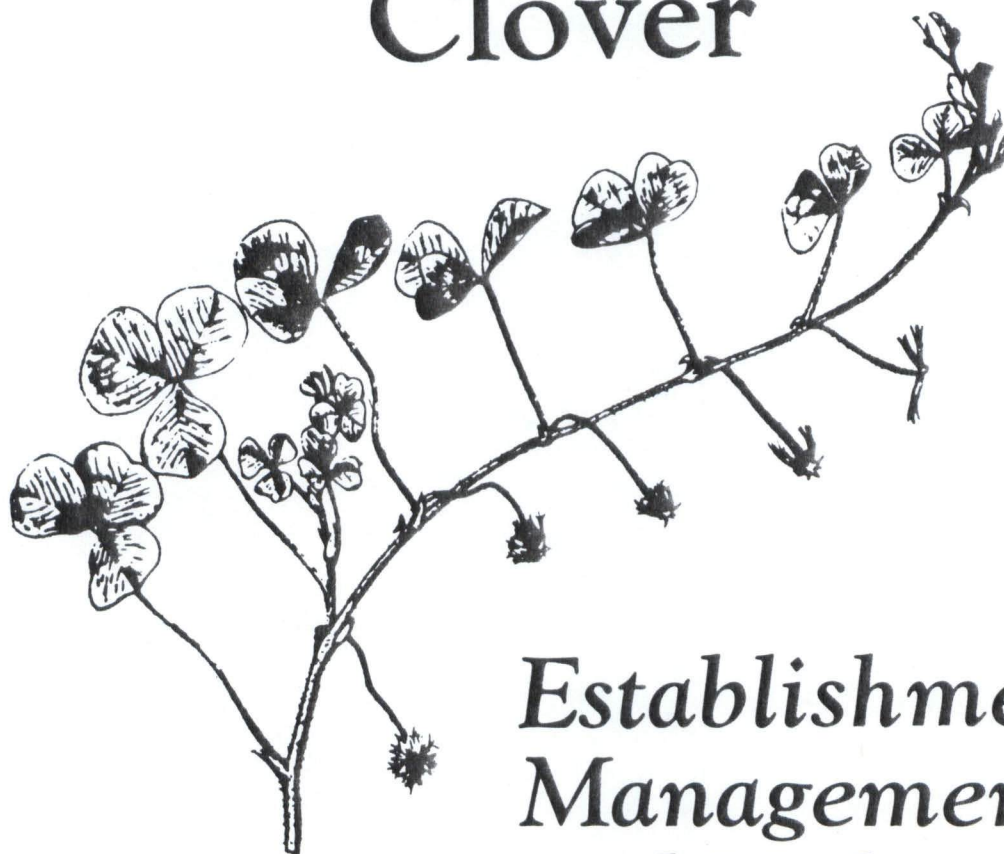


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Subterranean Clover



*Establishment,
Management,
and Utilization
in Texas*

Weed Control In Subterranean Clover

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Each square foot of pasture has a limited amount of moisture, light, and plant nutrients. Undesirable plants compete for limited essential components for plant growth. It is estimated that every pound of herbaceous weeds growing in improved pastures reduces production of forage plants by an almost equal amount (9). Livestock will select the more digestible grass and clover over stemy and mature weeds. If weeds go unchecked, they flower and produce seed which intensifies the weed problem the following year.

Good stands of subclover form a thick canopy quickly which are very competitive with other plants (2). However, with thin subclover stands, weeds are always a problem. Following are various management practices for controlling weeds in subclover pastures.

Nonchemical

To many, the words "weed control" automatically mean the use of chemicals. If a producer knows his weed species and how they grow there may be alternatives.

Good Subclover Stands. The first step in controlling weeds is to have a good thick stand of subclover which will rapidly form a solid canopy. Eliminating light at the soil surface will reduce the growth of smaller weed seedlings and germination of other weed seeds. Subclover has good seedling vigor (1) and will germinate in September if moisture is available. Selecting planting sites with low weed populations such as fields that have been in row crops is also helpful. However, residual problems from herbicides applied to the row crops should be determined. Earlier land preparation would permit weed seed germination and destruction before clover is planted. Good establishment practices are discussed in Chapter 4, Subterranean Clover Establishment.

Mowing. The low growth habit of subclover allows it to be very tolerant of mowing. If the weed species present has upright growth, mowing to a 3- to 4-inch height would favor subclover over the weeds. A spring mowing, after winter weeds have begun to flower but before seeds are produced, will help reduce the weed population for the following year.

Grazing. Digestibility, protein, and mineral content of some cool season weed species are similar to ryegrass, wheat, and oats (8). Their digestibility does decline as they mature. Most grassy weeds are eaten by cattle but many broadleaf weeds like wild geranium (*Geranium* sp.) and evening primrose (*Oenothera* sp.) are not. Broadleaf weeds are more acceptable to sheep and goats. Most cool season weeds will be avoided by livestock in the spring when they flower and produce a seedhead. Once the subclover is well established, close grazing will reduce competition of most weeds when they are young and tender.

Cleared Herbicides

Forages are considered by many as low income crops. Chemical companies generally feel the market potential is greater for grain crops than for pastures and range. Most approved herbicides were originally selected for alfalfa and then the label was expanded for use on clovers. There has been very little herbicide evaluation on the specific cool season annual clovers grown in the southeastern United States. Following is a list of cleared herbicides for clovers and how subclover responds to them. Always read the label *before* purchasing a herbicide to be sure it meets your requirements.

