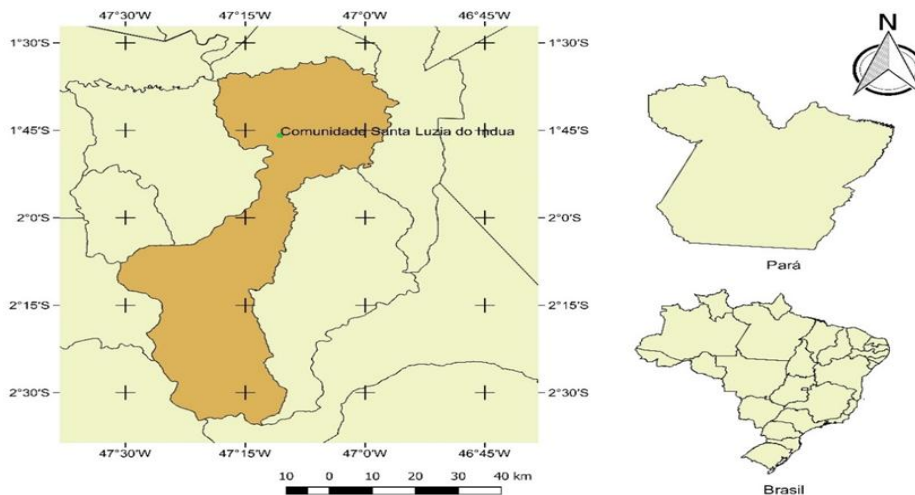


Fig. 1. The geographical location of the community of Santa Luzia of Induá, municipality of Capitão Poço/PA
Source: NERES, 2018

Table 1. Classification of producers of seedlings of Santa Luzia of Induá, Capitão Poço/PA

Classes	No seedlings	No interviewees
Small Producer	5 to 10 thousand seedlings	27
Medium Producer	>10 to 50 thousand seedlings	16
Large Producer	Over 50 thousand seedlings	07
Total		50

Source: Authors, 2018

2.3 Data Analysis

The data were tabulated in an electronic spreadsheet Microsoft Excel 2010® and 2013®, where they were utilised for preparation of graphs and tables to represent them. Finally, it was performed the analysis of the information obtained.

3. RESULTS AND DISCUSSION

Marketing is the latest step in the system of cultivation of seedlings production, which allows the sale of citrus seedlings for different regions. In addition to the final changes, the marketing of the rootstock is also carried out in the community, but as observed in Table 2, only 14% of the producers perform this process, where the time to market is approximately eight months, this being carried out in the form of bare root and tubes, with prices ranging between 0.30 cents to \$1.00. We can observe that they are in conformity with the requirements of Articles 34 and 35 of standardization, where reports that the changes of rootstock may be marketed since the post-emergency phase until the maximum age of eight (8) months counted from the date of sowing and that the changes of rootstock may be marketed in pots, tray, box, final packaging or in the form of bare root.

Regarding the final moult, the commercialization time varies between 18 and 24 months for both small and medium producers, and the large

nurseries only sell in the period of 18 months, where the seedlings are sold on the value of R\$2.00 to R\$5.00, being these values in constant change in trade, ranging as well as the quality of the seedlings, valuation, market demand and depending on the form of cultivation, either on the ground or in the nursery. In this sense, the cost of production in a protected environment is significantly larger and has increased considerably in recent years, labor and substrate, the two main components of cost, this results in an aggregation of the value of the seedlings produced in this environment [4,5].

According to Fig. 2, we noticed that the majority of producers sell both types of seedlings (type copa formed and dipstick), of the varieties of lemon, orange and tangerine, where the nursery reported that changes the type dipstick has a greater preference for marketing outside the region, due to the ease of handling and transport which is related to the size of the changes, when compared to the copa formed, which requires greater care, due to lower resistance to be transported over long distances.

It is important to emphasize that throughout the research, it was possible to verify that the producers still do not have the habit of identifying the rootstocks and the final seedlings destined to the commercialization, according to recommendations described in more detail in Article 36 of IN 48. However, as producers comply with regulations, this practice will become common among community nurseries.

Table 2. Situation of the marketing of citrus rootstock seedlings producers of Santa Luzia of Induá, Capitão Poço/PA

Classes of producers	Marketing of the rootstock	
	No of producers that sell	No of producers who do not sell
Small	8%	46%
Medium	2%	30%
Great	4%	10%
Total	14%	86%

Source: Authors, 2018.

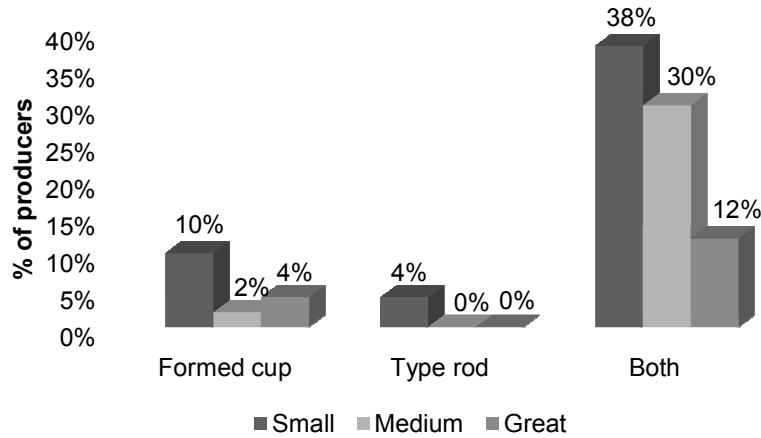


Fig. 2. Seedlings marketed by producers in the community of Santa Luzia of Induá, Capitão Poço
 Source: Authors, 2018

