

P2-04

BRS Juruti: The first Habanero pepper cultivar developed in Brazil

Claudia S. C. Ribeiro¹, Karina R. R. Souza¹, Sabrina I. C. Carvalho¹,
Francisco J. B. Reifschneider²

¹ *Embrapa Vegetables, Brasília/DF, Brazil*

² *Embrapa, Secretariat of International Relations, Brasília/DF, Brazil*

Abstract

The Habanero hot pepper group is not well known in Brazil, despite its origin in the Amazon. Nevertheless, domestic and international markets have been increasing the demand for this type of hot pepper. The Brazilian agroindustry is interested in supplying part of this demand with high quality products and competitive prices, and it needs well-adapted cultivars. To fill this gap, Embrapa Vegetables developed the Habanero pepper cultivar BRS Juruti, which meets the demands of both fresh fruit and the mash and sauces markets.

BRS Juruti was derived from segregating population CNPH 4159, which is part of the germplasm collection of *Capsicum* spp. maintained at Embrapa Vegetables. Five generations of plant selection and selfing were performed until the progenies showed no segregation. During each generation, selection for agronomic and processing traits relevant to the industry was undertaken. Selection was based on plant and fruit characteristics such as plant architecture and height, shape and size of fruit, mature fruit color, and pungency, high yield, and disease resistance.

BRS Juruti has red fruits and yielded around 50 t ha⁻¹ (36,000 plants ha⁻¹). Fruit pungency is *circa* 260,000 SHU and fruits have high content of vitamin C (122 mg 100 g⁻¹). BRS Juruti has shown field resistance to several viruses, *Oidiopsis sicula*, *Meloidogyne javanica* and presents intermediate resistance to key bacterial diseases; and is highly uniform in comparison with the original population. Cultivar BRS Juruti is recommended for open field (specially adapted to the Central Region of Brazil), as well as greenhouse/screenhouse cultivation. BRS Juruti has been registered (RNC 32010) and protected (DOU 01/09/2015) in the *Brazilian Ministry of Agriculture, Livestock and Food Supply* (MAPA). Breeders' seed is being made available to interested parties in the private sector.

1. Introduction

The production of chile peppers in Brazil is of high social importance, and the integration between small farmers and the *Capsicum* processing industry is an important characteristic of this segment (Reifschneider, 2000; Ribeiro et al., 2008).

Habanero is one of the most popular pepper types within *Capsicum chinense* species and was originally grown on the Yucatan Peninsula of Mexico and in Belize (Bosland & Votava, 1999). In addition to the high pungency, fruits of habanero have a particular, fruity, apricotlike aroma and flavor (DeWitt & Bosland, 2009).

Habanero peppers (*C. chinense*) are beginning to be of interest to the Brazilian market; so far, no cultivars specifically adapted to Brazilian agroecosystems have been developed.

Domestic and international markets have been increasing the demand for this type of pepper, particularly in the United States of America and Europe, in the form of pepper paste or mash. Brazilian agroindustry is interested in supplying part of this demand with high quality products and competitive prices, and it needs well-adapted cultivars.

The *Capsicum* breeding program of Embrapa has concentrated efforts on the development of new, uniform, high yielding, high nutrition and disease resistant habanero-type cultivars. The main objective of this work was to develop a habanero-type cultivar adapted to the Central region of Brazil with high pungency, yield, and uniformity, to meet both the demands of both the market for fresh fruit and the processing agroindustry.



Figure 1: Ripe (red) fruits of BRS Juruti

2. Material and Methods

BRS Juruti was derived from segregating population CNPH 4159, which is part of the germplasm collection of *Capsicum* spp. maintained at Embrapa Vegetables.

Five generations of plant selection and selfing were performed until the progenies showed no segregation. During each generation, selection for agronomic and processing traits relevant to the industry was undertaken.

Selection was based on plant and fruit characteristics such as plant architecture and height, shape and size of fruit, mature fruit color, and pungency, high yield, and disease resistance.

