Research Note

FURTHER EVALUATION OF BLIGHT-TOLERANT GENOTYPES OF TARO UNDER UPLAND CONDITIONS[1,2]

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J. Agric. Univ. P. R. 100(1):99-100 (2016)

Taro leaf blight is partially responsible for a significant reduction in the commercial production of taro (*Colocasia esculenta*) in Puerto Rico. This disease devastated wetland taro production and had a significant negative impact on the upland production system. The Agricultural Experiment Station of the University of Puerto Rico has made considerable efforts toward regaining local production of this crop. Recent efforts relate to improved drip irrigation and fertigation techniques for taro production under the upland system in semiarid areas. In this area the leaf blight pressure tends to be less.

Importing tolerant varieties was among initial strategies of the University of Puerto Rico to maintain taro production despite the blight; however, varietal substitution is usually not possible until validation processes demonstrate its appropriateness. Taro genotypes identified as having tolerance to leaf blight in Hawaii were imported into Puerto Rico and screened for susceptibility to the disease and for horticultural characteristics[5]. Evaluations show that Hawaiian genotypes had significantly more photosynthetic leaf area than that of traditional cultivars of Puerto Rico: Lila and Blanca. These genotypes were also more efficient in accumulating dry weight per unit of time during the cropping season and had better yield potential.

Among the genotypes imported from Hawaii, three were selected for further evaluation. This study was conducted to assess the stand, corm fresh weight and general sensory attributes of Hawaiian genotypes MP2, 19F and 2000-101 as compared to the local cultivars Lila and Blanca (checks). Field activities were conducted at the Gurabo Agricultural Substation in eastern central Puerto Rico. A humid climate characterizes this location. All genotypes were planted under upland conditions and drip irrigated. Each plot consisted of a bed 0.61 m wide and 9.14 m long containing 18 plants. Six replications were used. In the experimental area the soil was a Vertisols from the Mabí Series (Aquic Hapluderts) with a pH of 7.0 and 2.1% of organic matter. Each plant was individually side-dressed with 57 g of 12-5-10 fertilizer applied approximately at 60 and 120 days after planting. Weeds were controlled by a combination of herbicides and hoe weeding. No measures were taken to control the taro leaf blight. Harvest was at 222 days after planting and freshly harvested corms weighed immediately. A sample of two corms per

[1]Manuscript submitted to the Editorial Board 8 August 2015.

[2]This work was supported by the USDA National Institute of Food and Agriculture, Hatch project PR00416. Acc. No.0211516.

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[5]Ortiz, C.E., J.J. Cho and E. Rosa-Márquez, 2011. Performance of blight-tolerant genotypes of taro under upland conditions. *J. Agric. Univ. P. R.* 95:79-84.

TABLE 1.—*Stand, corm fresh weight and sensory attributes for taro genotypes and cultivars harvested 222 days after planting*[1].

Cultivar/ Genotype	Corm Fresh		Sensory attributes after boiling[1]		
	Stand %	Weight g/corm	Mouth feel Texture	Flesh Color	Acridity
Blanca	78b[2]	774a	Somewhat hard	White	Non-acrid
19F	93a	674a	Smooth with hard fibres	Purple	Non-acrid
2000-101	94a	507b	Smooth	Purple	Acrid
MP2	85ab	383c	Hard	Light purple	Non-acrid
Lila	90a	342c	Smooth	Purple	Non-acrid
LSD(005)	11	119			

[1]Characteristics were as compared to that of Lila.
[2]Within columns, means followed by the same letter are not significantly different at $P < 0.05$.

plot (500 to 700 g in weight) was cured for a week, then informally evaluated for appearance and sensory attributes after boiling (mouthfeel texture, color and acridity).

Pressure of the leaf blight was relatively high throughout the cropping season. Lila was significantly affected by the disease and, as a consequence, plants were stunted. Stand for Blanca (78%) was significantly lower than that of the majority of genotypes (Table 1). On the contrary, stand for the Hawaiian genotypes was 85% or more. Check Blanca and genotypes 19F and 2000-101 had the heaviest corms, all with average corm fresh weight over 500 g (Table 1). Although with good stand, MP2 and Lila had relatively light-weighed corms.

After boiling, flesh of genotypes 19F and 2000-101 was purple and light purple in color, similar to that of Lila, which was considered an acceptable attribute. Genotype 2000-101, however, was acrid to taste, an undesirable characteristic for consumption after boiling. Of the genotypes evaluated, 19F was the most desirable in terms of fresh corm weight and sensory attributes. Genotype 19F had a purple-fleshed corm with an average weight similar to that of Blanca (Table 1). Genetic background of 19F is (PH21 x [Red Moi x PH15]) x Maui Lehua, where PH21 and PH15 were the source of tolerance to the leaf blight. Therefore, we recommend the incorporation of Genotype 19F into breeding programs as a source of tolerance to the taro leaf blight.