Validation of Plant Growth Regulator Products for the Enhancement of Germination, Growth and Development of Native Plants

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Introduction

All plants naturally produce hormones that regulate metabolism, growth, and development. A number of plant hormones were identified in the 1930's - by regulating these hormones, researchers found that they could control the loss of leaves, and formation and growth of roots, shoots, buds, flowers and fruits.

What are Plant Growth Regulators (PGRs)?

- Chemical stimulants (synthetic analogues) that promote existing treated seeds per plate saturated with ultrapure water
- Enhancing aboveground biomass development may reduce bare ground
- Gibberellins significantly improved shoot length for the majority of Ticklegrass
- Junegrass
- Foul Bluegrass
- Improving early emergence and shoot length may improve competition
- Hairy Wild Rye
- 21%
- GAA4/7
- Measurement Endpoints:
- Auxins
- Cytokinins
- Enhancing belowground biomass development may assist in erosion
- A one
- There are 5 major types of PGRs:
- Strawberries
- Kinine and brassinolide significantly improved root length for the
- Western Wheatgrass
- GA340
- Abscisic Acid
- (Rough Fescue
- Which of the 5 major PGR products have been identified to improve seed
- Foul Bluegrass
- Rocky Mountain Fescue
- PGRs having the greatest impact on overall seed development included
- Yarrow
- +
- Figure 1:
- Validation of Plant Growth Regulator Products for the Enhancement of Germination, Growth and Development of Native Plants
- (i.e., non
- hormonal activity
- Toxic) (increases cell growth & expansion)
- (influences fruit ripening or aging)
- (increases stress resiliency)
- GA
- -based revegetation and restoration
- do not pose significant risk to the environment
- • PGRs having the greatest impact on overall seed development included
- to the environment
- magnitude of the improvement in germination rate.
- were measured to have significant increase in germination rate over the control (p = 0.05; n = 100) and the magnitude of the improvement in germination rate.
- • Conclusions
- • PGRs have the potential to break dormancy and improve emergence
- • A one-time seed soak did not increase the total number of germinable seeds for most species tested in the trial
- • Gibberellins significantly improved shoot length for the majority of species
- • PGRs having the greatest impact on overall seed development included GAA4/7 and brassinolide
- • Significance:
- • Improving early emergence and shoot length may improve competition with weeds and non-desirable species
- • Enhancing belowground biomass development may assist in erosion control and improve plant establishment
- • Enhancing aboveground biomass development may reduce bare ground by increasing litter