I.  *Poa annua*: THE INVADER

"*Poa annua* is supreme among weeds. It shows greater phenotypic and
genotypic variability than most, if not all, other weeds; it flowers and fruits
throughout the year; it germinates rapidly, is small enough to escape notice."

Tutin. Watsonia. 4:1-10. 1957

II.  *Poa* Profile

What are the characteristics of *Poa annua* that make it very competitive?

1. Diverse genetic make-up
2. Large seed production
3. Similar to desired turf
4. Very adaptive to site and climate
5. ____________ and ____________ biotypes.

III.  Biotypes classified by morphological characteristics

IV.  Survey of Europe’s *Poa annua* population

Who the heck would characterize 6,466 *Poa* plants? ________

___% true type annual plants
___% of reptans were annual
___% of reptans were annual but could overwinter
___% of reptans were biennials
___% of reptans were perennials

V.  *Poa annua* reproduction

*Poa* can produce viable seed during the entire growing season. Less than
15% of reproduction is outcrossing.

VI.  General Seed Properties

Ripening
Dormancy
Numbers per plant
Seed bank in the soil

*Poa annua* uses these seed properties to gain a competitive advantage
over other turfs. Research has produced viable annual bluegrass seeds
when clipped one day after pollination. This is unique among grasses.
Seed dormancy has been related to the irrigation management of a site. Frequently irrigated sites yield seed ________ dormancy period. Unirrigated sites yield seed ________ dormancy period.

VII. The Turfgrass Management Arsenal

There are five strategies that can be used to manage *Poa annua*.

1. _______________
2. _______________
3. _______________
4. _______________
5. _______________

VIII. Preemergence Herbicides

It is __________ to achieve 100% efficacy using only a preemergence program.

When using a preemergence program, fall and spring applications are necessary. Fall applications should be made around ___________. Spring applications should be around ________.

BOTTOM LINE
Pre alone is not 100% effective.
Root pruning during sensitive times needs to be considered.
PRE timing should be prior to major germination time.
Multiple applications are needed.
Must have a postemergence partner.

IX. Postemergence Strategy

The only available control is Prograss (ethofumesate).

Notes on use of ethofumesate.
Control with Prograss needs to be well timed and requires 2 or more applications.
Prograss applications should be made in the ________.
Treatments need to be started at the first signs of invasion. When *Poa annua* is present in no greater than 15%. NOTE: Start sooner than later.
If you think you have 15% you probably have 30-40%.

Does Prograss provide a long preemergence residual in established turf?___
For effective control, Prograss in the fall needs to be followed with a __________ _____ in the spring.
X. Prograss the Silver Bullet?

The use of Prograss needs to be examined closely. There is a significant potential for injury to the desired turf.

More applications of Prograss provide better control of *Poa annua* but risk of injury is also increased. Injury associated with Prograss is not well understood. Possible factors include:

1. Areas in heavy shade
2. Standing water
   - Low lying
   - Poorly drained

**BOTTOM LINE**

Must wait for *Poa annua* to be present in order to control.

Supplement Prograss when PRE breaks.

Multiple applications required
   - more is better (higher injury potential)

Results are not consistent
   - damage not understood
   - shade?

Use a first signs of invasion (<15%)

XI. Sterilization

Sterilization for renovation will temporarily level the playing field for desired turf.

Eradication of seeds in the seed bank, mycelium, and nematodes.

Basamid (dazomet) is the only product available for seed eradication.

**Basamid Results**

Reduced viable seeds by >95%

Non-destructive to architecture

Immediate seeding

Safer handling
**XII. Cultural Practices**

Effect of Cultural Practices on Annual Bluegrass Populations

<table>
<thead>
<tr>
<th>Management Condition</th>
<th>Reduce <em>Poa annua</em></th>
<th>Maintain <em>Poa annua</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Moisture</td>
<td>infrequent deep irrigation</td>
<td>daily surface irrigation</td>
</tr>
<tr>
<td>Seed Production and</td>
<td>collect clippings</td>
<td>return clippings</td>
</tr>
<tr>
<td>Turf Vigor</td>
<td>raise mowing height</td>
<td>lower mowing height</td>
</tr>
<tr>
<td>Compaction</td>
<td>aerification in spring or after applying preemergence</td>
<td>aerification in late summer</td>
</tr>
<tr>
<td>Nutrient Source</td>
<td>inorganic nitrogen sources</td>
<td>organic n sources – increased earthworm activity, worm casts</td>
</tr>
<tr>
<td>Fertilization Timing</td>
<td>nitrogen in late fall limit phosphorus</td>
<td>nitrogen in late summer and early spring phosphorus in late summer</td>
</tr>
</tbody>
</table>

**XIII. Plant Growth Regulators**

PGRs can be used to change the growth rate or growth habit of *Poa annua*.

- Scott's TGR (paclobutrazol)
- Cutless (flurprimidol)

These products cause some damage to *Poa annua* and inhibit growth rate. Creeping bentgrass is less effected and therefore gains an advantage over the *Poa* during the inhibitions period.

- Embark (mefluidide)
This product will inhibit the formation of seedheads. Timing is crucial because mefluidide is short-lived.

- Rubigan (fenarimol)
Used primarily as a fungicide, fenarimol does exhibit preemergence activity on *Poa annua*. 