

moisture for several weeks. Further, we have found that if the soil dries for several weeks then is followed by several weeks of wet weather, the germination "switch" in NWSG is turned off and the seeding will fail.

Of the three species of NWSG tested—eastern gamagrass, big bluestem, and switchgrass—switchgrass seems to be the most forgiving in the timing of its seeding. This is due to its small seed size, 10-14 day germination period and inherently higher germination rate (+/-80%). Big Bluestem requires 3-4 weeks of good soil moisture. In contrast, most of our cool season grasses need only 5-7 days. Eastern gamagrass has a seed coat that makes its first year germination rate very low. Various cold and chemical treatments at Beltsville USDA-ARS have produced seed lots with first year germination rates from 0-90%. Most are in the 10% range. Surprisingly, one can expect an additional 5-10% germination for each subsequent year the stand is maintained. Another factor to be considered is the dearth of herbicides labeled for non-crop NWSG that have not become labeled for forage uses.

If NWSG could be seeded and adequate stands for forage production by Maryland standards established with regularity and at reasonable cost without violating herbicide labels, then we could see more acres being converted from marginal cool season grass pastures to NWSG. However, since the initiation of these diverse efforts with NWSG, several new grass management tools have been introduced into Maryland for the serious grass managers to add to their toolbox.

In 1997 annual and Italian ryegrasses were introduced into Maryland on a number of Washington County farms for forage production. Utilized in a variety of systems but most effectively used in a double-crop system with improved varieties of warm season annual grasses, about 20,000 acres are seeded annually in the Mid-Atlantic. This double-crop system generally allows forage harvest in the following windows: November-December, April-May, July-August, making use of our spring, summer, and fall growing seasons. NWSG are grazed from late June to early September.

In 2000 Jessup Max-Q, an "animal-friendly" endophyte-infected fescue, was introduced into Maryland on a Washington County beef farm. Subsequent seedings are showing this fescue to seed effectively under difficult conditions, establish quickly with deep root systems, resist drought, maintain palatability, and animal acceptance during heat and drought and stockpile as effectively as K-31 for winter-long grazing. Similar fescues from other companies are being introduced.

Since most of our dairy and beef farms in Maryland and the Northeast have limited land and need to maximize the production from that limited resource, our Maryland grass farmers are carefully considering their options for summer forage production. The NWSG have a limited place in forage production in Maryland and the surrounding region as new forage alternatives provide more forage tonnage and quality with less cost and less risk than the NWSG.