Effects of Inbreeding on Various Agronomic Traits in Du Puits Alfalfa

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Du Puits alfalfa, *Medicago sativa*, is a variety developed in France from Ormelong, a vigorous, early flowering strain of Flemish type. It was introduced into this country relatively recently and has gained considerable attention because of its rapid rate of regrowth after cutting and its high total yield of forage. Its limitations include a mediocre level of winterhardiness and susceptibility to bacterial wilt and diseases of the blackstem complex.

European workers have reported that Du Puits produces an additional cutting each season, as compared with most other varieties. Yields of Du Puits in Iowa often have been comparable to those of such varieties as Vernal and Ranger and occasionally have been higher during the first two years of production.

In this study the effects of inbreeding Du Puits were investigated—specifically, effects on self-fertility, growth habit, apparent leaf disease, crown size, foliage color, winter survival, and forage yield.

LITERATURE REVIEW

Self-fertility of alfalfa varies from nearly complete incompatibility to almost complete fertility, as has been shown by Bolton (1), Dean (3), McAllister (6), Wilsie (8), and others. Under greenhouse conditions in Iowa in the winter, noninbred plants have averaged approximately 0.7 seed set per flower tripped when artificially self-pollinated. Inbreeding has resulted in a drastic loss in self-fertility.

Greenhouse studies by Wilsie and Skory (10) and Wilsie (9) demonstrated a characteristic pattern of decline in seed setting through selfing *S₀*, *S₁*, and *S₂* generations, with a loss in self-fertility of 80 to 90% from the *S₀* to the *S₄* generation.

Effects of inbreeding on vegetative vigor have been studied by Kirk (4), Bolton (1), Lepper and Odlund (5), Tysdal et al. (7), and others. In general, losses in vigor and flowering strain of Flemish type. It was introduced into this country relatively recently and has gained considerable attention because of its rapid rate of regrowth after cutting and its high total yield of forage. Its limitations include a mediocre level of winterhardiness and susceptibility to bacterial wilt and diseases of the blackstem complex.

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