

PROTINUS™

SEED NUTRITION PRODUCT



Optimize your turf and grass seed performance with PROTINUS Seed Nutrition Product

Getting your turf, grass or forage stand off to a good, healthy start is critical to its long-term performance and feed potential. Research trials have shown increased plant health in young grass plants - as shown by earlier emergence, more even growth and improved nutrient content with PROTINUS™ Seed Nutrition Product.

PROTINUS is a unique seed applied product scientifically formulated to promote early plant growth and nutrition in agricultural and horticultural crops, and works in the following ways:

- PROTINUS enhances the pH in the micro-zone around the seed, enhancing nutrient availability and optimizing nutrient uptake.
- PROTINUS delivers nutrition directly to the seed. Three key micronutrients important to early plant growth functions – zinc, manganese and iron – are included in the PROTINUS formulation.

Improved Stand Establishment

PROTINUS treated grass seed has shown a positive response in early growth under both optimal and cool, spring growing conditions. Seedlings emerge more quickly and evenly, resulting in a more vigorous stand and tend to be larger, compared to the check.

In a study evaluating PROTINUS impact on Kentucky bluegrass stand establishment, PROTINUS treated stands emerged one to two days earlier, and resulted in 29% more plants per square centimeter by 14 DAE than all other treatments.

**Kentucky Bluegrass Seedling Count
(per cm²) at 14 DAE**

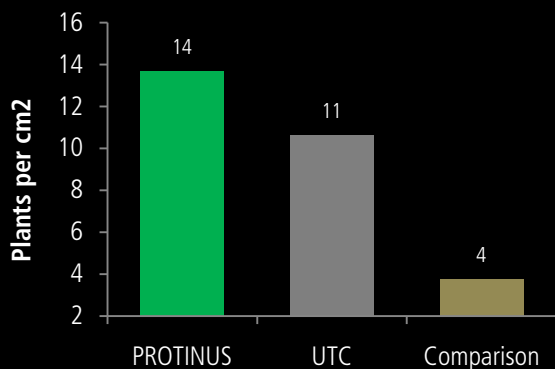


Figure 1: PROTINUS treatment resulted in 27% more seedlings per cm² than the check and 250% more than the comparison treatment.



In this photo, Kentucky bluegrass treated with PROTINUS on the far right emerged 1 – 2 days earlier compared to the check on the far left and comparison product in the middle.

Larger, More Vigorous Seedlings

In a study evaluating the impact of PROTINUS on ryegrass species, the PROTINUS treatment resulted in seedlings with 36% greater total length at 7 DAE compared to the check. (significant at $p=0.1$)

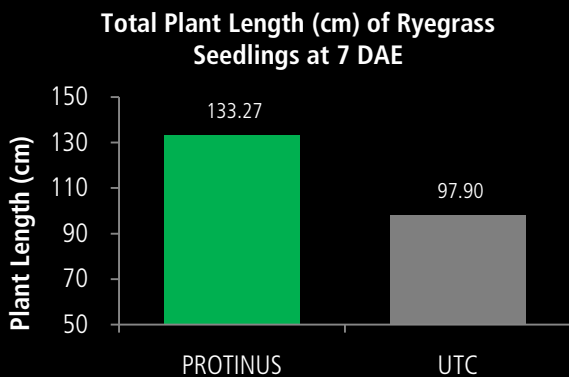


Figure 2: PROTINUS treated ryegrass seed resulted in seedlings that were 36% larger than the check.



In this photo, ryegrass treated with PROTINUS (on the left) emerged 1-2 days earlier and seedlings were 36% larger compared to the check on the right.

Improved Seedling Nutrition

In evaluating the impact of PROTINUS on nutrient levels in forage stands, tissue samples were analyzed to determine Zinc and Manganese levels. Results indicate that both Zinc and Manganese levels were significantly higher at each harvest date. (significant at $p=0.06$)

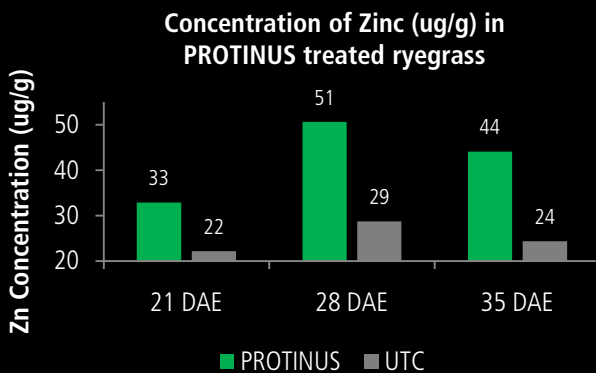


Figure 3: PROTINUS treatment resulted in up to 76% higher Zinc levels compared to the check, at three harvest intervals.

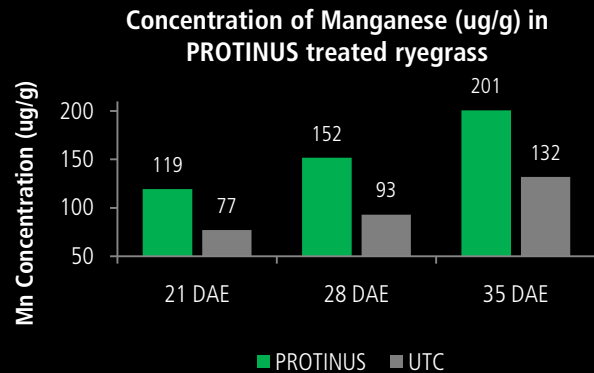


Figure 4: PROTINUS treatment resulted in up to 52% higher Manganese levels compared to the check, at three harvest intervals.

Based on the results of these studies, and others conducted by Wolf Trax, PROTINUS treatment resulted in more even emergence, faster stand establishment and larger grass seedlings with increased nutrient levels.

For more information about **PROTINUS**, please contact your local Wolf Trax retailer.



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INNOVATIVE MICRONUTRIENTS