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## Impact assessment of seed treatment in rice crop in district Auraiya Uttar Pradesh

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### Abstract

Quality of seed is very important to increase the production. It is necessary to maintain the varietal purity of seed, and control the seed borne disease for the production of high-quality seed. Therefore, the major objective of this paddy seed production technique manual is to improve the knowledge to farmers about technical and management activities, including increment in production of quality seed of paddy. Seed borne infestation of insects and diseases pose devastating consequences to crop production. The concept of seed treatment is the use and application of biological and chemical agents that basically can control or contain primary soil and seed borne infestation. This helps to improve crop safety which in turn leads to good establishment of healthy and vigorous plants which results in better yields. KVK, Auraiya conducted an on-farm trial assesses the seed treatment on the grain yield of paddy. The result showed that seed treatment with 2 g carbendazim & 0.2 g streptomycin per kg gave highest yield 63.26 Q/ha as compared to seed treatment with only streptomycin 0.2 g/kg seed and with only 2 g carbendazim/kg seed.

**Keywords:** Seed treatment, carbendazim, streptomycin, paddy crop

### Introduction

Maintaining the quality of seed is dependent on many environmental factors, some of which are moisture, temperature, humidity, and storage conditions. Even though these factors are properly accounted for, seed quality may still be reduced by certain seedborne diseases or destroyed by insects and other pests. Research has shown that treating seed with one or more pesticides is the most economical and efficient way to protect seed from these pests and improve seed quality. Since pesticides are poisonous, extra care and safety precautions must be taken when applying them and in handling seed after it has been treated.

"Seed" means a matured ovule having embryonic plant, food substance and protective cover or seeds or germ which can be used in sowing or planting to produce crop by reproducing in sexual or asexual mode. (Seed Act, 1988).

- Seed is a live embryo in dormancy mode with or without cover, which can grow as a fully developed plant under a favorable environment.

### Features of quality seed Features of quality seed is as followings

- Seed purity
- It should have genetic purity.
- It should have physical purity (no mix of other crop seed, weed seed and inert matter).
- It should have high germination vigor, germination rate and sprouting capacity.
- It should be free from seed borne disease and pests.
- It should have high growth and development capacity with germination capacity.
- It should be healthy and shining without any spot and weakness on looking.
- It should be in equal size and weight to produce healthy plants.
- It should have standard moisture level - with a maximum of 13% (as recommended by government) in paddy seed, which should clink while biting and shaking by hand.

### Importance of Good Quality Seed

- Quality seed gives more production in comparison to normal seed.
- It also leads increment of production and income of farmers.
- Production from quality seed can be easily traded in the market.
- If high quality seed is produced in the mid-hill region of Nepal, the production of paddy will also be raised in that area.
- The variety selected from Nepal has higher adaptability and more resistant than the seed imported from foreign country.
- There are many pockets area for quality seed production in mid-hill region, which is also easily accessible to remote farmers.
- Quality seed production can also contribute to food security via increasing productivity.

In this way seed treatment will play an important role in protecting the seeds and seedlings from seed borne diseases and insect pests affecting crop emergence and its growth. Commercial seed treatment to deliver pesticides has been extensively used for a wide range of crops and use of chemicals seed treatment will undoubtedly continue. Physical seed treatment (dry or aerated heat, hot water, radiation etc.) and methods using natural crop protection agents/microbial inoculants could be an alternative to chemical seed treatment methods in crop production. Research efforts in alternatives methods to chemical crop protection are currently being addressed worldwide especially with regards to food safety and environmental sustainability (Nicholas and Groot, 2013). Moreover, pre-sowing physiological treatments (seed priming, fluid drilling etc.) for seed enhancement have a pivotal role in seed treatment technology. Biological seed treatments are made up of renewable resources and contain naturally occurring active ingredients targeting protection against soil-borne pathogens, alleviate abiotic stress and increase plant growth Keeping in view of the importance of seed treatment to achieve better crop stand of major crops, virtue of its IPM compatibility and the fact that many farmers in developing country like India not aware/do not adopt this practice, adoption of this practice by the farmers across the country, requires effective extension strategies to make them aware about different aspects of seed treatment and using treated seeds to enhance production and attaining food security as well. Moreover, the purpose of this review is to describe selected seed treatment technologies and their technological advancement that have helped out or will in the near future, the development of better and more uniform crop production. Present scenario: The high cost of GM seed is a key factor in the high demand for and growth of chemical seed treatments. With the regulatory issues facing both granular and fumigant nematicides, there has been a great deal of focus on seed treatment uses of nematicidal and nematostatic products. A critical success factor for the seed treatment market was the development of a complete protection solution against various plant stressors in a single product that is grower-friendly, crop-friendly and environmentally responsible (Schwinn, 1994) [5]. Seed treatments, compared to conventional crop protection products, offer competitive costs, reduced application efforts and save the time. As a result, seed treatment is currently the fastest growing agricultural chemicals sector and has a significant economic impact on markets, particularly in the U.S. and Europe (Research and Markets, 2013). Presently, 70% requirement of seed is met from the farmer's own stock which goes for sowing

