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## The Anatomy of the Crowns and Roots of the Annual and Biennial White Sweet Clover Compared

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THE EFFECT OF PHYSICAL FACTORS ON THE  
DEVELOPMENT OF WOODLAND AND  
PRAIRIE ASSOCIATIONS IN IOWA

J. M. AIKMAN

The physical factors within the transition zone between the typical prairie association of the state and the deciduous forest communities occurring along the Des Moines River have been studied. The conditions for plant growth at the source of the river in northwestern Iowa have also been compared with those near the mouth of the river in southeastern Iowa. The purpose of this paper is to report the effect of the modification of factors on the distribution and grouping of woodland species and on the general reactions of the communities to the varying habitat factors.

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THE ANATOMY OF THE CROWNS AND ROOTS OF  
THE ANNUAL AND BIENNIAL WHITE SWEET  
CLOVER COMPARED

J. N. MARTIN

In case of the annual, all structures die at the end of first season's growth. In the biennial only the aerial shoot dies at end of first season's growth. The root and the crown of the biennial prepare, during the first season, for the second season's growth which consists chiefly in the development and fruiting of the flowering shoots that are present on the crown but held in check during first season's growth.

The flowering shoots develop early in the seedling stage in the axils of the cotyledons in both annual and biennial, but in the annual they are not permitted to develop beyond a rudimentary stage. The annual has transferred the flowering function to the first year aerial shoot and suppressed the second year aerial shoot.

In preparation for the second season's growth the root and crown of the biennial develop much cortex and other storage tissues characterized by thin cellulose walls. During the second

season the root and crown undergo marked changes in development of conductive tissues and lignification of cell walls. In the annual, the root and crown develop very little storage tissues and most tissues are lignified.

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## EUROPEAN BINDWEED IN IOWA

A. L. BAKKE

The European Bindweed, Creeping Jennie, *Convolvulus arvensis*, the worst perennial weed of California, Kansas, and Colorado, is now quite common in the northwestern part of the state. This species has a rather fine, deeply penetrating root system, which after a time forms a dense underground network of roots. The flowers and leaves are only about one-half the size of the native species, *C. sepium*. The plant is exceedingly hard to eradicate through cultural methods. The most effective procedure to destroy this weed is, in all probability, to spray it with herbicides like sodium chlorate.

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