

Experiment Station that phenyl mercury compounds would remove crabgrass from bentgrass turf.

Another milestone was the finding by the New Jersey Agricultural Experiment Station in 1948 that potassium cyanate could successfully eliminate crabgrass in bluegrass turf.

Research is often a slow, painful process. For every success there are a thousand failures. Scientific research is not a series of miracles or brilliant discoveries. It is a gradual development, often the result of years of preliminary investigation. It takes time to test and to prove new ideas.

Unsolved turf problems regarding seeding establishment, *Poa annua* control, sub-surface fertilizer application, grass adapted to close cutting treatment, irrigation practices, and disease resistant grasses abound.

Research is of little value unless the fruits of its discoveries are harvested. The technical developments that I have mentioned above have already found practical use on golf courses. On some courses all are in general use; on others only a few. Financial resources, education, and individual aptitude for progress makes the difference.

THATCH CONTROL

By RALPH E. ENGEL

On many occasions, I have noted that serious thatch problems occur on soils having a low pH. Certainly, management can provide the proper pH through liming. Also, management can alter the nutrient and moisture conditions to some extent.

In earlier years when labor costs were lower, topdressings of soil were used heavily and frequently on the greens. Two years ago, I encountered a course that was still following this practice. These greens had an excellent tight turf that was free of thatch in spite of the fact that the greens had never been raked or cultivated. The absence of thatch on these greens can be explained by the thorough topdressing program that encouraged the organic residues to decompose readily. Apparently, the topdressing material had reduced the frequency of surface drying and enabled the bacteria to decompose organic matter without interruption. Possibly this type of situation illustrates the value of mixing soil and thatch as was suggested by Dr. Starkey. Let us remember this principle, since some of our methods tend to mix thatch and soil.

Topdressing with soil for thatch control has very limited application because of cost. Also, application of topdressing material on established thatch is undesirable because contact cannot be made with the soil. Certainly, we must utilize other methods for controlling thatch on most turf grass areas.

RYE-BERMUDA TRANSITION

By J. R. WATSON, JR.

Where Bermuda and ryegrass is used to maintain green turf throughout the year the two periods of transition are perhaps as critical as any facing the superintendent. The conversion from Bermuda to ryegrass as a rule causes little difficulty. However, a successful transition from rye to Bermuda the following spring will depend to a large extent on the manner in which the fall transition was handled.

The recommended procedure for the fall transition involves certain basic practices. These are:

1. About 4 to 6 weeks prior to seeding ryegrass, aerate the green as deeply as possible.

2. Immediately following aeration apply a complete fertilizer (one that contains nitrogen, phosphorus, and potash). This fertilizer should have a ratio of approximately 2-1-1 with at least one-half of the nitrogen in an organic form and be applied at a rate to supply approximately two lbs. of nitrogen per 1000 sq. ft. It is important that nitrogen be applied early enough in advance of seeding the rye so that the Bermuda will utilize most or all of it. No additional nitrogen should be applied at the time of seeding rye.

3. Following aeration and fertilization, mow at the usual height of cut until shortly before seeding rye.

4. A few days before seeding date, the Bermuda should be cut somewhat closer than normal.

5. Remove any thatch present.

6. Thoroughly scarify the green. This may be accomplished by aerating with the spoons or tines adjusted so that they penetrate only one to one and a half inches followed by spike disking. The object here is to insure contact between the seed and soil. Such will reduce the amount of rye grass otherwise needed to insure a good stand.

7. Seed 10 to 20 lbs. of ryegrass per 1000 sq. ft. The exact amount to use will depend on the personal preference of the superintendent, climatic conditions obtaining, condition of seed bed and whether or not the seed have been treated with a