

# Grassland Fertilization

A NEW and somewhat revolutionary method of fertilizing grasslands, made possible by the development of highly concentrated fertilizer in uniform particle size, was described by B. G. Klugh, vice president of Swann Research, Inc., at a meeting of the American Institute of Chemists held in New York.

Permanent sod grass growing requires fertilization for adequate returns, whether the purpose be for grazing, golf courses or ornamentation. The grass root system must remain undisturbed by any general tillage of the sod. The only system of fertilization known or applied in the history of grassland cultivation has consisted in surface applications. Whether this be in liquid or solid form, the fertilizing effect essentially comes through percolation of the solutions through the surface soils to the grass root system.

Grasses can only feed through their roots, which naturally grow in the plant food bearing zones. They require nitrogen, phosphoric acid and potash in some definite ratio for their optimum growth. No one of these plant food elements can be substituted for the other in most effective fertilization. Phosphoric acid and potash tend to become changed to a temporarily insoluble state, especially in grassland types of soils. Such change naturally occurs in zones comprising about the top half-inch of the sod. This is the immediate effect where the surface applications of soluble fertilizing material are followed by uniformly gentle soaking rains.

More often, however, heavy rains wash this fertilizer either into irregular locations or entirely away. Where it is subjected to the most ideal soil soaking conditions, the surface changes cause the grass root system to develop near the ground surface. The resulting shallow root system is therefore above the normal water storage zones, hence cannot withstand any appreciable drought. This explains

why a luxuriant growth of surface fertilized grass dies in dry weather long before the thin unfertilized grass does.

These serious defects in the old methods appear to have been completely obviated by the system of fertilization recently developed by Col. James H. Graham who owns the Montrose farm estate, eight miles from Louisville, Kentucky. Col. Graham has spent years of effort and large sums of money developing these grazing lands, and having experienced all the difficulties set forth in the old system, he saw in the first samples of the new drillable concentrated fertilizer a solution of the problem.

Col. Graham purchased for this purpose a special alfalfa seed drill, since the fertilizer particles approximated the uniformity of seed grains. With this equipment, he had this fertilizer placed well below the grassland surface, in grooves four inches apart, but so narrow as not to disturb the continuity of the root system.

He states that with this machine he drilled this fertilizer uniformly over the entire area at a rate of between 5 and 7 lbs. per acre. Although only one application was made in the season of 1931, he reports that the growth and quality of grass was vastly superior to that previously resulting from many times the equivalent plant food placed on the surface.

This placement of the complete, quickly soluble plant food, uniformly and accurately below the surface of the grass, provided conditions for immediate absorption by the plants, and caused the root system to develop down in the water storage zone. The result was that the plots so fertilized showed at least double the grass growth of, and withstood the drought of the summer of 1931 vastly better than that fertilized by the old surface method or that unfertilized.



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