— Soil Fertility Note 15 —
Managing Bermudagrass Sprayfields

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Decline and loss of hybrid bermudagrass stands on swine farm wastewater sprayfields is an increasing concern on sites that are overseeded with a winter annual (WA) grass and managed for hay. Many swine operations must overseed their sprayfields due to limited wettable acreage. Overseeding every fall is a viable and useful practice on pastureland where forage is grazed by animals. However, it can be problematic on fields where forage is mechanically harvested.

Growth and Development of Bermudagrass

Hayfields and pastures differ in *sward*, or stand thickness. Hybrid bermuda hayfields normally exhibit moderate- to low-sward density, as measured by the number of growing points close to the ground surface. Hayfields generally have erect stems with few stolons (runners) and few rhizomes (underground stems).

Pastures, however, have many stolons and rhizomes. Each node on a stolon can develop roots, leaves, erect stems, and other stolons—the more light they receive, the more they grow. Rhizomes develop in response to defoliation (cutting or grazing) and fertility and store the carbohydrate reserves produced by photosynthesis.

Effects of Annual Overseeding

When soil surface growing points are deprived of light for long periods (as in overseeded hayfields), the number of growing points decreases. That is why bermudagrass develops erect stems in hayfields. As stems elongate and compete for light, the sward thins. Swards that contain few rhizomes and stolons have less reserve energy and may deplete their carbohydrate reserves if transition from dormancy is delayed.

It is not advisable to overseed a bermuda hayfield more than once every two years. Introducing a winter annual (WA) overseed into a hayfield adds competitive stress, and overseeding every year can significantly reduce bermuda stands. However, since rotating winter overseeding among fields is not possible under most waste plans, early removal of the WA is critical. When the WA remains on too long, bermuda expends root reserve energy in an effort to grow as warm soil temperatures stimulate its transition from dormancy.

Warm spring air and soil temperatures also trigger germination of summer annual grasses and weeds. When WA harvest is delayed, competition from summer annuals can overwhelm weakened bermuda. In a healthy stand, "green-up" typically begins before summer annuals emerge, and bermuda competes well.

On sprayfields, re-establishment of bermuda can be problematic. The need to remove the WA often interferes with timely re-sprigging of fields, which is best done in March when sprigs are dormant. Waste plan compliance often requires even newly re-sprigged fields to be overseeded in the fall. Overseeding in the year of establishment can severely stress bermuda, especially if sprigs are planted late (May, June).

Tips for Protecting Bermudagrass Stands in Sprayfields

- ***Always use an early maturing cereal, such as rye, to overseed sprayfields***. Choose an erect cultivar, such as 'Abruzzi,' and seed at 75–90 lb/acre drilled no-till or at 100+ lb/acre broadcast.

  Do not use annual ryegrass or the leafier grazing-type ryes, except when overseeding pastures. Oats have intermediate maturity but tend to produce leafier and more competitive regrowth than rye or triticale. Wheat matures late and is not well adapted as an overseed.

- ***Use good seed***. Certified seed is best, but if you use non-Certified seed, especially in bulk, store it properly and have the germination tested by the NCDA&CS Plant Industry Division. Having this test done prior to purchase can avert stand failures and disputes over seed quality.

- ***Harvest the WA on time, even if weather is less than ideal***. Remove the overseed at the "boot" stage of growth—prior to emergence of seed heads from the sheath. For rye, this is usually early April but varies with species and weather. In some years, follow-up harvests of the WA may be needed.

  Early April is seldom a good time to dry hay in the field, so plan to remove the WA as chopped or baled silage. Timely harvest of the WA permits bermuda to emerge from dormancy and develop leaf area before summer annual grasses and weeds germinate. If annual ryegrass was sown, plan on multiple harvests. A herbicide (metsulfuron) may be warranted for heavy regrowth.

- ***Harvest bermudagrass at least every four weeks under a normal rainfall and nitrogen fertility regime.*** Light must reach the lower stems to promote stolon development and increase density of growing points. Frequent harvests also reduce competition by removing weedy grasses.

- ***Fertilize appropriately to help bermuda compete with weeds***. At green up, bermuda needs 25–40 lb/acre nitrogen, potassium as recommended by a soil test (minus that supplied by waste irrigation), and on sands, 10–20 lb/acre sulfur. Phosphorus is not needed or desired on most sprayfields. Waste applications usually provide the needed nutrients; however, if there is insufficient waste to supply enough nitrogen, amend your waste utilization plan to allow a modest application of commercial fertilizer. Apply any supplemental fertilizer in mid-April to mid-May.

- ***Apply lime according to a NCDA&CS soil test.*** During establishment, apply and incorporate all recommended lime before sprigging. In subsequent maintenance applications, lime will have to be surface applied and will move through the soil profile very slowly. If a soil report recommends more than one ton per acre, apply one ton immediately and the balance the following year. The target pH for hybrid bermuda is 6.5.

- ***On deep sandy soils, test for nematodes before establishing a stand or if existing stands are poor***. Although nematodes are not usually a problem in bermudagrass, ***sting nematodes*** can be damaging in highly sandy soils, especially when soils are moist and soil temperatures are cool. Affected plants have stubby roots, and stands are thin.

  Cultural practices are the only way to manage sting nematodes in forage grasses. Timely delivery of water and nutrients from waste irrigation helps crops compensate for root damage. However, managers must be aware that timely management of the bermudagrass and WA overseed is even more critical when nematodes are present.

- ***Control weeds and insects. The best and most cost-effective weed control is timely management*** of bermudagrass and the WA overseed along with common-sense cultural practices. A well-managed hayfield is competitive and rarely needs herbicide.

  Falls armyworms are leaf feeders and can cause severe defoliation. Multiple outbreaks may occur in a season, and infestations seem to be worse in dry years. Armyworm damage can rob a grower of one or more hay cuttings.

  Grubs feed on roots and can cause damage in large patches or small isolated spots. Treatment is rarely justified but may be advisable on sprayfields where weak stands are being managed for recovery. September is the best time to treat fields.

  Consult the N.C. Agricultural Chemicals Manual and product labels for restrictions and rates pertaining to herbicides and insecticides.

- ***Call your regional agronomist.*** Agronomists make on-site visits, assist with nutrient management problems, and give advice on taking samples and interpreting and implementing recommendations. Call 919-733-2655 or visit the Web page www.ncagr.gov/agronomi/rahome.htm to find contact information for your area agronomist.

Tim Hall, Regional Agronomist

Questions or comments should be directed to the Field Services Section of the NCDA&CS Agronomic Division. Information on soil testing, nematode assay, and plant/waste/solution analyses is also available from the division.