

Pasture Weed Management¹

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Weeds in pastures and rangeland cost ranchers in excess of \$180 million annually in Florida by reducing forage yield, lowering forage quality, and causing animal injury through toxicity or specialized plant organs (thorns and spines). Effective weed management begins with a healthy pasture. Weeds are seldom a serious problem in a well managed, vigorously growing pasture. Good pasture management involves the proper choice of the forage species and variety, an adequate fertility program, controlled grazing management, and pest management (weeds, insects and diseases).

If pasture health declines, weeds will exploit the situation and become established. Bare ground is the perfect environment for establishment of weeds. Once established, weeds must be controlled with mechanical or chemical methods. However, unless the pasture-management problem that caused forage decline is corrected, the grass will not reestablish and weeds will re-infest the area.

Integrated weed management is both an economically and environmentally sound approach to weed management. An integrated approach involves scouting, prevention, and control (biological, cultural, mechanical, and chemical) in a coordinated plan.

Scouting

Scouting pastures is the foundation of a sound weed management program, but is often overlooked. Scouting involves routinely walking or driving through pastures and identifying weeds. This defines the scope of the problem and allows the best management practices to be implemented in a timely fashion. The number of weeds, the species present, and their locations are important. Note the dominant species as well as uncommon or perennial weeds. The management strategies adopted should focus on controlling the dominant species, while preventing the spread of less common species. If not managed proactively, the less common weeds in a pasture may become future dominant weed problems.

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Proper identification of weeds is the first step toward weed control. A good example is knowing the difference between tropical soda apple (TSA) and red soda apple (cockroach berry). Of the two, only TSA is a troublesome invasive weed that must be controlled. However, some have occasionally confused the two species and allowed TSA to go uncontrolled. Unfortunately, this costly mistake results in TSA spreading throughout the ranch and potentially onto neighboring ranches. If there are questions concerning weed identification, contact your local county Extension office for assistance.

Some weeds grow best in wet sites (maidencane ponds, depressional areas, ditches, etc.); while others can be found on dry sites (ditch banks, upland areas, and fence rows). Scout pastures for weeds in conjunction with other activities such as checking calves, working cattle, feeding, etc.). When a weed is first discovered, remove it or spot treat with an appropriate herbicide. Do not allow that one plant to produce seed and give rise to hundreds of new plants. It is less expensive (in terms of both time and money) to control one plant than to wait and have to control hundreds of plants.

Poisonous plants (e.g., *Crotalaria*, black nightshade, spiny pigweed, lantana, etc.) are commonly found throughout Florida. Animals do not usually choose to graze most poisonous plants when forage is abundant; however, when quality forage is limited due to poor growing conditions or overstocking they may graze these plants.

Prevention

Prevention is any activity that keeps weeds from infesting a pasture. Most weeds spread by seed. Thus, preventing the movement of weed seeds onto the ranch reduces potential weed pressure. Weed seeds can be transported in hay, harvested grass seed, sod, cattle, mowing equipment, or dispersed by wind, water, and wildlife. Producers should avoid buying hay or grass seed that is contaminated with weed seeds. Refuse to purchase hay from someone who cannot provide a weed-free product. Using certified forage seed reduces weed seed contamination and is highly recommended. Also, consider TSA. Cattle have been shown to excrete TSA seeds for at least 7

days after consumption. If cattle are grazing in a TSA infested pasture, it is recommended that the cattle are held in a clean area for 10 days before moving them to a new pasture. This will reduce the likelihood of transporting TSA seeds. Remember, “an ounce of prevention is worth a pound of cure.”

Control

Cultural Control

Cultural practices improve weed control by increasing the competitiveness of the forage. This involves optimizing forage production through monitoring soil pH, fertility, and, potentially, water management. Generally speaking, a thick sward will prevent weed emergence, will out-compete emerged weeds, and will capture the majority of environmental resources (light, water, nutrients) necessary for growth. The aim of cultural practices is to modify your management program so that the sward is as competitive as possible.

