Bacterial Blight of Saintpaulia ionantha 
Caused by Erwinia chrysanthemi 

J. F. Knauss and J. W. Miller 

Assistant Professor of Plant Pathology, University of 
Florida, Agricultural Research Center, Apopka 32703; 
and Plant Pathologist, Florida Department of 
Agriculture and Consumer Services, Division of Plant 
Industry, Gainesville 32602, respectively. 

Florida Journal Series Paper No. 5243 of the Institute 
of Food and Agricultural Sciences. 

Contribution No. 362, Bureau of Plant Pathology, 
Division of Plant Industry. 

ABSTRACT 

A severe blight of the crown, petioles, and leaves of 
Saintpaulia ionantha (African violet), was found to be caused by 
Erwinia chrysanthemi. The pathogen was isolated from diseased 
petioles and leaves. Inoculations of leaf cuttings with leaf and 
petiole isolates produced symptoms typical of the disease. 
Erwinia chrysanthemi was reisolated consistently from the 
inoculated cuttings. Physiopathology 64:1046-1047. 

Additional key words: African violet, ornamental plants, 
flowering plants. 

A severe disease which limited the production of 
certain cultivars of the "Diana-type" African violet, 
Saintpaulia ionantha Wendl., was noted in a commercial 
greenhouse range in Florida during 1972. Infection of 
cuttings and potted plants was noted throughout the year, 
but was most severe during the warm months. Early 
symptoms usually appear as a brown-to-black root and crown rot. Although isolated leaf spots were noted, leaf 
infection usually occurred by progression of the rot 
through the petioles from infected crowns and roots. 
Infected petioles and leaves turned a greasy brown to 
black. Wilt and collapse of plants was common. 
Isolations from diseased plants of Englert's cultivar D108 
revealed the presence of Phytophthora nicotianae var. 
parasitica, (Dast.) Waterh., which was then considered to 
be the only cause of the problem. Recently, P. nicotianae 
var. parasitica was reported in Germany (3) as an 
important pathogen of African violet. Both cultural and 
chemical measures taken to control P. nicotianae var. 
parasitica in this Florida commercial greenhouse 
operation decreased the problem, but did not eliminate it. 
Subsequent isolations from diseased plants rarely 
revealed the presence of P. nicotianae var. parasitica, but 
consistently yielded a bacterium. The bacterium 
produced a white colony, was gram-negative and had 
peritrichous flagella, which are characteristics of the 
genus Erwinia. Stem inoculations were made on 
Chrysanthemum morifolium (Ramat.) Hensl. 'Iceberg' 
using toothpicks soaked in bacterial suspensions. 
Production of typical bacterial blight symptoms (2) 
identified this organism as E. chrysanthemi Burkholder et al. 

Eleven cultures of E. chrysanthemi, each isolated from 
either leaf or petiole tissue from a separate naturally-
infeeted plant of cultivar D108, were tested for 
pathogenicity to unrooted leaf cuttings of D108. Four 
pots, each containing an unrooted cutting planted in a 
steam sterilized potting mix, were employed for each 
treatment. Inoculum for each isolate was prepared by 
transferring a loopful of a 24-h-old culture grown at 30 C 
on Lima bean agar (Difco) to 10 ml of autoclaved yeast 
extract-dextrose broth (10 g each/liter) contained in a 25 
X 95-mm shell vial. Five toothpicks previously boiled 
in distilled water, were included in each tube prior to 
autoclaving. The vials were placed on a reciprocating 
shaker at room temp (25 ± 1 C). After 4 h incubation, the 
cultures were turbid and ready for use. 

Potted leaf cuttings were placed under intermittent 
mist (15 sec, every 15 min) for 2 h prior to inoculation. 
Inoculation was effected by employing a flamed forceps 
and inserting the infested toothpick into the upper leaf 
surface and down into the petiole. Control pots were 
handled identically except the cuttings were stuck with 
toothpicks soaked in sterile yeast extract-dextrose broth. 
After inoculation, all leaf cuttings were submitted to 
intermittent mist (15 sec, every 15 min) for 12 h each day 
during the entire test period. 

Fig. 1. Unrooted leaf cuttings 1 day after inoculation with 
toothpick infested with sterile yeast extract-dextrose broth (left) 
and with toothpick infested with 4-h-old yeast extract-dextrose broth 
culture of Erwinia chrysanthemi (right).
Symptoms were noted as early as 12 h after inoculation. The decay, which had a black, greasy appearance developed rapidly from the point of inoculation into the leaf laminae. Two days after inoculation, the petioles of all cuttings inoculated with all tested isolates of *E. chrysanthemi* were soft, brownish-black in color and separated easily from the laminae. The foliage of all inoculated cuttings were 50-75% rotted (Fig. 1), while the laminae and petioles of all control cuttings remained healthy. Twenty-two leaves (two/isolate tested), were selected for reisolation of *E. chrysanthemi*. Fifteen of 22 were positive for *E. chrysanthemi* employing the identification criteria stated above previously.

*Erwinia chrysanthemi* is an important pathogen of many ornamental crops (1). *Saintpaulia ionantha*, the florist's African violet, now must be added to the growing list of hosts for this destructive phytopathogen.

**LITERATURE CITED**