EPTC (EPTAM 7-E). Eptam is a preemergence herbicide which must be applied and incorporated before planting. It controls broadleaf and grassy weeds as well as ryegrass and small grains. Its use on subclover is limited to establishing a pure stand of clover on a prepared seedbed. Research at Angleton (3,4) has shown some damage to subclover. Although 3 lbs (3-1/2 pt)/A is recommended, 2 lbs (2-1/4 pt) would be safer. If a severe weed problem is expected, the 3 lbs/A rate may be preferred even though it will retard early clover seedling growth. The company marketing Eptam has suggested delaying clover planting 5 to 7 days after herbicide application since half life in moist loam soil at 70 to 80°F is approximately 1 week. This practice has been evaluated at Angleton and subclover damage was reduced. Treated pastures cannot be grazed for 45 days.

Pronamide (Kerb 50-W). Kerb is applied in late fall and winter after weeds have emerged. It controls chickweed and most grassy weeds including ryegrass and small grains. Kerb will also control dodder if applied before the dodder seed germinates. Recommended rate is 1.5 to 2.0 lbs/A *after* subclover has produced the first trifoliate leaf. Research at Yoakum has shown no harmful effects on subclover with rates up to 3 lbs/A (6). There is a 120-day waiting period after Kerb application before grazing can begin.

2,4-DB (Butoxone, Butyrac). It controls many broadleaf weeds if it is applied when the weeds are small (less than 3 inches). Henbit control is marginal. Grasses are tolerant of 2,4-DB so it can be applied to subclover-ryegrass and/or small grain mixtures. There is some deformation of clover leaves after 2,4-DB application, but new leaves appear normal (6). If applied to small subclover seedlings (less than 5 to 7 leaves) they become stunted and early for-

age production is reduced (3). Subclover pastures sprayed with 2,4-DB can not be grazed for 30 days.

2,4-D. Numerous companies market 2,4-D under a variety of trade names. It has been used to control broadleaf weeds in pastures for many years. At high rates it will also kill most clovers. Subclover, however, can tolerate three-fourths to 1 lb/A (7). These rates are effective at removing some small broadleaf weeds and burclover from subclover pastures. Amine (salt) formulations should be selected since they will not volatilize and drift to nearby susceptible crops as easy as ester forms.

Response of Subclover to Pasture Herbicides

Most of the herbicides recommended for pastures and rangeland will kill clover if applied when the clovers are growing. A problem frequently overlooked is that some of these herbicides applied in the summer when clovers are not present, will persist in the soil through the following fall and kill any volunteer or seeded clover. The effect of herbicide rate and time between herbicide application and clover planting was studied by Smith (10) at Overton. Applying Weedmaster during the summer had no residual effect on subclover (Table 1).

The Picloram in the Grazon P+D had dramatic effects on the subclover stand when applied within 60 days of planting and at the 4 pt/A rate 120 days before planting. Heavy rainfall within 10 days after the 90-day application date reduced subclover stand loss relative to the 120-day date. The Grazon label states that it "may injure or kill legumes. Also new legume seedings may not be successful if made within 2 years following application of this herbicide." Other pasture and rangeland herbicides which are toxic to clovers are Atrex (atrazine), Princep (simazine), Banvel (dicamba), and Graslan (tebuthiuron). Always read the label *before* purchasing any herbicide for use on pasture or rangeland growing clover.

Herbicides For Pasture Renovation

Obtaining successful stands of subclover and other clovers in warm season grass pastures in fall is a problem. It is difficult for a small clover seedling to compete with a well established grass. One method of reducing the grass

Table 1. Percent Subclover Stand Fifty Days After Planting into a Bermudagrass Sod (R. G. Smith, Overton)

Herbicide	Rate (pt/A)	Days Between Herbicide Application Clover Planting			
		120	90	60	30
— Percent Stand —					
Weedmaster	1	97	96	98	94
(1/4 lb Dicamba+)	2	95	98	97	100
(3/4 lb 2,4-D)	4	96	98	93	93
Grazon P+D	1	97	96	66	71
(1/2 lb Picloram)	2	95	87	6	37
(4/5 lb 2,4-D)	4	53	97	2	8

competition is the use of herbicides. Paraquat, Roundup, and Dalapon are approved for pasture renovation and sod-seeding.

Paraquat (Gramoxone). Paraquat is a fast-acting, contact herbicide which desiccates (top kills) most plants. Under summer temperatures leaves will turn brown within 24 hours. Its main limitation is that it only retards the grass about a week before the grass begins to grow up again. This is usually not long enough to get clover established. Sometimes Paraquat is used in conjunction with a light discing of the grass on sandy soils to set the grass back. Paraquat may be applied the same day clover is planted because it has no soil activity. Do not graze treated pastures until clover is 3 to 6 inches high.

Glyphosate (Roundup). Roundup is also a postemergence herbicide but is more toxic to plants than Paraquat. Plants turn brown within about a week. Planting should be delayed about a week since there is some evidence of clover damage if planted immediately after Roundup application. Most grasses do not resume growth until the following spring. Stands of dallisgrass and bahiagrass are reduced by Roundup (5). The growth of bermudagrasses may be severely retarded but they usually recover. Roundup is most useful when introducing subclover in an unimproved pasture where few desirable plants are present. Wait 8 weeks after application before grazing or harvesting.

Dalapon. The primary use of Dalapon is to control smutgrass in pastures. It also will retard the growth of bermudagrass and dallisgrass. Dalapon must be applied in the fall for good smutgrass control. This provides an excellent opportunity for sod-seeding fall seeded forages. Planting should be delayed 3 to 4 weeks after Dalapon application. Pastures may not be grazed for 8 weeks after herbicide application.

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