

to be necessary to mow the bermuda under one-half inch or to remove the thatch in the fall by a light renovation. If this is not done, the stand will be spotty and uneven. Early fall renovation will bring early *Poa annua* seed germination and eliminate a long period of off-color turf. Frequent light watering in the fall also encourages early seed germination. Regular application of nitrogen during the winter are essential for a dense, even turf. We have found that some of the dense new bermuda, such as Tifton 127 and Tifton 123, may not permit the *Poa annua* to establish itself as well as the more open common bermuda." Dr. Youngner adds that some of the selections of *Poa annua* under study have a distinct perennial habit.

Again it is important to point out when fertilizing to supply only sufficient

phosphorus to meet the needs of bentgrass. Then apply arsenate of lead or other forms of arsenic when *Poa annua* seeds and again in the fall of the year when it is normal for *Poa annua* to germinate. Several superintendents have applied arsenate of lead as seedheads appear, but few of them use it during the germination period. The rate of application is from 5 to 10 pounds of arsenate of lead to a thousand square feet.

A new weedicide, butyldichlorophenyl methyl urea, that shows promise to determine its effectiveness regarding *Poa annua*, is being used on trial plots.

Culture practices that encourage bents to crowd out *Poa annua* are always in order. They include reducing soil compaction, eliminating mat conditions and fertilizing with slowly-available nitrogen.

FURTHER COMMENTS CONCERNING POA ANNUA

By DR. MARVIN H. FERGUSON

Southwestern Director and National Research Coordinator, USGA Green Section

Some of the conditions which favor the development of *Poa annua* may be restated here: Cool weather and moisture seem to favor *Poa*; on putting greens it appears to correspond to low-lying, wet areas; it appears to be more serious where soil is compacted; and *Poa* appears worse on putting greens where thatch exists. All of these observations bear out the conclusion that excess water near the surface of the soil contributes to *Poa* infestations.

Using these observations as a basis for our conclusions, several management steps are within the reach of most turf growers.

1. Use a vigorous strain of bent that competes well.
2. Encourage bentgrass to vigorous growth by fertilizing during late spring and early fall, while *Poa* is inactive.
3. Use fertilizer which is low in phosphorus. Only enough phosphorus to sustain bentgrass growth should be used. Lead arsenate treatments are more effective when phosphorus is at a low level.
4. Fall cultivations should be done early so that holes are covered before *Poa*

germination season.

5. Control diseases, insects, weeds, and other agencies which might contribute to a weakened turf.
6. Keep greens dry on the surface during the *Poa* germination season. Many will ask how the surface may be kept dry. There are several possible ways:
 - a. Keep mat and thatch to a minimum. Thatch holds excessive moisture in the surface.
 - b. Try to increase water infiltration, so that it does not lie near the surface. Use a disk spiker to cut through the turf and any accumulated thatch without seriously disturbing the soil. Try using a wetting agent to lower surface tension of the dater, so that it infiltrates and does not lie at the surface.
 - c. Use a sandy topdressing material which will not hold excessive moisture, and which will allow greens to hold a well-played golf shot without being excessively wet.