3. Results and Discussion

BRS Juruti is a highly uniform cultivar in comparison with the original population. A typical BRS Juruti plant presents intermediate growth habit, and is around 90 cm high by 60 cm wide.

Its pods are lantern-shaped, the standard shape of habaneros, turn from light green to bright red when mature (Figure 1), 5.1 cm long by 4.2 cm wide and 1.9 mm in wall thickness.

The fruits of BRS Juruti are very hot with 260,000 SHU (Scoville Heat Unit) of total capsaicinoids (197,600 SHU of capsaicin, 59,800 SHU of dihydrocapsaicin and 2,600 SHU of norcapsaicin) and vitamin C content reaches 122 mg 100 g⁻¹ of fruit (Teodoro et al., 2013).

This cultivar showed field resistance to tospovirus Tomato Spotted Wilt Virus (TSWV) and to potyvirus causing Pepper Yellow Mosaic Virus (PepYMV) and Potato Virus Y (PVY); resistance to powdery mildew (*Oidiopsis sicula*) and to *Meloidogyne javanica*; and intermediate resistance to *Ralstonia solanacearum* biovar 1, *Xanthomonas euvesicatoria* and *X. gardneri*.

BRS Juruti was evaluated in several Brazilian states (SP, MG, GO and DF), demonstrating good adaptation, yielding 26 to 50 t ha⁻¹, depending on the spacing used and the region. In Central Brazil's growing conditions during the dry season, the harvest of ripe fruit begins around 90 days after transplanting, with yields around 50 t ha⁻¹ at the density of 36,000 plants ha⁻¹. The open pollinated cultivar BRS Juruti has had yields above the American hybrid 'Caro-Tex-312' (28.9 t ha⁻¹, 32,600 plants ha⁻¹) (Crosby et al., 2013).

The new cultivar has been registered (RNC 32010) and protected (DOU 20/05/2015) in the *Brazilian Ministry of Agriculture, Livestock and Food Supply* (MAPA); breeders' seed of this new cultivar is being made available to interested parties in the private sector.

BRS Juruti was developed to meet both the fresh fruit market and the processing industries, particularly for the production of hot pepper paste ("mash") and sauces, in addition to the potential use for the dehydration of whole fruit to obtain spicy paprika. Many gourmet products use habanero pepper for aggregating pungency, flavor and taste, such as in fruit jellies, flavored vinegars, and different kinds of seasoning powder, nuts, potato chips, cookies, cheeses and sausages.

4. Acknowledgements

The authors wish to thank CNPq (the Brazilian National Research and Development Council) and Sakura Nakaya Alimentos Ltda for their support.

References

- BOSLAND, PW; VOTAVA, EJ. 1999. *Peppers: Vegetable and spice Capsicums*. Wallingford: CABI Publishing, 204p.
- CROSBY, KM; FERY, RL; LESKOVAR, DI; BUTCHER, J. 'CaroTex-312', a high yielding, orange-fruited, Habanero-type, F₁ hybrid pepper. *HortScience* 48:1059-1061, 2013.
- DEWITT, D; BOSLAND, PW. 2009. *The complete chile pepper book*. Portland: Timber Press, 336p.
- REIFSCHNEIDER, FJB (Org.). 2000. *Capsicum: Pimentas e Pimentões no Brasil*. Brasília, DF: EMBRAPA Comunicação para Transferência de Tecnologia/ EMBRAPA Hortaliças. 133p.
- RIBEIRO, CSC; LOPES, CA; CARVALHO, SIC; HENZ, GP; REIFSCHNEIDER, FJB (Org.). 2008. *Pimentas Capsicum*. Brasília: Embrapa Hortaliças. 200p.

TEODORO, AFP; ALVES, RBN; RIBEIRO, LB; REIS, K; REIFSCHEIDER, FJB; FONSECA, MEN; SILVA, JP; AGOSTINI-COSTA, TS. Vitamin C content in habanero pepper accessions (*Capsicum chinense*). *Horticultura Brasileira* 31:59-62, 2013