Optimizing pregermination techniques for three turfgrass species
2013 Research Update

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Purpose of Project:
To provide research based recommendations for pregerminating three turfgrass species by investigating
the influence of water temperature, soaking duration, aeration, and drying time on germination and
seedling persistence. The objectives of this study are to:

1. Determine the effect of soaking duration, water temperature, and aeration on seed germination and
   seedling persistence of three turfgrass species.

2. Determine the optimal moisture content of seed from three turfgrass species to maximize
   spreadability and survival rate.

Experimental Treatments:
Kentucky bluegrass (Wildhorse), perennial ryegrass (Soprano), and creeping bentgrass (A4) have been
obtained to initiate three separate studies this spring semester. All studies will include non-pregerminated
seed of each species as untreated controls.

The first study will include all three species, four soaking durations (8, 24, 48, and 72hrs) and treatments
will be aerated or not aerated. The study will have two primary phases; pretreatment and germination.
The pretreatment phase will consist of seeds (900g) soaking in 8000ml of water at 20°C in a 4 gallon
bucket for the various durations. For each of the soaking durations, half the treatments will be aerated
using a commercial air pump and 6” airstones. Following pretreatment, 100 seeds will be individually
placed on moistened blotter paper and placed in 6” X 9” plastic incubators to determine germination rate.
The incubators will be placed in a growth chamber that will remain at 25°C for an 8 hr photoperiod and
reduce to 15°C for 16hrs of darkness. Germination counts will be conducted daily for the first 10 days and
final counts completed at 14 days for perennial ryegrass, 21 days for Kentucky bluegrass and 28 days for
creeping bentgrass.

The second study will include the same turfgrass species and be performed very similarly. However,
water temperature during the pretreatment soaking phase will include three separate temperatures, 4°C,
20°C, and 25°C. Optimal aeration and soaking duration (determined from study 1) will be kept constant
for all treatments.

The third study will include the same turfgrass species and the optimal soaking duration, water
temperature, and aeration. Following pretreatment, the water content of the seed (i.e. drying time) will be
varied to determine the water content level at which percent germination is reduced. It is important to
determine how dry the seed can get to assist will the ease of spreading without negatively affecting
percent germination. These studies will be initiated January 23.