Precision Agriculture Based on GIS

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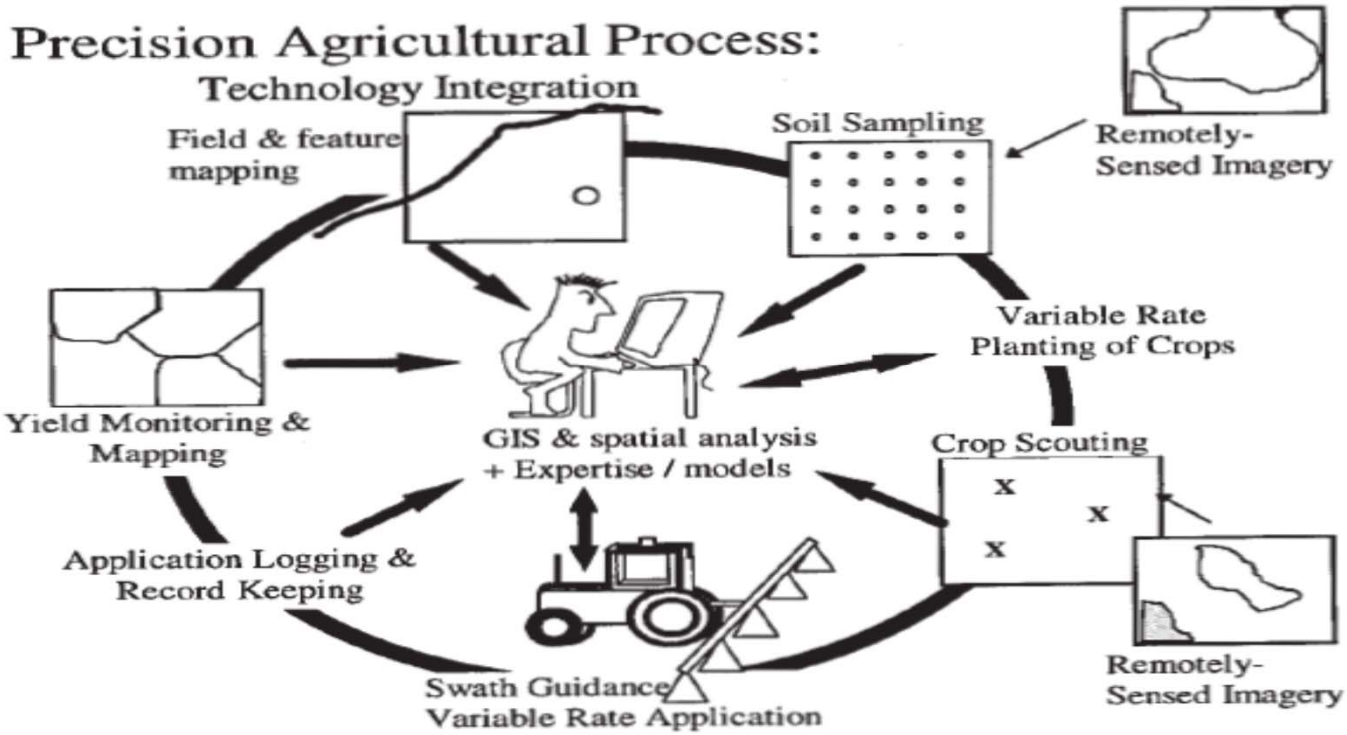
Outlines

- Introduction to Precision Agriculture (PA).
- Literature review.
- Applications of GIS in PA.
  - Yield Mapping and Monitoring.
  - Soil sampling.
  - Variable Rate Applications (VRA).
- Case Study.
- Conclusion.

Introduction to PA

Precision Agriculture (PA): is conceptualized by a system approach to re-organize the total system of agriculture towards a low-input, high-efficiency, sustainable agriculture (Shibusawa, 1998).