Soil pH is an important factor for forage growth as well as weed establishment. Forage agronomists and soil scientists at the University of Florida have determined the optimum soil pH for most forages grown in Florida. Acidic soils limit plant growth and can result in aluminum and manganese toxicity, and magnesium, calcium, phosphorous, molybdenum, and potassium deficiency. Soil acidity may also result in poor root growth, which can reduce water and nutrient uptake. Weeds that grow under such conditions can be indicators of low soil pH. For example, crowfoot grass germination is optimum at soil pH levels between 4 and 5, which is too low for optimum forage growth. Thus, the presence of crowfoot grass in your pasture may warrant a soil test and corrective action.

Mechanical Control

Mowing is one of the most often used weed control methods in pastures. Mowing improves the appearance of a pasture, temporarily increases forage production, and, if properly timed, prevents weeds from producing seed. Mowing is generally more effective on broadleaf than grass weeds and is more effective on annual weeds than perennial weeds. Carefully consider the cost of mowing and the

anticipated effectiveness. As fuel prices increase, it may be more cost effective to avoid mowing and use other forms of weed control since other weed control methods may be more effective on a given species.

Mechanical weed control does have drawbacks. Large weeds with extensive root systems will not be controlled through mowing alone. Additionally, mowing misses prostrate-growing weeds like crabgrass, spurges, and matchweed. Mowing can also spread vegetative plant stems, allowing the plant to root elsewhere (e.g., prickly pear). If mowing is performed after seed set, seeds can accumulate on the mowing equipment and worsen the weed problem by spreading seed to other pastures.

Biological Control

Biological control involves the use of biotic agents (e.g., plants, herbivores, insects, nematodes, and phytopathogens) to suppress weeds. Overall, biological control is still in its infancy, but great strides are being made, especially against invasive plants. Two good examples are the tobacco mild green mosaic tobamovirus (TMGMV), and the newly released insect, *Gratiana boliviana*, both used for TSA control. The virus, TMGMV, can be sprayed to control existing TSA plants, while the beetle is used primarily for suppression.

Most biological control agents rarely provide complete weed control, but they usually suppress the weed population to a manageable level. Additionally, biological control agents are rarely fast acting and time is needed for the agent to suppress a given weed population. For example, the effect of *Gratiana boliviana* is not often seen until the year following release of the beetle.

Chemical Control

Chemical weed control includes the use of herbicides. Herbicides kill weeds by inhibiting plant processes that are necessary for growth. Herbicides should be selected based on forage species being grown, weed species present, cost, and ease of application. Application method and environmental impact should also be considered.

Proper herbicide choice and application rate are extremely important. Lower than recommended application rates will not provide consistent weed control, while excessive application rates may cause injury to the forage or result in only killing the above-ground portion of perennial weeds. Also, herbicides must be applied at the correct time to be cost effective.

Preemergence applications are made before weeds germinate and emerge. Understanding the life-cycle of the weed is important when using a pre-emergence herbicide. Some weed seeds germinate in the summer, while others germinate in the winter months. Always refer to the herbicide label for additional information about controlling specific weeds.

Postemergence applications are made after the weeds emerge. The most effective and cost efficient applications are made when the weeds have recently emerged and are small. For perennial weeds (regrowing from root storage organs), it is advisable to allow them to bloom before spraying, which allows sufficient leaf surface for coverage and ensures that the perennial is transporting photosynthates back to the roots.

Postemergence herbicides may be broadcast over the entire pasture or may be applied as a spot treatment to sparse weed patches. Spot treatment is less costly compared to broadcast spraying. Other application methods include wipers and mowers that dispense herbicide while mowing the weed. In all cases, it is extremely important to carefully read the herbicide label before purchase to determine whether that herbicide controls the weeds in your situation. For up-to-date recommendations on chemical weed control, see the current IFAS publication "Weed Management in Pastures and Rangeland" (SS-AGR-08), which is available online at <http://edis.ifas.ufl.edu/WG006>, or at most University of Florida Cooperative Extension offices.

Summary

Maintaining healthy, productive pastures will minimize the risk associated with weedy plants. Good pasture management practices such as adequate fertilization, insect control, and controlled grazing

will result in healthy pastures. Unfortunately, weeds are present in pastures and the associated loss in forage production can have serious economic implications. An integrated weed management strategy involving prevention, detection, and control is the most economical and environmentally friendly approach to pasture weed management.

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