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Seminar II

on

"Precision Farming: The Future of Indian Agriculture"

Synopsis

Agriculture is the engine of the Indian economy, which accounts for almost 20 per cent of GDP and employs 41.49 per cent of the population (Agricultural Statistics at a Glance, 2021). Though this is a rosy picture of our agriculture, how long will it meet the growing demands of the ever-increasing population? This is a difficult question to be answered, if we depend only on traditional farming system. In the present context, indiscriminate and non-judicious use of inputs along with the improper management of the resources over a period of time has resulted in land degradation and stagnation of production and productivity. In the light of today's urgent need, there should be an all-out efforts to use new technological inputs to make the 'Green Revolution' as an 'Evergreen Revolution'. The only option remained to increase the production is to adopt the improved innovative technologies and to use the available resources efficiently, in other words, precision farming has to be practised. Precision agriculture can address both economic and environmental issues that revolve around the agricultural production. The concept of "doing the right thing in the right place at the right time" has a strong intuitive appeal. Further, precision farming technologies allows the integration of local and traditional knowledge into farm resource management to create a spatial database, which would help for prosperity. With this brief backdrop, the current seminar has been conceptualized with the following objectives:

1. To understand the concept of precision farming
2. To know about current scenario and future trends of precision farming in India
3. To know about different government initiatives related to precision farming
4. To review the related research/case studies

Precision farming

Precision farming is defined as information and technology based agricultural management system to identify, analyse and manage site-soil, spatial and temporal variability within fields for optimum profitability, sustainability and protection of the environment. (Robert *et al.*, 1995).

Five R's of Precision farming: Right input, in the Right amount, to the Right place, at the Right time, in Right manner

Benefits of Precision farming: Compile and analyze data in real time, accuracy at higher speed, reduces skip and overlap with input application, resource use efficiency, increase in yields, less affected by weather, monitor soil and plant parameters, helps automated field management

Components of Precision farming: Remote sensing, geographic information system, global positioning system, yield monitoring and variable rate technology

Components of Precision farming adoptable under Indian condition: Good quality seed or planting materials, precise land preparation, timely sowing/planting, application of organics (FYM/ bio compost/cake/green manuring/crop residue), drip/ sprinkler method of irrigation, fertigation, herbigation, mulching with plastic/organics, plant protection measures

Constraints in adoption of Precision farming in India: Small size of land holding, high cost of investment, highly skilled labour requirement, lack of training programs, complexity of tools and techniques requiring new skills, lack of local technical expertise, heterogeneity of cropping systems and market imperfections, inadequate knowledge about precision farming among the farmers, un assured availability of quality seed or planting material of desired crop and variety.

Government initiatives: Pradhan Mantri Krishi Sinchai Yojana, Precision Farming Development Centres, Micro Irrigation Fund (MIF), National Horticulture Mission

Research studies

Greena *et al.,* (2015) found that more than three fourth (76.67 %) of the respondents had high level of knowledge on precision farming technologies followed by 17.50 per cent with medium level of knowledge and l5.83 per cent had low level of knowledge.

Rajesh (2020) found that nearly three-fourth (73.00 %) of the horticulture crop growers belonged to medium to high production performance. While, more than two-fifth (43.00 % and 42.00 %) of the growers belongs to medium economic and social performance respectively. Further, with respect to overall performance, more than two-fifth of the (43.00 %) horticulture crop growers belonged to medium overall performance level followed by high overall performance level (33.00 %) and low overall performance level.

Conclusion

Currently, potential benefits of precision farming are utilized only to a small extent mostly limiting to large farmers with limited adoption of only few components of precision farming. This paves a numerous opportunities for farmers to identify specific crops and to enhance the production and productivity by exploring the various components of precision farming. It has high potential to increase farmer's income, increase extrinsic and intrinsic quality of agricultural production, and decrease negative environmental effects of agricultural production and all other issues at the same time. This has to be effectively utilized by the farmers to achieve higher returns and maintain sustainability in the production.

References

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