without seed treatment. Even if seed is sourced from the private or public sector agencies, except hybrid seeds, large percentage of such seed is untreated (Upadhyaya, 2014) [6]. The estimates reveal that on an average, 80% of the seed sown in the country is untreated, as against the 100% seed treatment practice in developed countries. Seed treatment not only protects the seeds from seed and soil borne diseases but also gives protection to the emerged seedlings from sucking insect pests affecting crop emergence and its early growth. However, many farmers in the country are neither familiar with the practice nor follow it (DPPQS, 2007) [1].

### Materials and Methods

Assessment of seed treatment in paddy crop Location of the study: one village were studied namely- Sibupur block Bhagyanagar. In through Krishi Vigyan Kendra Auraiya, in village 05 farmers were selected from district Auraiya UP India.

**Sample size and selection:** Number of 05 Farmers were selected for the treatment of the study.

**Data Collection:** An interview schedule was used to collect information on general information including location, showing seed habits, religion, seed treatment and use, amount and frequency of seed. Data was collected by interviewing on farmer's field.

### Results

#### Impact of seed treatment in paddy crop

The analysis of data revealed that Assessment of seed Treatment in paddy crop Technology T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>. T<sub>1</sub> -Treatment of carbendazim 2 g/kg with yield 5.992 (T/ha) and net returns in Rs. 0.27568 (in lakh. /ha). T<sub>2</sub>- streptomycin 0.2 g/kg with 6.204 Yield (t/ha) and Net Returns Rs. 0.2946 (in lakh. /ha). T<sub>3</sub>- carbendazim 2 g + streptomycin 0.2 g/kg with yield 6.326 Net Returns Rs. 0.30464 (in lakh. /ha) The technology successfully adopted and accepted by the farmers.

**Table 1:** Impact of seed treatment in paddy crop

Technology Option	No. of trials	Yield (T/ha)	Net Returns (Rs. in lakh./ha)
T <sub>1</sub> - Seed treatment with carbendazim 2 g/kg	05	5.992	0.27568
T <sub>2</sub> - streptomycin 0.2 g/kg		6.204	0.2946
T <sub>3</sub> - carbendazim 2 g + streptomycin 0.2 g/kg		6.326	0.30464

### Conclusion

Seed treatments play a crucial role by providing protection for the seed and seedlings against disease and insect pressure from the moment they are planted. There are hundreds of pathogens and insects that can damage or even kill the seed or seedlings before they even have a chance to develop, which can negatively influence the crop's progress throughout the growing season and have a major impact on the yield results at harvest time. Seed treatment refers to the application of fungicide, insecticide or both to the seeds to disinfect (deep seated) and disinfest (over seed coat) them from seed borne or soil borne pathogenic organisms and storage insects. It also refers to subjecting the seed to solar energy exposure or immersion in conditional water. Kvk auraiya identified the problems of farmers in paddy crop Low yield due to seed born diseases and provided seed treatment solution for the increases with yield with T<sub>1</sub>- Seed treatment with carbendazim 2 g/kg, T<sub>2</sub>- streptomycin 0.2 g/kg, T<sub>3</sub>-

carbendazim 2 g + streptomycin 0.2 g/kg.

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