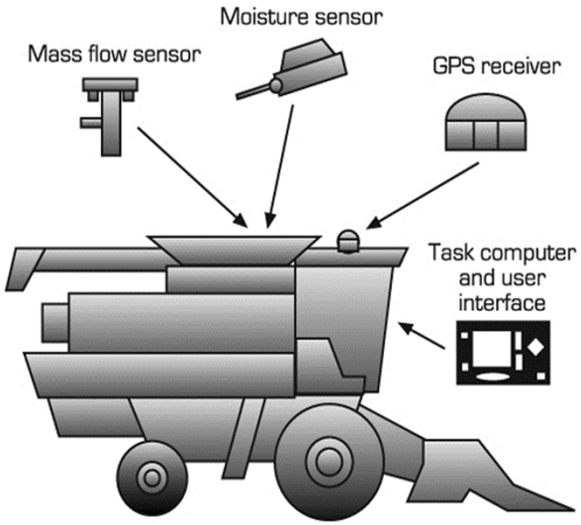


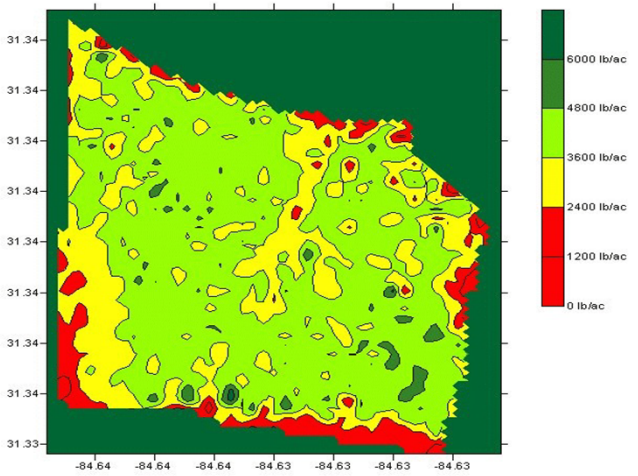
Literature review

- VRA is another technology that can modify the rate of input flow or switch input sources in response to GIS records that guide a GPS system (Bullock et al., 2002)
- Mapping yield information allows a better understanding of where and why yields vary across fields (Seelan et al, 2003).
- The GPS and the GIS allow data to be analyzed on a sub-field level allowing precise knowledge of field variability (Backes et al,2006).

Applications of GIS in PA

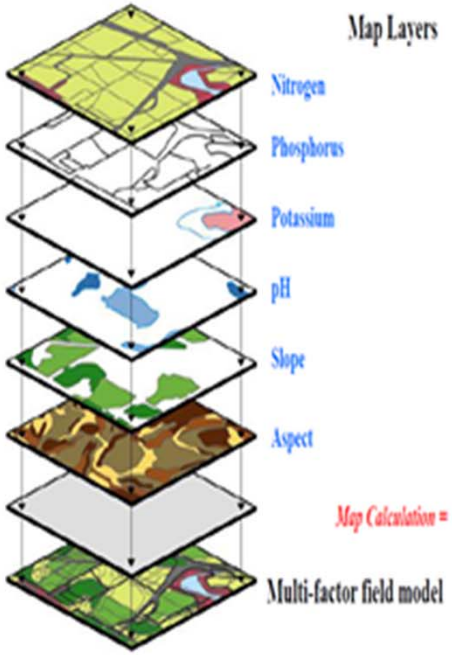
- Yield Mapping and Monitoring:

