INHERITANCE OF GROWTH HABIT, COTYLEDON COLOR, AND CUP-LEAF IN MELILOTUS ALBA

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SINCE improvement of sweetclover is of relatively recent origin, only limited studies have been made on the inheritance of its characteristics. In addition to contributing to breeding, the genetics of sweetclover is of value for making determinations on the isolation requirements for maintaining the purity of improved varieties. In this paper the inheritance of three characters, namely, growth habit, cotyledon color, and cup-leaf, is discussed.

GROWTH HABIT

Considerable interest has been focused upon the inheritance of growth habit in biennial white blossom sweetclover since the Alpha type was first described, particularly because of the forage value of leafy, fine-stemmed types. The Alpha variety is short-growing and has fine stems and a high proportion of leaves to stems. Stevenson (6) has used the term “dwarf branching” to describe this type. Kirk (5) and Stevenson (6) have studied the inheritance of the Alpha type and found it to be a simple recessive to the common growth type with the F₂ generation giving a close fit to a 3:1 ratio. Clarke (1) studied the inheritance of a similar low-growing type which he termed “dwarf-bunch.” The dwarf-bunch also behaves as a simple recessive to the common growth type. In the cross Alpha × dwarf-bunch, the F₁ was of the common growth type. The F₂ segregation was interpreted as a 9:6:1 ratio in which the double recessive was lethal, thus giving nine tall to six dwarf-type plants. The two recessive genes involved were named bunched dwarf (bd) and spreading dwarf (sd), respectively.

Two other leafy, short, fine-stemmed types have been grown in the Urbana nursery. These are F. C. 13074 and a segregate from F.P.I. 89911. F. C. 13074 was obtained from Matthew Powlds, South Dakota State College, Brookings, S. D. F.P.I. 89911 was introduced from Spain by the U. S. Dept. of Agriculture. One plant of F.P.I. 89911, selected in the summer of 1937, produced common and small type plants in the first selfed generation progeny. Although both of these low-growing types differ somewhat from the Alpha type, yet,