

Journal of Agricultural Sciences Research

AGRONOMIC EVALUATION AND QUALITY OF *BLACKBERRY* *FRUITS RED: RUBUS* *ROSIFOLIUS SMITH*

Agatha Barão Cavalheiro

Graduation Student in Agronomy, IFC –
campus: Rio do Sul

Cláudio Keske

Advisor, Professor EBTT, IFC – campus: Rio
do Sul

Rony da Silva

Advisor, Professor EBTT, IFC – campus: Rio
do Sul

All content in this magazine is
licensed under a Creative Com-
mons Attribution License. Attri-
bution-Non-Commercial-Non-
Derivatives 4.0 International (CC
BY-NC-ND 4.0).



Abstract: The species *Rubus rosifolius* Smith, known as Red Mulberry, Wild Strawberry or Wild Strawberry, is a plant native to Brazil. Amora occurs spontaneously in the Alto Vale do Itajaí. It can be used for fresh consumption and in the preparation of jellies, sweets, compotes and wine. The project aims to evaluate the agronomic potential of the species, observing the phenology, adaptability in an area cultivated under different fertilizations and evaluating the quality parameters of the fruits, also verifying the phytotherapeutic potential. The experiment was carried out in an experimental orchard with root cuttings obtained in the Alto Vale region, in Ituporanga-SC and at the headquarters of 'Instituto Federal Catarinense'.

– Campus Rio do Sul. The cultural treatments were the same for all the plants in the orchard, such as mowing and pruning, only differentiating the fertilization treatments. Fertilization treatments consisted of five doses of N (0.0, 7.5, 15.0, 22.5 and 30.0g per plant), applied in maintenance fertilization. The doses, 0.0, 7.5, 15.0, 22.5 and 30.0 g correspond to 0.50, 100, 150 and 200% of the recommended dose (Fertilization and liming manual for the states of Rio Grande do Sul and Santa Catarina, 2004). The maintenance doses of N were divided into three applications: at the beginning of sprouting, with the second and third applications being carried out 15 and 30 days after the first. Maintenance phosphate and potassium fertilizers were carried out in a single application, at the beginning of sprouting. There was no statistical difference between the data, one hypothesis for this is that because they are wild plants, they are able to develop well without the need for the use of additional nitrogen fertilizer.

Keywords: Small fruits 1. Plant management 2. Phenology 3.

INTRODUCTION

The species *Rubus rosifolius* Smith, known as Blackberry – red, Blackberry or wild strawberry, is a plant native to Brazil, belonging to the group of blackberries, a bush measuring no more than 1.50 meters, which forms clumps and has thorns on the stem. and in the leaves (LORENZI, 2006). The blackberry has not been the subject of relevant studies. However, pharmacological studies have shown that this genus can be an important source of bioactive substances (MOTA, 2006).

The Alto Vale do Itajaí is located in the south of Brazil between latitudes 26°34'S and 27°41'S, presenting climatic characteristics suitable for the commercial production of temperate fruit trees and small fruits such as blackberries, according to EPAGRI's agroecological zoning (THOMÉ et al, 1999), being an investment option for producers, mainly family ones, in the diversification of production.

The project aims to evaluate the agronomic potential of the species, observing the phenology, adaptability in the area cultivated under different types of fertilization and evaluating the quality parameters of the fruits, also verifying the phytotherapeutic potential.

The work was developed in the experimental and demonstrative Fruit Farming Field at IFC- Rio do Sul Campus, where practical and didactic activities are developed with students from integrated technical courses and Agronomy. Furthermore, students from other institutions as well as producers and interested parties come to visit orchards and experiments like these to improve their knowledge and visualize the techniques used.

METHODOLOGICAL PROCEDURES

COLLECTION OF SEEDLINGS

The seedlings to begin the project were collected in the field in the municipality of Ituporanga, followed by transplantation at *Instituto Federal Catarinense* – Campus: Rio do Sul.

SYSTEM IMPLEMENTATION

Soon after collecting the seedlings, they were taken to the project implementation site. The beds followed four 16-meter beds with 2 rows of seedlings planted, spaced 0.40 cm apart.

SOIL CORRECTION AND FERTILIZATION

Soil correction followed the recommendation of the fertilization and liming manual of the State of Santa Catarina and Rio Grande do Sul, for blackberry cultivation. The correction was carried out with calcitic limestone, followed by soil incorporation and the fertilization used was conventional fertilizer.

