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Response of the Genus *Rhamnus* to *Puccinia coronata* Corda

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SPECIES CROSSES IN THE GENUS CUCURBITA

EDWARD F. CASTETTER

Various attempts were made to cross different varieties belonging to three species. Successful crosses have been made as follows: (1) Hubbard Squash (*C. maxima*) as the pistillate parent x Common Field Pumpkin (*C. pepo*). Viable seeds which produced vigorous fertile F1 plants were secured from this cross. The reciprocal cross produced normal fruits, but no fertile seeds. (2) Hubbard Squash (*C. maxima*) as the pistillate parent x Large Cheese Pumpkin (*C. moschata*) produced fruits which contained no fertile seeds, although otherwise normal. (3) Scalloped Squash (*C. pepo*) as the pistillate parent x Large Cheese Pumpkin (*C. moschata*) produced fruits containing no fertile seeds, although otherwise normal. (4) Bush Crookneck Squash (*C. pepo*) as the pistillate parent x Scalloped Squash (*C. pepo*) produced many fertile seeds. In the last three cases mentioned no reciprocal crosses were made. In the last three cases mentioned all back crosses produced fertile seed.

COMPARATIVE ANATOMY OF HUBAM AND BIENNIAL SWEET CLOVER

ALICE M. CROZIER

Comparative study of the anatomy of the roots, leaves, of one and two-year-old plants leaf petioles, and the flower stalks of both varieties of sweet clover.

RESPONSE OF THE GENUS RHAMNUS TO PUCCINIA CORONATA CORDA

S. M. DIETZ

All of the several species and varieties of *Rhamnus* exposed to infection with *Puccinia coronata* Corda show some degree of infection with some form of crown rust. Eleven species of *Rhamnus* produced aecidiospores which were able to infect oats, from teleutospores developed on oats. Of the susceptible buckthorn species, only *Rhamnus cathartica*, *R. lanceolata* and *R. alnifolia*

occur in Iowa. The former is a cultivated species imported from Europe, that has escaped from cultivation in many places. *Rhamnus lanceolata* is commonly found along the small streams and shaded dry runs throughout the southern half of this state and as far north as Sioux City on the Missouri river and McGregor on the Mississippi. *Rhamnus alnifolia* is confined to a few counties in extreme northeastern Iowa.

Rhamnus frangula and *R. dahurica*, both indigenous to Northern Asia and thus able to endure cold, are very resistant to crown rust. Both flourish under Iowa conditions and could well replace *R. cathartica* as an ornamental shrub. *Rhamnus dahurica* retains the purplish-black fruits until late in the spring, a fact which makes it desirable for landscape gardening.

BREEDING OATS RESISTANT TO PUCCINIA GRAMINIS AVENAE

S. M. DIETZ

A test of some three hundred oat varieties showed some susceptible and some resistant to *Puccinia graminis avenae*. A study of the inheritance of resistance has been made by determining the response of hybrids of resistant x susceptible varieties. In this study, Iowa 105 was found to possess a marked resistance in addition to maturing early and thus escaping stem rust. Green Russian and Raukura were both resistant. The F_1 generation of Iowa 105 x Green Russian was resistant. The F_2 generation gave a wide ratio of several hundred resistant plants to one susceptible. In the F_3 progeny test the susceptible F_2 plants bred true for susceptibility, while numerous progenies from the resistant F_2 plants, segregated into resistant and susceptible plants. Such a wide ratio exists in the F_2 generation it is impossible to determine the true factorial basis of inheritance without further work. It is probable, however, that several factors are responsible for the inheritance of resistance to stem rust of oats. These data were further confirmed by the Raukura x Green Russian crosses.

CERTAIN FEATURES OF THE VEGETATION IN KANSAS SAND HILLS

FRED W. EMERSON

A consideration of some ecological factors influencing the stabilizing of these dune areas located in central Kansas. Heavy