

Bermuda Grass Eradication Protocol

Specific to California

Prepared by Jim Leap 1-23-2024

Implements required:

- 1) Chisel /ring roller combination (one chisel per 10 HP spaced @ 18" on solid tool bar with ring roller hitched to tool bar to follow chisel)
- 2) Undercutter with additional weight (500 lbs)
- 3) Springtooth cultivator
- 4) Single shank ripper
- 5) Three-point mower (rotary or flail)

Timing:

Fall

Mow standing crop and weeds ahead of winter rains.

Once moisture is adequate from irrigation or rainfall chisel and ring roll ground to break compaction, break clods and minimize weed re-growth.

Winter

Between breaks in winter rain events when soil has adequately dried down to facilitate tillage, chisel and ring roll ground as needed to minimize winter weed growth and maintain decent tilth.

Spring

While there is still adequate residual rain moisture in the soil chisel and ring roll ground as needed to break up compaction, minimize cloddiness, breakup residual weed and crop residue and disturb spring weed emergence. Timing is critical since this work cannot be accomplished in dry or "tight" soil.

If weed and crop residue is minimal the bermuda infested areas can be undercut starting as early as April 1st. Depending on the amount of residual field "trash" the infested areas can be cultivated with the springtooth to bring stolons to the surface following undercutting.

Summer

At approximately 30-day intervals throughout the summer undercut and springtooth the bermuda. Bermuda will continue to regrow and re-root throughout the summer. If there are persistent patches of bermuda going into the fall these can often be hand removed since the soil will be very loose and friable at this point.

If a bermuda infested area is in a relatively dry condition during the winter months it may be possible, depending on the amount of crop and weed residue present, to undercut and springtooth the infested areas. The exposed stolons will very easily frost kill during the winter.

The ring roller is a critical component of the early spring mitigation efforts (especially in heavily infested areas) since it will very effectively break soil clods from around the bermuda stolons leaving them vulnerable to frost or sun desiccation.

The spring tooth cultivator will very effectively “comb” through the soil and will bring stolons to the surface.

The 30-day interval for summer mitigation efforts is critical since the springtooth can much more effectively “grab” longer stolons and bring them to the surface. The bermuda stolons need about 30 days to get to a “grab-able” length.

The Undercutter is a key tool since it very effectively separates the surface stolons from the deeper “water gathering” roots of the bermuda.

When a bermuda clump is undercut during the summer months it will immediately show signs of extreme water stress since it has been cut off from its deeper water gathering roots. If the stolon has decent soil contact it will very quickly re-root and go back into a growth phase.

Disc and rototiller use must be absolutely avoided during any phase of this process as these tools actually enhance the survival success of the bermuda through their cutting and burying action.

Field edges tend to be highly compacted and it is therefore highly desirable to rip the field edges when moisture is optimal to keep these areas loose and friable. Maintaining “workable” field edges will only improve on bermuda mitigation efforts and will greatly facilitate the use of the undercutter, springtooth and chisel.

Success with these operations is dependent on large areas to be fallowed (e.g. .25 acres or larger) to facilitate effective tractor use and allow for adequate space to turn and maneuver.

When bermuda residue is extensive it is often necessary to use the chisel as a “rake” to pull large clumps off of the field. These large clumps can be spread on the adjacent avenue where they will desiccate. The stolons on the avenue may require frequent disturbance to assure they do not root and survive.

When optimum tillage windows are missed following the winter rain dry down period and the soils become tight and compacted the only option to effectively manage bermuda during the summer months (utilizing chisels, ring rollers, undercutters and spring tooth harrows as described above) is to utilize overhead irrigation to uniformly wet the soils to an adequate depth to facilitate tillage.

For optimum soil wetting the application rate should not exceed the soil infiltration rate. An application rate of between 1.5 and 2 inches should be adequate to facilitate soil tillage following a week or 10 days of dry down.

The effective use of sprinklers – especially if uniformity of application is maximized – should allow for tillage operations that will break soil compaction. Once the soil compaction issue is mitigated through improved soil moisture from irrigation bermuda eradication efforts utilizing above-mentioned techniques should significantly limit further depletion of soil moisture and the soils should stay open and friable for the duration of the growing season to allow for successive undercutting and harrowing of the stolons.

If soil conditions are rough and non-uniform it may take several light irrigations followed by light tillage to improve soil conditions adequate to allow for uniform flow of water through the soil profile to allow, ultimately, for uniform tillage and tilth improvement. Good soil management takes time, care, patience and the right tools.