Forage Management

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Johnsongrass

Johnsongrass (Sorghum halepense) is a vigorous tall growing perennial grass similar to sudangrass above ground. Below ground, mature johnsongrass plants produce large vigorous rhizomes. This plant was introduced into the United States from Africa for use as a forage crop. Because of its vigorous growth habit and production of rhizomes and seed, it has become a major weed in many sections of the county.

Biology

Seeding Development

Johnsongrass seed often enters a field through contaminated crop seed, combine chaff, manure or flood water. The seed is dormant at maturity and must over-winter before much of it will germinate. The seed can remain viable in the soil for several years due to its hard seed coat and dormancy. Seedlings begin emerging from the soil when the soil temperature reaches 57°F but optimum germination occurs as the soils warm up to 75°F. Plants that develop from seeds germinating in warm soil (75°F) will flower in 6 weeks and develop viable seed by 8 to 9 weeks of age (2 to 3 weeks after flowering). Plants that emerge when the soils are cooler may require 12 weeks to flower.

Rhizome Development

Johnsongrass also reproduce by rhizomes which are underground stems, not roots as they are often called. Seedling johnsongrass can produce rhizomes as early as 3 weeks after emergence. When plants reach the boot stage (when the seed head is just visible within the leaf sheath of the plant) rhizomes can be 25% of the total plant weight. The plant produces 90% of its rhizomes after flowering. Most rhizomes are produced in the top 8 inches of the soil. However, in loose soils they can penetrate to 10 to 20 inches. When johnsongrass is closely grazed or clipped, rhizome growth is weak and near the soil surface. The rhizomes release chemicals which inhibit the growth of other plants. Johnsongrass' tall growth habit allows it to overtop smaller plants and shade them out and to compete with any crop for sunlight, water, and plant nutrients.

Control Methods

Prevention

When using cultural or herbicidal control of johnsongrass ensure that plants are controlled on field edges and in fence lines to prevent invasion by seed or rhizomes from these areas.

Crop Rotation

A good crop rotation can reduce johnsongrass competition. Crops in the rotation need to be competitive with the johnsongrass tops and the cultural methods have to break up the rhizomes and expose them to drying. Broad leaf crops such as soybeans and alfalfa compete more with johnsongrass than does corn. The cultural methods used with these crops are suited to destroying and weakening the rhizomes. Soybeans allow for early shallow plowing and repeated disking before planting and then for several cultivations after crop emergence. The repeated harvesting of alfalfa reduces the rhizome energy reserves, shades the emerging johnsongrass and the alfalfa plant competes for water and plant nutrients. A thick vigorous crop stand is necessary to give competition to the johnsongrass. Crop choice also affects the herbicides which can be used for johnsongrass control. Crop rotations will not eradicate johnsongrass but will reduce its effects on crop production.
Summer Fallow

Summer fallowing a johnsongrass infested field using tillage and/or herbicides can control this weed. The field should be plowed at a shallow depth to prevent burying the johnsongrass rhizome deep in the soil. Then disk the field twice to break the rhizomes into smaller pieces. This stimulates sprouting of the rhizome buds creating a flush of leaf growth. This flush of growth expends the plant’s energy reserves and exposes a large leaf area for exposure to herbicides and drying winds. Alternating the use of field cultivators with diskin has proven more effective than either tool alone. The field cultivator tends to bring the rhizomes to the soil surface where they dry out and die. This is most effective under dry weather conditions. If using only mechanical cultivation the area should be disked every 3 to 4 weeks to kill the emerging johnsongrass tillers or when the johnsongrass is 12 to 14 inches tall, whichever comes first. Continue this management until late September.

Herbicides

When herbicides are used, apply them in conjunction with tillage management and at the plant growth stage of johnsongrass called for on the label of the herbicide being used. Scout fields on a regular basis and learn to recognize johnsongrass. Spot treatment of johnsongrass with a systemic herbicide is an effective and economical way to deal with the problem. See the current WVU herbicide recommendations for herbicides and rates of application. As with any pesticide program, use herbicides only according to label recommendations approved at the time of application.

Mowing or Grazing

Close mowing and grazing are other ways of controlling johnsongrass but are not as effective as diskin. Mow or graze the field whenever the grass reaches a 12 inch height. This weakens the plant and causes small weak rhizomes to grow near the soil surface. This process may take two to three years to reduce johnsongrass to the extent of one year of summer fallow and diskin. When done for a year or two before summer fallowing it can increase the effectiveness of the summer fallowing and diskin.

If the johnsongrass contaminated field has little other than johnsongrass forage, there is the risk of prussic acid poisoning of livestock grazing the field. Tillage or herbicides may be better options for control in this situation. Aftermath grazing hayfields containing johnsongrass as a component should be safe. If such a field is frosted allow the livestock to graze it after the johnsongrass has completely dried out to prevent prussic acid poisoning.