

(5) Breeding and selection for:

- (a) Higher seed producing types. (The possibilities here appear limited in view of the large importance of pollinating insects).
- (b) Selecting strains of alfalfa more attractive to bees as a source of pollen or nectar.
- (c) Selecting strains that trip easier, insuring that a larger proportion of the flowers visited by pollinating insects will be tripped.
- (d) Develop self tripping strains of alfalfa which also are highly self fertile. (At present improvements in this direction do not look especially hopeful).

For the alfalfa seed grower the suggestions under numbers 1 to 4 offer most immediate promise. Varieties of alfalfa available and suitable for growing in North Dakota do not differ appreciably in seed production. Winter hardiness is an important requisite. Winter hardy varieties, in addition to northern grown Grimm, include Cossack, Ladak and Ranger. Ladak has shown ability to maintain its stand under drought conditions better than Grimm or Cossack. Ladak also has some resistance to bacterial blight, a wilt disease of alfalfa. Ranger, a new variety bred for wilt resistance and winter hardiness, is one of the preferred varieties for the central states and other areas where this disease of alfalfa may be serious. Losses in stand from bacterial wilt are less common here than in areas of relatively higher rainfall.

USE OF FERTILIZERS

In a recent address before the annual convention of the American Plant Food Council, Dr. R. M. Salter, Chief of the Bureau of Plant Industry, Soils, and Agricultural Engineering, U. S. Department of Agriculture, said that the victory the farmers of the United States have won on the "food and fibre front" has been due to seven factors, namely: (1) some 30 years of breeding better plants; (2) improved methods of soil management including the use of fertilizer; (3) the development of the U. S. domestic synthetic ammonia industry; (4) the manufacture of ammonium nitrate on a large scale; (5) new ways of preparing other fertilizing elements for use; (6) the development of domestic potash deposits; and (7) increasing the plant food content of fertilizer mixtures.

As better plants, capable of higher yields are made by the plant breeder, the consumption of the elements of plant food will increase and the demand for fertilizers correspondingly increase. Just as plant breeding increases the draft on the soil for elements of fertility so too do better tillage and irrigation to the extent that they increase yields. (H.L.W.)