

TABLE 1. ALTERNATIVE MEDICINES FOR YOUR TURF

Though these products don't guarantee the 99% effectiveness we've come to expect from chemical pesticides, they do offer alternative control solutions when pests are not at their max.

PRODUCT

MINERAL REMEDIES

Silica Soluble forms of silica such as potassium silicate, calcium silicate, or silicate (SiO₂) can be sprayed at a rate of 7 lb. per 1000 ft². Dick Schmidt used Kasil #1 at 20 to 40 fl. oz. per 1000 ft². (information on the product can be found at www.pqcorp.com/Lines/PS.htm.)

Sulfur Sulfur is an inexpensive yellow powder available through many horticulture supply houses. It can be sprayed or dusted on the foliage at a rate of 1 to 2 lbs. per 1000 ft² for control of fungal pests.

Manganese Microelements like manganese (not to be confused with magnesium) are usually applied as a spray solution in either the mineral or chelate form.

Iron Iron chelate is a safer but more expensive alternative to iron sulfate. Both forms are generally applied as a spray because of the small quantities required.

Nitrogen Fast-release nitrogen fertilizer can be used to grow a turf out of many pest problems. N can be sprayed as a liquid or applied as a dry granular and irrigated to activate. A rate of 1 lb. per 1000 ft² solves many problems; a half rate is recommended for delicate turf areas.

Phosphorus Most phosphate products take far too long to dissolve and activate to aid in pest control. Quickly soluble sources like diammonium phosphate (DAP) can be dissolved and sprayed for faster action and medicinal effects.

Corn gluten This livestock feed product exhibits pre-emergence activity on crabgrass and other annual weeds. It also functions as a slow-release, natural fertilizer, containing 10% N.

HOW TO APPLY IT / WHAT IT CONTROLS

Lawrence Datnoff found silica fights gray leaf spot, Marty Petrovic found activity against pythium blight, and Schmidt found it works against dollar spot. In other studies, silica applications reduced brown patch disease by 10 to 20%, and also had activity on powdery mildew.

Roy Goss found that sulfur controls Microdochium patch. Pete Dernoeden found good control of take-all patch. Bruce Clark and Jim Murphy found a 23% to 42% reduction in take-all patch from using ammonium sulfate fertilizer. Sulfur is also used to treat powdery mildew. Goss concocted a sulfur regiment for *poa annua* control in creeping bentgrass turf, though Vargas admits, "it might do the job, but God help the patient."

Charles Peacock and his associates discovered that foliar applications of manganese reduce brown patch disease and even bentgrass summer decline.

Tara McLeod, agronomist for the New Zealand Turf Institute, discovered that monthly applications of iron sulfate at 1.7 lbs. per 1000 ft² effectively eliminated clover, slender speedwell, dandelion, and daisy from sports turf. Iron applications also control moss and cow grass and can mask the symptoms of fairy ring and yellow tuft.

Dollar spot, rust, red thread, pink patch, anthracnose, necrotic ring spot, summer patch, melting out and leaf spot can be reduced by nitrogen applications, according to Vargas. Nitrogen even benefits so-called "high-nitrogen diseases" like pythium and stripe smut, when applied after the disease has run its course, aiding recovery. Nitrogen can similarly help repair damage from insect outbreaks. Daniel Potter and his colleagues found it vital in promoting recovery from grubs. Legume weeds, like clover and black medic, can be reduced or eliminated by periodic nitrogen treatments.

Regular phosphate applications reduced crabgrass and dandelion populations to 5% from 26%, according to work by Wayne Huffine. Foliar sprays of soluble phosphate have also been shown to have a mild curative effect on brown patch disease.

Nick Christians discovered the herbicidal side-effects accidentally and has gone on to patent it for turf. Rates of 100 lbs. per 1000 ft² are needed for 95% crabgrass control. Work by Tom Turner has found mixed results of gluten, depending on the year, rate, and weather.

HERBAL REMEDIES

Salicylic acid — Salicylic acid is the white dusting you find on the surface of many plants, most notably on the bark of aspen trees. Aspirin is a derivative of salicylic acid. It is a natural protectant in plants that shields against oxidation and stimulates healing.

Xanthomonas — Suspensions of Xanthomonas bacteria can be sprayed on the turf on weekly intervals or injected through the sprinkling system for control of *poa annua* (annual bluegrass).

Schmidt has used salicylic acid to improve fitness against disease and even to enhance frost and cold tolerance. "We buy salicylic acid by the 10-lb. bag and it's cheap," he says. His recent studies have had more success with root applications — rather than foliar.

Japanese researchers, led by S. Imaizumi, found reductions in annual bluegrass populations of up to 75% from certain strains of Xanthomonas. Kentucky bluegrass, bentgrass, and zoysia were unharmed. Recent work by Vargas confirmed these findings. He found additional Poa control by mixing PGR (plant growth regulator) with the bacterial suspension. Work at the University of Massachusetts found that Xanthomonas works better against the annual strain of Poa annua than the perennial strain.

LIVE BIOLOGICAL REMEDIES

Pseudomonas — Michigan State University's TX-1 strain of Pseudomonas can be injected via a BioJect appliance into the irrigation system for disease suppression.

Nematodes — Seven different strains of beneficial nematodes are available for control of insect pests. Nematodes are microscopic pinworms, applied alive, that parasitize certain insect pests. However, when sprayed on, most will dry out and die. Granular applications are preferable. (A list of suppliers can be found online at

<http://edis.ifas.ufl.edu/pdf/IN/IN09600.pdf>)

Pseudomonas bacteria has shown activity against dollar spot, brown patch, and pythium diseases. It also shows minor activity against anthracnose, leaf spot, take-all patch, bermudagrass decline, necrotic ring spot, summer patch, pink snow mold, and gray leaf spot, according to Vargas. However, under severe disease pressure, fungicides are still required. Graham Davis reported a 27 to 33% reduction in dollar spot severity from TX-1, when tallied across an entire growing season.

Nematodes are effective against grubs, mole crickets, caterpillars, and soil inhabiting larva. Beneficial nemas are particularly "host specific," meaning that a given strain of nematode is picky, preferring certain insect pests over others. Be sure to get the right strain for your intended critter.

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