Another issue raised was on the demand of citrus seedlings in the Community during the past five years, which can be observed in Figure 3 that about 93% of the producers stated that there was a significant increase in the demand for different varieties of citrus. This growing demand, may be occurring because of the existence of important projects in execution in the region, such as the installation of an agro for the processing of orange juice, valuing the culture of lemon in which their export is in constant growth and the fall in production and value of pepper, these factors that increasingly

require increased local production of citrus seedlings, contributing to the increase in the planted area.

Results similar to those obtained were found in the work Infestation of the citrus black fly in citrus orchards in conventional and agroforestry systems, where during the research the authors observed that there was an increase in sales of seedlings that was declared by 19.28% of the nurseries, in which the majority affirmed that this increase would be between 0% and 25% [2].

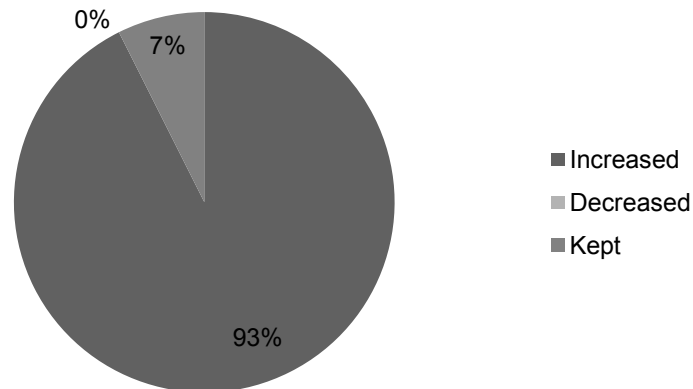


Fig. 3. Looking for seedlings in the past five years in the opinion of producers of seedlings of Santa Luzia of Induá, Capitão Poço
 Source: Authors, 2018

Table 3. Main difficulties encountered for the production and marketing of citrus seedlings in the community of Santa Luzia of Induá, Capitão Poço/PA

Classes of producers	Difficulty of producers				All	Other
	Lack of technical assistance	Attack of pests and diseases	Adequacy IN 48	Lack of public policies		
Small	4%	2%	20%	6%	22%	4%
Medium	0%	4%	14%	6%	8%	0%
Great	0%	4%	2%	0%	4%	0%
Total	4%	10%	36%	12%	34%	4%

Source: Authors, 2018.

(Table 3), where the small (20%) and medium (14%) producers stated that the adequacy to IN 48 would be the main obstacle faced by nurseries in Santa Luzia do Induá for production and commercialization of seedlings. main bottleneck in the community, since adequacy requires a deep understanding and analysis of how they will work, since they are not accustomed to developing the activity according to some criteria established in this regulation, that is, they have their own form of production and commercialization and it will be challenging to try to fit into this new production model.

Another factor mentioned was the high investment, since the nursery needed to have a capital equivalent to start effecting the adequacy of regulatory requirements. This adequacy has greater impact especially for small producers, who have no income and sufficient information to perform this adjustment. On the other hand, the major producers reported not having difficulties related to normative, but the main limiting factor found by them is the attack of pests and diseases in the cultivation of seedlings.

In addition, the producers mentioned some alternatives as partnerships and the provision of services by the institutions and/or public and private bodies, acquisition of public policies, among other options, which could be used as a way of minimizing the impacts caused by the factors cited above.

In this context, partnerships and the provision of services as ATER, could provide more information, as well as the standardization law due to their complexity, as well as in research, creating new techniques of crops for increased production as for example creation of substrates that is made with materials available and easy access to the region, where the nursery would more easily to produce them; use of biological control and natural, in order to minimize the use

of pesticides or development of new varieties resistant to pest attack (gummosis and greenbug), decreasing the excessive costs related to production, in addition to other aspects such as access and adherence to public policies for the financing of productive system, because not all producers can join this Supply, since it must be with the documentation of their nurseries regularized so that access is released, however, some producers are starting to adhere to IN 48, where it was possible to observe the construction of telados nurseries, as well as the cultivation of seedlings which is being held in a protected environment, suspended and with the use of substrate that contains no soil.

Fiscalizatórias actions, lectures and meetings are other key metrics to remedy the concerns of producers of citrus seedlings, as in 48, so a way to indoctrinate the productive chain in front of the advance of agribusiness of citrus fruit from this region.

4. CONCLUSION

It was observed that the marketing of rootstock is held by a small minority of Community producers of Santa Luzia of Induá in accordance with the IN 48, where it was found that the majority of producers sell seedlings of the canopy formed and dipstick type, however, in other regions to change type gauge is more commercialized.

ACKNOWLEDGEMENTS

To the seedlings producers of Santa Luzia do Induá, for having shared the reality lived in the field that were primordial for construction of this work.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
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