

Phenotypes of Common Crupina (*Crupina vulgaris*), Synchronization of Bolting, and Yield Effects of Leaf Removal and Inoculation by *Ramularia crupinae*

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Abstract

Common crupina (*Crupina vulgaris* Cass.) is an annual plant of major importance in the Western United States. There are two varieties of crupina, *i.e.*, var. *vulgaris* and var. *brachypappa*, that occur in North America. Only by artificial plant vernalization, is it possible to synchronize bolting between varieties for comparative studies. Successful vernalization was achieved in this study by germinating seeds and growing transplants at 10°C with an 8 hr photoperiod for a minimum of one month. Typical plant phenological development, *i.e.*, seedling, rosette, bolt, bud, flowering, and seed stages, results for both varieties. Use of this protocol has enabled comparative studies on susceptibility of both varieties at the same time. Because crupina reproduces only by seed, an attempt was made to determine which plant part (or parts) provides photosynthate for seed fill. If such can be identified, then climatic conditions that occur at that stage of growth can be estimated and used to determine if conditions would be favorable for disease when the plant is most vulnerable. Either selected leaf removal or inoculation of various plant parts (or growth stages) by *Ramularia crupinae* Dianese, Hasan & Sobhian was used in these tests. Clear evidence of the importance of cauline leaves was found in two leaf removal experiments. Although reductions in seed yield and other parameters resulted from inoculations with *R. crupinae*, the importance of plant part was less clear than in the detached-leaf experiments. One reason for this difference is that symptom development under greenhouse conditions requires from 10 days to 2 weeks, so effects from infection of crupina on yield parameters may be manifested at a slower rate than when leaves are detached. Although *R. crupinae* was damaging and caused seed yield loss in these studies, more profound effects may result from inoculations, either at earlier stages of plant development or after multiple inoculations.