



Ad Index

Advertiser	Page
The Andersons	4, 29
B A S F Corp	20, 21, 26
Bayer Environmental	CV2-1
Becker Underwood	5
Bell Labs	30
Bioverse	34
Bunker Solutions	36
Champion Turf Farms	9
DuPont	14-15
Ecologel	38
FMC Professional	12-13
Golfdom Summit	17
Gro Power	28
Jacobsen	CV3
John Deere Golf	40
Kochek	31
Lebanon Turf	CV4
Linear Rubber	32
Malt Products	28
PBI Gordon	3
Reliable Golf	32
Sonic Solutions	37
Spectrum Technologies	11
Syngenta	7
TifSport	Insert
Toro	Supplement
Turfco	30
U S Aqua Vac	35
White Metal Gwolf	31
Wireless Solutions	10
Wood Bay Turf Tech	39

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White clover and bermudagrass.

Continued from page 45

clover establishment. In addition, monitoring soil nutrient levels is important for all turf management scenarios, even those with legumes included. Adequate soil P and K aid in successful establishment, but ideal soil pH varies with species. So soil tests are recommended.

Seed inoculation prior to planting is common, although it may not be necessary. Natural soil populations are typically able to sustain productive stands, and inoculation has no reported effect upon seed germination. It is important to pick the proper species and strain of bacteria for the legume being seeded. For example, the *Rhizobium* spp. used to inoculate soybeans cannot be used to inoculate clover. Even different clover species are inoculated by different strains, so check several sources and with your seed provider.

Once established, the next challenge is to manage in favor of the desired legumes. Most superintendents associate legumes with clumpy, non-uniform patches. It's true. Legume populations are highly self-regulating. They come and go as soil nitrogen lev-

els fluctuate. However, they become more evenly distributed when mowing and fertilization are reduced. Several steps can help ensure legume health and persistence, such as:

■ Decreasing supplemental nitrogen.

When paired with well-fertilized grass, clover density quickly decreases due to its inability to compete for light. White clover leaves have a higher photosynthetic capacity at low nitrogen levels than do competing perennial ryegrass. Another reason to reduce nitrogen application is its negative effect on biological nitrogen fixation. Fixation is highly dependent on the level of nodulation occurring in root tissues and activity of the bacteria within. High concentrations of soil nitrogen inhibit nodule growth and development.

■ Reducing mowing frequency.

Legumes are much less tolerant of frequent mowing than grasses are. The growing point of grass is well hidden below canopy level. However, most legumes must regenerate foliage lost to mowing by sending up new leaves from the base of the plant, which is energetically unfavorable.

■ Adjusting mowing height and timing.

White clover is especially tolerant of low mowing heights. However, that is not the case for the majority of clover species. Most annuals are less tolerant of close mowing heights, especially during heavy flowering periods. However, if plants can fully mature, seed dispersal may occur naturally or with mowing. Using mowing as a tool to disperse next year's crop is especially important with annuals, while perennials like white clover reestablish mostly through stoloniferous growth.

Deciding to include legumes in your turf is a step toward sustainability. Turf-legume scenarios challenge contemporary turfgrass weed management. However, given the benefits, legume inclusion is a coming-of-age method of going green.

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