TREATMENTS

The experimental treatments were composed of different doses of urea in the blackberry crop. Five treatments (A, B, C, D, E) with four replications containing four plants each replication Treatment was A was the control, that is, without fertilization. Treatment B: 7.5 g/plant. Treatment C: 15 g/plant. Treatment D: 22.5 g/plant Treatment E: 30 g/plant.

ASSESSMENT CRITERIA

The criteria for evaluating plant development were: height, weight (g/plant) and fruit quality, using the L*, a*, b* indices measured using a Delta model Colorimeter and the SPAD index

using a Chlorophyllometer. The experimental data were subjected to analysis of variance (ANOVA) and the means were compared using the Tukey test at a 5% probability level. The results were statistically analyzed using the SASM-Agri program.

RESULTS AND DISCUSSION

	SPADa	SPADb
1. 0,0 g	28,7ns	30,9b
2. 7,5 g	24,4	33,9ab
3. 15,0 g	25,2	38,0a
4. 22,5 g	26,6	38,4a
5. 30,0 g	27,7	39,3a
C.V. %	10,74	7,72

Table 1: SPAD index evaluated seven days after the application of N SPADa and SPADb, average of evaluations carried out at heights of 15, 30, 40 and 60 cm.

Means separated by the same letter do not differ from each other. The Tukey Test was applied at a 5% probability level

Leaf chlorophyll concentration positively correlates with leaf N concentration since the N contained in leaves is in chloroplasts. This explains the statistical difference between the treatments that received higher doses of nitrogen and the control.

	Height (cm)	g/plant	L*	A*	B*
1.T. 0,0 g	40,5ns	8,8ns	25,9ns	36,8ns	25,1ns
2. 7,5 g	33,3	6,9	25,3	36,2	25,3
3. 15,0 g	38,6	7,6	26,0	36,6	23,9
4. 22,5 g	41,5	9,9	27,3	35,7	24,5
5. 30,0 g	45,9	8,3	26,0	36,9	28,8
Média	40,0	8,3	26,1	36,5	25,5
C.V. %	19,17	70,57	7,61	6,87	19,61

Table 2: Evaluations of average height (cm) at the end of the evaluation, total production (grams/plant), luminosity index (L*), a*, b* Means separated by the same letter do not differ from each other. The Tukey Test was applied at a 5% probability level

There was no statistical difference between treatments. It was possible to verify that the use of nitrogen fertilizer in different dosages did not contribute in this experiment to improving fruit productivity and quality in all parameters evaluated (Table 2). Due to the large coefficient of variation in fruit production, of 70.57 (Table 2), there was probably interference in the soil homogeneity issue, and it would be interesting to carry out other experiments in pots or in an area with more homogeneous soil in the future.

FINAL CONSIDERATIONS

There was no statistical difference between the data, one hypothesis for this is that because they are wild plants, they are able to develop well without the need for the use of additional nitrogen fertilizer. They only need shade and irrigation. There are not many studies on blackberries, which makes it more difficult to draw conclusions. More studies are needed on their adaptability, survival and development.

REFERENCES

BAÑADOS, M.P.; STRIK, B.C.; BRYLA, D.R.; RIGHETTI, T.L. Response of highbush blueberry to nitrogen fertilizer during field establishment. I: Accumulation and allocation of fertilizer nitrogen and biomass. *HortScience*, v.47, p.648-655, 2012.

LORENZI, Harri.; BACHER, Luís.; LACERDA, Marco, SARTORI, Sergio.: Frutas brasileiras e exóticas cultivadas (de consumo in natura). Instituto Plantarum, 2006.

MANUAL de adubação e calagem para os estados do Rio Grande Sul e Santa Catarina. 10. ed. Porto Alegre: Sociedade Brasileira de Ciência do Solo, 400p. 2004.

MOTA, Renata Vieira. Caracterização física e química de geléia de amora-preta. *Ciênc. Tecnol. Aliment.* [online]. 2006, vol.26, n.3, pp. 539-543.

PAGOT E, HOFFMANN A. 2003. Produção de pequenas frutas no Brasil. In: SEMINÁRIO BRASILEIRO SOBRE PEQUENAS FRUTAS, 1., Vacaria. Anais. Bento Gonçalves: Embrapa Uva e Vinho, p. 7-15. (Embrapa Uva e Vinho. Documentos, 37).

SALGADO JM. 2003. O emprego de amora, framboesa, mirtilo e morango na redução do risco de doenças. In: SEMINÁRIO BRASILEIRO SOBRE PEQUENAS FRUTAS, 1., Vacaria. Anais. Bento Gonçalves: Embrapa Uva e Vinho, p. 33-36. (Embrapa Uva e Vinho. Documentos, 37).