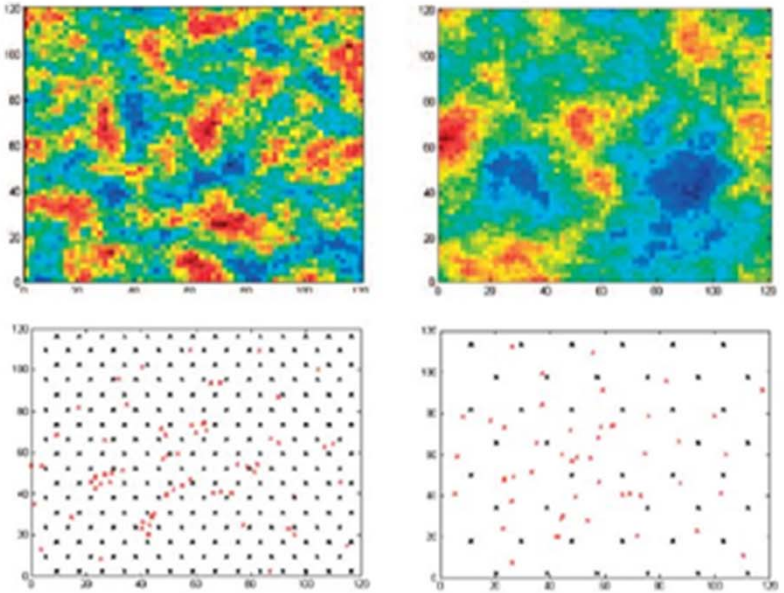




Applications of GIS in PA

- Soil sampling:

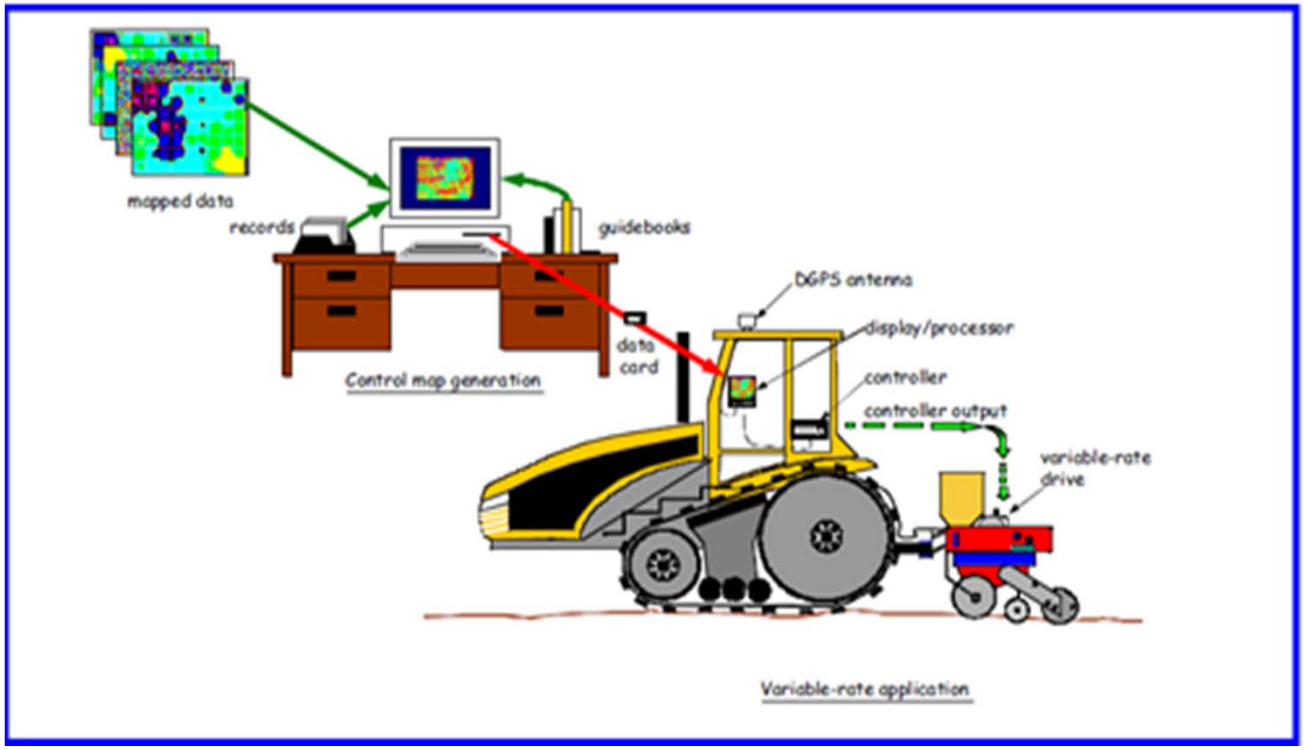




Applications of GIS in PA

Variable Rate Applications (VRA):

