

STATUS OF THE CREEPING ALFALFA BREEDING PROJECT

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The objective of the alfalfa improvement program at the Kentucky Agricultural Experiment Station is to transfer by breeding the creeping habit from a Canadian variety, Rambler, to vigorous Kentucky recommended alfalfa varieties.

Present alfalfa varieties in use in Kentucky, Certified, Narragansett, Atlantic, Ranger, Buffalo, Vernal, Williamsburg, and DuPuits are well adapted for use as hay, but under grazing condition are rapidly depleted in stand. The incorporation of the creeping-rooted habit into these varieties should be expected to lengthen the life of the stand under grazing, in mixtures with grasses, and to provide high yields. No available alfalfa variety will fill all these needs in Kentucky. Other benefits from the program include the possibility that the spreading-crown plants will be more resistant to heaving in low areas or in areas where a hard pan is close to the surface. It also may provide hay types which will be much longer lived due to the continuous production of new plants.

Description of The Creeping-Root Characteristic

Plants which possess this potentiality may be expected to develop lateral roots about 6 to 8 inches below the ground surface. This lateral root may be only 1/8 to 1/4 inch in diameter but usually in the second year of growth will develop slight enlargements which give rise to a stem and a new tap root. The stem grows to the surface while the tap roots grows downward developing the new plant. The old lateral root may eventually disintegrate and the new plant when sufficiently enlarged also may be expected to develop new plants. Soil and climate conditions will of course modify the somewhat ideal situation described above.

Breeding Methods

In 1955 seed related to the variety Rambler was secured from the Swift Current Experiment Station, Saskatoon, Saskatchewan, Canada. This material was quite low in vigor. Plants were spaced in the field and overseeded with bluegrass; after which the field was clipped to simulate grazing. At the end of two seasons, six of the more vigorously creeping plants were dug and brought into the greenhouse along with 6 plants from each of the varieties,

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Narragansett, Vernal, Atlantic, and Rhizoma. All plants of these varieties were crossed with the creeping plants in the winter of 1956-57. In August 1957, all plants were spaced planted into the field and overseeded with bluegrass. In August 1958, about 3.5% of the plants of the F₁ population (crosses) were observed to be creeping. Vigor, while variable, was approximately an average of the two parents. These creeping plants were brought into the greenhouse in the winter of 1958-59 and backcrosses to the original plants and selfs of the F₁ plants were made. These populations were transplanted to the field, again overseeding with bluegrass, in August 1959.

Future

Selections of creeping plants in the backcross and F₂ progenies will be made in 1960 so that another backcross generation may be produced. It is expected that in 1960 the plants will possess about 75 percent of the vigor of the non-creeping hay-type varieties and many, of course, will possess the creeping habit. Additional backcrosses should increase the vigor still further.

After backcrossing is completed it will be necessary to test the material on a field basis, studying such factors as forage and seed production and disease resistance. No seed will be available even for testing for some time. Consequently it is at present too early to estimate even an approximate date for release of a variety.