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Florida 1974, Cos-type Lettuce Breeding Line¹

V. L. Guzman and T. A. Zitter²

University of Florida, Agricultural Research and Education Center, Belle Glade, FL 33430

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Florida 1974, a cos-type lettuce, has achieved some of the goals of our lettuce breeding program. It is homozygous for resistance to lettuce mosaic virus (LMV) and bidens mottle virus (BMoV) and is released primarily for breeding purposes.

Lettuce mosaic is a serious virus disease affecting all types of lettuce grown in south Florida. It is seed-borne and is transmitted by several species of aphids, most notably the green peach aphid, *Myzus persicae* (Sulz). Under favorable conditions virus spread is rapid, resulting in complete crop loss. Bidens mottle, the next most serious virus disease in Florida, is not seed-borne but is carried in several weed hosts that serve as the primary source of inoculum. It is also transmitted by aphids. Control of aphids by pesticides has not proved to be effective in preventing virus spread. Transferring virus resistance into commercial cultivars is the most direct method for controlling these diseases and at the same time reducing pesticide usage for aphid control.

Origin

Resistance to LMV came from M464, derived from 68288 (LMV resistant line from Spain) × 'Great Lakes 65' F₂. This line was obtained from E. J. Ryder, USDA, Salinas in 1971. Resistance to BMoV was derived from 'Valmaine' a cos cultivar (1, 2). Florida 1974 originated in 1971 when several plants with a cos-like phenotype were selected for LMV tolerance from the segregating material in the field. In order to modify the leaf texture and growth habit, the

cross M464 × 'Valmaine' was made. Additional plant selections were made for head formation, uniformity, and LMV and BMoV resistance, under field conditions when 'Valmaine' was totally infected by LMV. Laboratory inoculations by aphid transfers were also used to test for resistance to the viruses. While indexing these crosses for freedom from LMV it was found that BMoV was likewise not recovered. Subsequent studies showed that 'Valmaine' is resistant to BMoV and this resistance is conferred by a single recessive gene (*bibi*) (Zitter and Guzman, unpublished). However, while studying BMoV under greenhouse conditions, a new isolate of BMoV was detected (3). This isolate can infect 'Valmaine' and other lines derived from 'Valmaine' including Florida 1974. So far this virus has only been observed in the greenhouse, and it is not known to what extent it occurs in nature. Preliminary tests indicate that neither LMV nor BMoV is seed-borne in Florida 1974.

Description

Florida 1974 is white-seeded and produces abundant seeds. It is less susceptible to thermodormancy than 'Valmaine' and germinates better in early fall. Plants are vigorous, but smaller than 'Valmaine', have narrow, soft and smooth leaves that at maturity form an erect well-folded head (Fig. 1). The delicate leaves are more susceptible to wind damage than those of 'Valmaine'. Eating quality of the light yellow-green interior leaves is excellent. Their upright growth habit makes them very adaptable to close planting (25–30 cm in 30 cm rows and in 90 cm beds center to center). Fertilizer requirements are similar to those of the cos cultivars. Florida 1974 responds well to nitrate topdressing during cold or rainy conditions. Fresh market maturity is attained in 64 and 70 days when direct-



Fig. 1. Florida 1974 cos-type lettuce.

seeded in the organic soils of south Florida in spring and winter, respectively. In hot weather Florida 1974 bolts about 4 days earlier than 'Valmaine'.

Florida 1974 is not suitable for Florida's trade, which is accustomed to the open habit of growth and tough leaves of the cultivar 'Valmaine'. Therefore, it is released as genetic stock for use in breeding programs when resistance to LMV and BMoV are desired. However, Florida 1974 is unique in carrying 2 single recessive genes for resistance to LMV and BMoV, and while the smooth narrow leaf appearance is not desired by the south Florida growers, it could be grown in home gardens or commercially elsewhere. Because Florida 1974 was selected for south Florida organic soils, its adaptation to other areas needs to be tested.

Availability

Seeds of Florida 1974 are available from Florida Foundation Seed Producers, Inc., P.O. Box 14006, Gainesville, FL 32611.

Literature Cited

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²Professor of Vegetable Crops and Associate
Professor of Plant Pathology.