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Reference: Turf Grass PGPR



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Plant Growth Promoting Rhizobacteria Applications for Grass Growth and Nematode Protection

Auburn University is seeking a licensee or development partner for the application of bacterial strains that promote growth in turf grasses and pasture grasses, as well as demonstrate nematicidal activity.

Overview: Plant growth promoting rhizobacteria (PGPR) can be used to boost the health and growth of turf and pasture grasses. These naturally occurring bacteria can strengthen grass roots making them more resilient to pests while also increasing their vitality. In addition to this, several PGPR strains have been demonstrated to be an effective nematicide. After being tested against root-knot nematodes, these PGPR strains were able to eliminate high numbers of juveniles, protecting the grass roots.



Advantages:

- **ENVIRONMENTALLY FRIENDLY** - By utilizing naturally occurring rhizobacteria, this method reduces or eliminates the chemical hazards of current methods.
- **IMPROVES PLANT GROWTH AND HEALTH** - Use of PGPR was shown to improve root growth and health in grasses, including outperforming fertilizer.
- **ADAPTABLE** - Can actively respond to seasonal stresses, such as drought.

Description: PGPR are naturally occurring bacteria that do not affect the environment negatively. Historically, PGPR research has been focused on row crops and other food crops. Auburn has initiated studies into the effects of PGPR applied to turf and pasture grasses. Bacterial strains were isolated from turf grasses, and then screened for various activities, including growth promotion.

Further, nematodes can pose a serious threat to grass health and growth by attacking the plant roots. While there are many chemical nematicides focused on dealing with such pests, fewer biological solutions exist, and none that are specialized for use with grasses.

With this work, PGPR strains have been shown to not only promote plant health and root growth, but to also demonstrate nematicidal activity.

Status:

- Multiple strains available for exclusive or non-exclusive licensing
- Strain-based and possibly species-based patent protection available
- At least one strain identified that outperforms fertilizer in field plot trials with pasture grass
- Eleven strains identified with *in vitro* nematicidal activity against root knot nematodes (RKN) greater than the commercial biological Nortica™, with one strain approaching the activity of the chemical agent fluopyram (Indemnify™); nematicidal activities confirmed in grasses in greenhouse studies. RKN activity has applications beyond grasses.

