community was likewise avoided. Furthermore, it was hoped that by controlling pollination in this way for two seed generations, a limited amount of gene recombination might be permitted.

Selection of a large number of heads was made from each strain in the fall of the second seed generation. The heads were threshed separately, and the seed production, color, and quality were noted. The most desirable heads were then used in further selection.

The seed of each head from the five strains was propagated in the greenhouse and transplanted in a well isolated field nursery, using 24 inch rows with plants 18 inches apart in the row. The number of plants per head was limited, in order to use the maximum number of heads. Each plant was scrutinized during its life cycle to evaluate its potential possibilities. Just prior to anthesis the superior plants were chosen; all others were destroyed. The superior plants were permitted to cross pollinate without restriction. In this way, it was hoped to maintain and increase plant vigor. The seed of each plant was harvested, threshed, and observed for production and quality. This information, together with notes taken on the plant characters, was used as a basis for choosing the most desirable selections for further tests.

Each chosen selection was then subjected to comparative field tests. Data were taken on hay, aftermath, and seed produced, together with evidence of resistance to cold, drought, and incidence of diseases, especially northern anthracnose. Because of the limitations imposed by satisfactory isolation only the selections from the Ohio Strain, F.C. 15808, were fully tested. All others were temporarily stored. From these tests, three superior selections combining high resistance to the northern clover anthracnose were retained (Figs. 1, 2, and 3). These three were permitted to interpollinate. They have been consolidated into one strain by mixing the seed and growing it as one strain. It should be pointed out that in multiplying the seed of this strain an effort has been made to remove all undesirable plants before blossoming.

This new strain has shown superior performance in hay, aftermath, and seed production in tests at Lafayette, Ind. It has also shown a high level of resistance to northern clover anthracnose, with some resistance also to mildew. A small quantity of seed has been multiplied and will be available for experimental testing over the region in 1951. Hence by 1953 sufficient data may be available to decide whether or not this strain should be released. In the meantime, a small sample of seed is available to clover breeders who may wish to use it as breeding material.—GERARD H. CUTLER, Plant Breeder, Agronomy Department, Agricultural Experiment Station, Purdue University, Lafayette, Ind.

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Figs. 1, 2, and 3.—Three component red clover selections shown here combine high resistance to northern clover anthracnose. The three were consolidated into the new synthetic.

ROOT BRANCHING OF ALFALFA VARIETIES AND STRAINS

The growth of the primary root of alfalfa is generally characterized by a remarkable degree of dominance as compared with that of the branch roots which arise from it. However, differences in the number and size of such branches occur between individual plants of a variety and between varieties. It is likely that such differences have an important bearing on the adaptability of alfalfa varieties with respect to the capacity of seedling and older plants to escape drought, the ability of the roots to absorb nutrients from the surface soil, and the resistance of a variety to heaving during periods of freezing and thawing.

Alfalfa varieties are usually appraised in terms of their resistance to northern clover anthracnose, with some resistance also to mildew. A small quantity of seed has been multiplied and will be available for experimental testing over the region in 1951. Hence by 1953 sufficient data may be available to decide whether or not this strain should be released. In the meantime, a small sample of seed is available to clover breeders who may wish to use it as breeding material.—GERARD H. CUTLER, Plant Breeder, Agronomy Department, Agricultural Experiment Station, Purdue University, Lafayette, Ind.