

Survey of Wild *Ipomoea* spp. as Potential Reservoirs of Sweet Potato Feathery Mottle Virus in Louisiana

C. A. CLARK, K. S. DERRICK, C. S. PACE, and B. WATSON, Department of Plant Pathology and Crop Physiology, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center, Baton Rouge 70803-1720

ABSTRACT

Clark, C. A., Derrick, K. S., Pace, C. S., and Watson, B. 1986. Survey of wild *Ipomoea* spp. as potential reservoirs of sweet potato feathery mottle virus in Louisiana. *Plant Disease* 70:931-932.

The growth habit and incidence of infection by sweet potato feathery mottle virus (FMV) of commonly occurring species of *Ipomoea* were monitored from March through June for three successive years. Seedlings and perennial plants of *I. trichocarpa* were observed each year. FMV was detected in perennial plants soon after emergence in March to April. *I. pandurata* was exclusively perennial in habit and was not a host for FMV, because the virus was not detected in plants from field collections or after graft inoculation with several different strains of FMV. *I. hederacea* and *I. wrightii* occurred only as annuals. FMV was not detected in either species until 2 mo after seedling emergence. Because infected *I. trichocarpa* plants are present throughout the sweet potato growing season, they may be an important perennial reservoir of FMV in Louisiana.

Sweet potato (*Ipomoea batatas* (L.) Lam.) is vegetatively propagated and is almost universally infected with sweet potato feathery mottle virus (FMV). As a result, there has been considerable interest in developing programs to eliminate FMV from propagating material. However, there is a lack of information on the potential for reinfection of virus-indexed sweet potatoes in the field. The host range of FMV, a potyvirus, is limited, with a few exceptions, to plants in the family Convolvulaceae (6). Several of the susceptible plants in this family are commonly found as weeds in cultivated fields, hedge rows, or ditch banks near sweet potato plant beds or fields. This study was conducted to determine if wild *Ipomoea* spp. are potential sources of inoculum for infection of sweet potato in Louisiana. A preliminary report has been published (1).

MATERIALS AND METHODS

During late summer 1980, 12 sites in Baton Rouge with naturally occurring stands of various *Ipomoea* spp. were selected for study on the basis of the presence of FMV-infected plants. All 12 sites were in an area about 0.5 mi. in radius on ditch banks or in hedge rows not subjected to cultivation. *I. trichocarpa* Ell. (cotton morning glory), *I. hederacea* Jacq. (ivy-leaf morning glory), and *I. wrightii* (Wall.) Choisy (palm-leaf

morning glory) were present at 10 of the 12 sites; *I. hederifolia* L., *I. lacunosa* L. (pitted morning glory), and *I. pandurata* (L.) G. F. W. Mey (big-root morning glory) were present at only one site. During 1981, 1982, and 1983, each site was examined at 1- to 2-wk intervals from the beginning of March to the end of June. The occurrence of true seedlings, perennial growth, stage of plant development, and incidence of FMV symptoms were recorded. Leaves were collected from plants with and without symptoms and were assayed for FMV by serologically specific electron microscopy (SSEM) (2) using antiserum to the common strain of FMV provided by J. W. Moyer, North Carolina State University.

One perennial, *I. pandurata* (3), occurs in widely scattered locations and as a result was not adequately represented in this survey. Therefore, this species was collected from different locations and established by propagation from fleshy root pieces in the greenhouse for further study. Each collection was assayed for FMV by approach grafting to *I. setosa* Kerr, a commonly used FMV indicator plant (6). In a separate experiment, *I. nil* 'Scarlett O'Hara' infected with FMV was

wedge-grafted into the *I. setosa* stock, and after symptoms appeared on new growth of the *I. setosa*, leaves of the *I. setosa* stock and *I. pandurata* scion were assayed by SSEM for FMV.

RESULTS

Both seedlings and perennial growth of *I. trichocarpa* were observed in each of the 3 yr of this study. Seedlings first appeared in early March to early April but did not show FMV symptoms for several weeks after emergence (Table 1). Perennial growth of *I. trichocarpa* first appeared 1-2 wk after seedling emergence, and FMV symptoms were evident 1-2 wk later. FMV symptoms in perennial growth included chlorotic spotting and mild chlorotic veinbanding (CVB). Symptoms in seedlings included chlorotic spotting, severe CVB, leaf distortion (LD), and stunting.

I. hederacea and *I. wrightii* grew exclusively as annuals, with seedlings appearing at the same time as observed for *I. trichocarpa*. FMV symptoms, however, did not appear until June, when mild CVB developed on *I. wrightii* and CVB and LD developed on *I. hederacea*. FMV was not detected in symptomless leaves except in instances where symptoms developed immediately after assaying. *I. hederifolia* and *I. lacunosa* were not sufficiently represented in the sites surveyed to make definitive observations regarding their status as hosts of FMV, but they were only observed to grow as annuals as has been previously reported (3).

I. pandurata did not produce true seed but grew exclusively as a perennial both at the site in Baton Rouge where it was routinely monitored and at the four other locations from which it was collected (Table 1). FMV was not detected in plants

Table 1. Dates of first recorded observation of true seedling emergence, perennial growth, and feathery mottle virus (FMV) symptoms (confirmed by positive SSEM assay) for *Ipomoea* spp. observed at 12 sites in Baton Rouge, LA, for the years 1981-1983

Species	Date first observed								
	True seedlings			Perennial growth			FMV symptoms ^a		
	1981	1982	1983	1981	1982	1982	1981	1982	1983
<i>I. hederacea</i>	5 Apr.	15 Mar.	11 Mar.	NO ^b	NO	NO	17 Jun.	8 Jun.	NO
<i>I. pandurata</i>	NO	NO	NO	7 Jul.	1 Apr.	11 Apr.	NO	NO	NO
<i>I. trichocarpa</i>	5 Apr.	2 Mar.	11 Mar.	8 Apr.	15 Mar.	10 Apr.	15 Apr. ^c	26 Mar. ^c	28 Apr. ^c
<i>I. wrightii</i>	5 Apr.	23 Mar.	11 Mar.	NO	NO	NO	17 Jun.	8 Jun.	18 May

^a Confirmed by positive SSEM assay to FMV-common strain antiserum.

^b NO = not observed.

^c Date symptoms were first observed on perennial growth.

Accepted for publication 4 May 1986 (submitted for electronic processing).

The publication costs of this article were defrayed in part by page charge payment. This article must therefore be hereby marked "advertisement" in accordance with 18 U.S.C. § 1734 solely to indicate this fact.

