'Florida Buttercrisp' Gorky Root-resistant Butterhead Lettuce

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Lettuce production in Florida is located primarily on large expanses of organic soil in the central and southern portion of the state. Disease resistance and environmental adaptability are very important considerations in the development of new cultivars for this area. At present, 'Orfeo' and 'Mantilia' are the most commonly grown butterhead lettuce cultivars. Small hectareage of 'Dark Green Boston' is grown during the winter months (December through February). While all perform well under a wide array of conditions, these cultivars are not adapted for production during periods when day temperature consistently exceeds 25C (October, November, April, and May) at the beginning and end of the Florida harvest period. In addition, all locally adapted butterhead cultivars are susceptible to corky root, caused by *Rhizomonas suberifaciens* van Bruggen, Jochimsen, and Brown (Datnoff and Nagata, 1990; van Bruggen, et al., 1990). Since the mid-1970s, corky root has been considered the most serious problem affecting lettuce yield and quality in Florida (Guzman, 1981). 'Florida Buttercrisp' is a high quality, corky root-resistant butterhead lettuce adapted to Florida's organic soils and is well suited for production when day and night temperatures consistently exceed 25 and 17C, respectively.

Origin

'Florida Buttercrisp' was derived from a

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cross between 'Montello' and 'Brazil-48' in 1980, followed by seven generations of pedigree selection. Two mass increases were conducted to produce breeder's seed. 'Florida Buttercrisp' was tested as line 70882 and is a sister line to 'Florida 202'.

Description

'Florida Buttercrisp', a brown-seeded, butterhead lettuce, is resistant to corky root and premature bolting and is tolerant to tipburn and lettuce mosaic virus (LMV). Corky-root resistance was derived from 'Montello', which confers a similar level of high resistance to 'Florida Buttercrisp'. On a scale for resistance where 1 = no symptoms, 9 = root disintegration, and 14 was considered resistant, 'Florida Buttercrisp' was rated 2.3, while the susceptible cultivars Dark Green Boston, Orfeo, and Mantilia were rated >7 (Table 1). External signs of bolting or stem elongation were not visible for at least 7 days past the optimum date of harvest. Incidence of tipburn in commercial field trials was normally 0% to 2% of heads harvested. However, 5% to 30% incidence of tipburn was observed when N sidedressing exceeded 27.7 kg·ha⁻¹ (South Bay Growers, South Bay, Fla., personal communication).

In a controlled inoculation test using aphid transmission of LMV, the virus was detected in six of 30 'Florida Buttercrisp' plants, as compared to 21 of 30 for the susceptible control, 'South Bay', and 0 of 30 for resistant 'Tall Guzman'. Enzyme-linked immunosorbent assay (ELISA) testing indicated that LMV, when detected in 'Florida Buttercrisp', was at very low titer in comparison to the titer of 'South Bay'. 'Florida Buttercrisp' is susceptible to a strain of downy mildew, *Bremia lactucae* Regal, that resembles California Pathotype IV, mating type B (Schettini et al., 1990). 'Florida Buttercrisp' can be grown during fall, winter, and spring in southern Florida. However, production during winter months should be avoided unless appropriate control measures for downy mildew are instituted.

Depending on environmental conditions, 'Florida Buttercrisp' matures within 55 to 60 days after sowing. The external foliage is an attractive dull-green, similar to that of 'Dark Green Boston'. The leaves feel thicker than those of other butterhead cultivars and are more durable. Growers credit this characteristic for reducing damage incurred during harvest and postharvest handling and the paucity of complaints from produce buyers (area farmers, personal communication). Leaves are neatly folded inward, forming a large, well-shaped head usually weighing 300 to 360 g. Heads of up to 450 g can be harvested under favorable conditions. The internal appearance of the head is desirable, especially its buttery-yellow shade. The butt or basal end is light green to white and attractive, with neatly overlapping leaves that are seldom ribby. 'Florida Buttercrisp' lacks the basal suckers commonly associated with 'Orfeo' and 'Mantilia'. The palatability of 'Florida Buttercrisp' was considered excellent by growers involved in the production evaluation of this line. Although this judgment has not been confirmed by a taste panel,

Table 1. Comparison of head weight and corky-root resistance of 'Florida Buttercrisp' to three standard butterhead lettuce cultivars grown in south Florida.

Cultivar	Head wt (g)	Corky root ^a	
		Symptom intensity	Incidence (%)
Dark Green Boston	285 b	7.2 a	70 a
Florida Buttercrisp	310 bc	2.4 b	13 b
Mantilia	255 a	---	---
Orfeo	306 bc	7.8 a	73 a

^aMean separation by Fisher's LSD (P ≤ 0.05).

^bSymptom intensity rating: 1 = no symptoms on the taproot to 9 = partial disintegration of the taproot. A rating of ≤4 is considered resistant. Severity is percentage of taproot exhibiting corky root symptoms.

the comments are probably related to the fact that, unlike most butterhead lettuces, this cultivar does not have an oily or slippery texture, hence the name 'Buttercrisp'.

Seed Availability

For information on seed availability, write to Florida Foundation Seed Producers, P.O. Box 308, Greenwood, FL 32443. Seed stock

was produced in California and was indexed at 0/30,000 infected seeds for lettuce mosaic virus.

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