INCREASING PRODUCTIVITY OF LEGUMES USING NITRAGIN COMBINED WITH BIOSTIMULANTS

Description
Nitragin is a highly effective preparation developed on the base of strains of root nodule bacteria. It has a wide range of activity and is used for legumes (soybean, clover, sweet clover, alfalfa, sainfoin, etc.). The operation principle is based on nitrogen-fixing ability of root nodule bacteria. The preparation provides nitrogen enrichment of plants without environment pollution. The preparation increases soil fertility and yield, improves the quality of ready-made environment-friendly products and decreases disease rate of plants. During sufficiently humid years, seeds should be treated once with nitragin combined with rutin and quercetin. In dry years, additional spraying of plants by biostimulants, preferably monoethanolamine, is needed. Combination of nitragin with natural biostimulants (rutin, quercetin, and monoethanolamine) increases the yield of legumes. The principle of combinatory effect of nitragin and biostimulants is fairly simple and involves several stages:

- Production or purchase of the appropriate nitragin for certain legume varieties;
- Application of nitragin on the seed surface before sowing with simultaneous application of biostimulants solutions (concentration of $10^{-7}$ M);
- Mixing in order to ensure uniform distribution of nitragin and biostimulants of the seed surface;
- Manual processing for small lots of seeds;
- Spaying by liquid nitragin and stimulants for large lots of seeds.

The preparation is harmless to humans and animals.

Technical appraisal and economic benefits
The Botanical Garden and Institute of Fodder SB RAAS have been testing nitragin in the field conditions for ten years in three regions of Siberia. The yield of soybean seeds increased by 2-3 centner per hectare, i.e., by 10-20 %, and that of alfalfa dry biomass by 10-18 %.

Application areas
Agricultural production and use in the fields of legumes or mixed grass and legume crops.

Development stage
Initial stage of production of liquid nitragin at rates sufficient for treating seeds in the sown area of 1,000 ha has been arranged at the Central Siberian Botanical Garden. The preparation is to be used at farms and joint-stock companies in Novosibirsk, Tomsk, and Kemerovo Oblasts of Siberia.

Patent situation
Three patents were granted in the Russian Federation in 1981, 1982 and 2002.

Commercial offers
Agreements on production and supply of nitragin, further research and development of new kinds of nitragin and testing.

Estimated Cost
To be negotiated.
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