

Winter Grass Experiments at Gainesville, Florida

By Charles R. Enlow

The winter grasses were seeded on a plot of ground adjoining the permanent turt plots near the state experiment station building. Before seeding, this ground was covered with a 3-inch growth of *Crotalaria striata*, a clover-like plant, which was spaded under about the middle of October, 1927.

On November 1, 1927, the plot was fertilized with a 4-8-4 fertilizer at the rate of 1,000 pounds to the acre, which was well worked into the soil. It was then divided into plots of 5 by 22 feet. These plots on the next day were planted with the following grasses: redtop, Italian rye grass (domestic seed), English rye grass (imported seed), Kentucky bluegrass, bulbous bluegrass (*Poa bulbosa*), annual bluegrass (*Poa annua*), Westernwolths rye grass, and Oregon rye grass. An additional plot of annual bluegrass was seeded for further fertilizer study. The seed was broadcast by hand, lightly raked, and rolled. The plots were watered daily. The bulbous bluegrass was sown with both bulbs and bublets in order to insure a good stand.

On November 5 Bermuda grass sod was seeded with Italian rye grass, Kentucky bluegrass, redtop, bulbous bluegrass, and Westernwolths rye grass. These various plots were top-dressed with about $\frac{1}{8}$ inch of soil, rolled, and kept moist. A portion of each plot was not seeded, in order to observe the effect of the winter grasses on the spring growth of Bermuda as compared with the growth made by the Bermuda where not planted to winter grasses.

A good stand of all the rye grasses and redtop was secured by November 8, while the bluegrasses were much slower. Bulbous bluegrass and annual bluegrass first appeared November 9, and Kentucky bluegrass November 10, but germination and early growth were so slow with these that numerous weeds developed. A similar condition was noticed where seedings were made on Bermuda sod. The rye grasses and redtop were green by November 14, while bulbous bluegrass and Kentucky bluegrass were just emerging.

One-half of each plot of the winter grasses which had been seeded alone was cut with the putting green mower, and one-half with the lawn mower. One-third of each half was fertilized with sulphate of ammonia, beginning December 1, at the rate of 1 pound to 1,000 square feet, applied every 15 days during the growing season; one-third was fertilized with sewage sludge at the nitrogen equivalent of the sulphate of ammonia; and the remaining third was left without treatment. No particular effects from the sulphate of ammonia and sludge were noticeable until January, due no doubt to the *Crotalaria* which had been turned under and the application of fertilizer previous to planting. At this time, however the areas which had been fertilized with sulphate of ammonia began to show a darker green color and more vigor. The sludge was slower in taking effect, but gave good results. On the extra plot of annual bluegrass, the phosphate of ammonia which had been applied gave much better results than sulphate of ammonia when applied at the same rate; the sod was established earlier, and was denser throughout the winter.

It was necessary to weed the bluegrass plots, but the plots of redtop and the rye grasses were free from weeds.

All of the grasses made splendid sod. Bulbous bluegrass, Kentucky bluegrass, and redtop were very fine and dense. The annual bluegrass was very good also. The rye grasses were coarser in texture.

A cold period early in January, when the temperature at Gainesville reached 15 degrees Fahrenheit, browned the tips of the leaves of all the rye grasses, but the other grasses were not damaged.

The first trouble with brown-patch occurred early in January, on the redtop. Several attacks of both large and small brown-patch occurred on this grass during the winter. Small brown-patch also attacked the rye grasses, Kentucky bluegrass, and annual bluegrass in February. Both large and small brown-patch were controlled by the use of one of the chlorophenol mercury compounds. In the case of redtop it was necessary to make these applications every ten days or two weeks.

Bulbous bluegrass began to turn yellow during a warm spell during early March, but recovered to some extent as cool weather followed. It died down completely in early April, before the Bermuda grass had well started to show green. Annual bluegrass and bulbous bluegrass began to form seed heads in March, even though closely mowed, which made them rather unsightly.

No difference could be noted between the imported and the domestic rye grass until early May. The imported was then much darker green, and it has remained so since that time. The domestic rye grass was affected more adversely by the warm weather. The imported lasted ten days longer than the domestic; this is a feature which may be of importance in case it always holds true.

The accompanying table has been prepared to give a comparison of the rates of disappearance of the winter grasses and development of the Bermuda grass during the spring and early summer.

ESTIMATED PERCENTAGES OF STAND OF WINTER GRASSES AND BERMUDA GRASS AT INTERVALS DURING SPRING AND EARLY SUMMER

Date, 1928	Italian rye grass on Bermuda		Kentucky bluegrass on Bermuda		Redtop on Bermuda		Bulbous bluegrass on Bermuda		Western-wolths rye grass on Bermuda		Bermuda alone
	Rye	Bermuda	Bluegrass	Bermuda	Redtop	Bermuda	Bluegrass	Bermuda	Rye	Bermuda	
April 18...	85	10	90	5	90	5	10	20	85	10	20
May 7....	50	40	65	35	35	35	0	50	15	50	80
May 28....	30	50	60	40	40	45	0	65	10	70	85
June 12....	5	60	40	50	5	60	0	85	5	75	90
June 25... 0	75	10	75	0	80	0	95	0	90	95	

Where these grasses and other winter grasses were grown alone, the dates of complete disappearance of the respective grasses were as follows:

Bulbous bluegrass	April 10
Westernwolths rye grass	May 20
Oregon rye grass	May 25
Redtop	June 5
Italian rye grass	June 10
English rye grass	June 23
Annual bluegrass	June 20

When the last observation was made, June 25, there was still a 10 per cent stand of Kentucky bluegrass.

Although the redtop seemed to have disappeared completely June 5, it revived a number of times later during periods of damp, cool weather.