

## Need for Precision Farming

SMS Ramya<sup>1</sup>, N. Mahesh<sup>2</sup>

<sup>1</sup>M.Sc.Scholar, Department of Agronomy, PJTSAU, Jagtial-505 529

<sup>2</sup>Assistant professor, Department of Agronomy, PJTSAU, Jagtial-505529

Professor Jayashankar Telangana State Agricultural University, Telangana

ARTICLE ID: 099

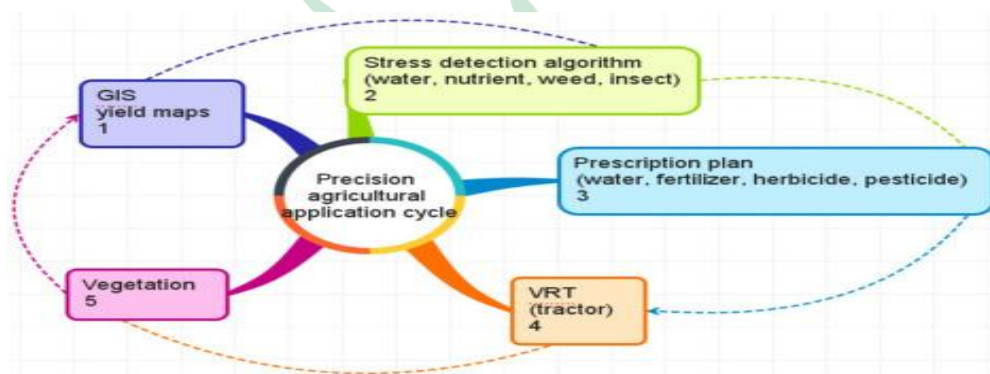
Today's polluted environment and over exploited natural resources, demand for immediate precautionary steps for sustainability of the earth. Agriculture also hugely contributes to such devastated condition. Precision farming has overall potential to help alleviate the problems those future world is going to face.

### What is Precision Farming?

“Precision farming/Precision agriculture is generally defined as information and technology based farm management system to identify analyze and manage spatial and temporal variability with in fields for optimum productivity and profitability, sustainability and protection of the land resources by minimizing the production costs”.

### Introduction:

Precision farming is an approach where inputs are utilized in precise amounts (i.e. chemical fertilizers and pesticides) based on the right quantity, at the right time and in the right place to get increased average yields compared to traditional cultivation techniques. Hence it is a comprehensive system designed to optimize production by using key elements of information, technology and management, so as to increase production efficiency, improve quality, improves the efficiency of crop chemical use, conserve energy and protect environment



Thus precision farming is an appealing concept and its principles quite naturally lead to the expectation that farming inputs can be used more effectively with subsequent improvements in profits and environmentally less burdensome production. The precision farming development of today can provide the technology for the environment friendly agriculture of tomorrow.

#### Major components of precision farming:

- 1. Global positioning system (GPS):** GPS as a satellite-based radio-navigation system maintained by the US Department of Defense (DoD) which provides accurate 3-dimensional location data (latitude, longitude and elevation) world wide at any time, in any weather, available freely.
- 2. Geographical information system (GIS):** GIS is considered as the brain of Precision agriculture. For strong and handling of location specific data, GIS is essential because it has the potential to analyze and process a large amount of data at high speeds. Also, time and money saving could be achieved by analysis remote sensing data and maps collected through satellite information system for land cover management simultaneously.
- 3. Remote sensing (RS):** Collection of data is done by sensors which are placed on satellites or mounted on aircraft, by detecting the energy that reflected from earth. RS has the ability to monitor the dynamic conditions of soil, plant, area under (within 95% accuracy), single crop cultivation area (within 10 days with 90% accuracy).
- 4. Variable rate technology (VRT):** Application of inputs precisely in variable type and quantity in different pieces of land according to the present status and requirement is the practice of variable rate technology in Precision agriculture.

#### Need for Precision Farming?

- ✚ To improve agricultural productivity
- ✚ Prevents soil degradation
- ✚ Reduction of chemical application in crop production
- ✚ Efficient use of water resources.
- ✚ Dissemination of modern farm practices to improve quality, quantity and reduced cost of production.
- ✚ Developing favorable attitudes

- ✚ Changing the socio-economic status of farmers.

**Advantages:**

- ✚ Agronomical perspective
- ✚ Technical perspective
- ✚ Environmental perspective
- ✚ Economic perspective

**Conclusion:**

Precision farming is still only a concept in many developing countries and strategic support from the public and private sectors is essential to promote its rapid adoption. There are tremendous benefits of precision agriculture; still we cannot skip its limitations because they create the hindrance for its adaption in the practical field situation. Small land holdings, heterogeneity of cropping systems, high cost technology, lack of local technical expertise and knowledge like computer analysis and decision making are probably greater constraint in its success path because technological gaps seen in the farmer community is making them reluctant to rely on precision agriculture technology. But by overcoming these issues, we can positively use precision farming developments of today to create an environment friendly agriculture of tomorrow. Developments are going on for rapidly mapping insect infestation, disease spread pattern study via GPS and GIS receiver's, variable rate spray operators are able to provide a permanent record of where and when the treatment took place back to the field manager by GPS data logger. Fleet management, field robots are some of the future technologies which are still there to be successfully implemented in agricultural fields.