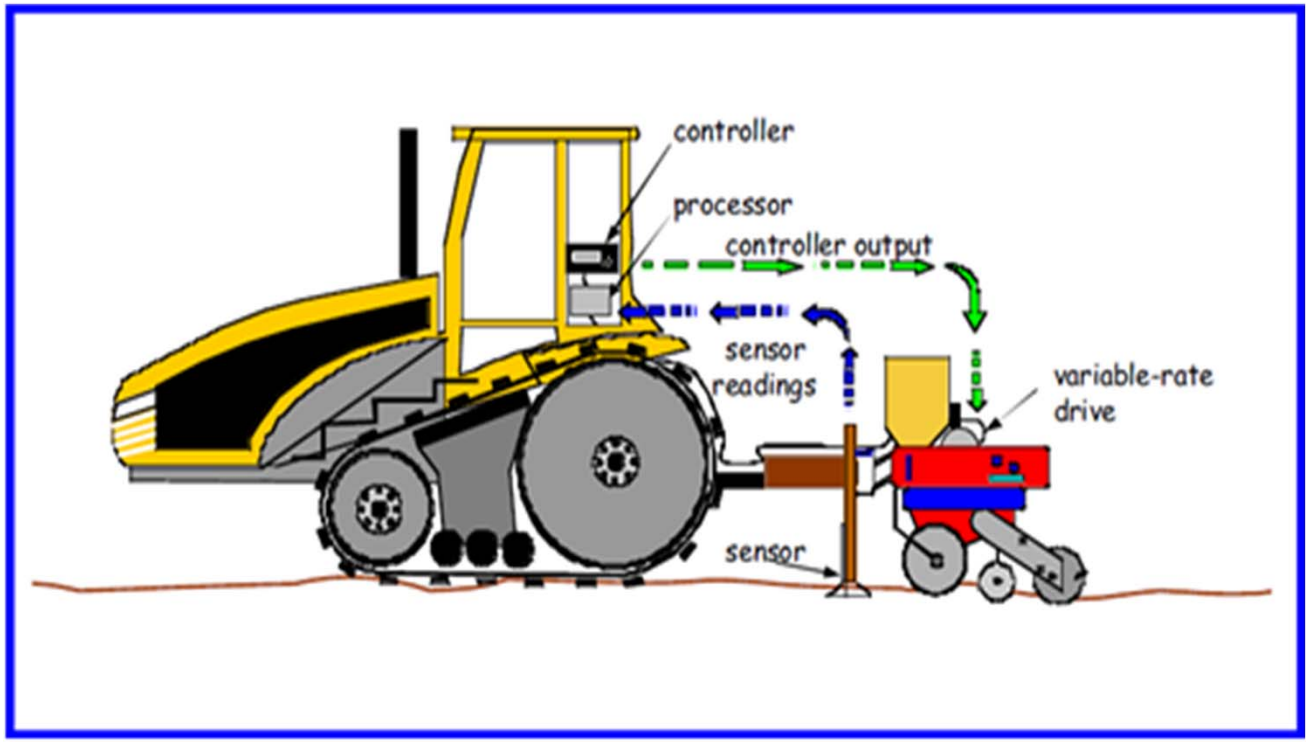
1. VRA based on Recommendations maps.



Applications of GIS in PA

Variable Rate Applications (VRA):

2. VRA based on the on-the- go Sensors:

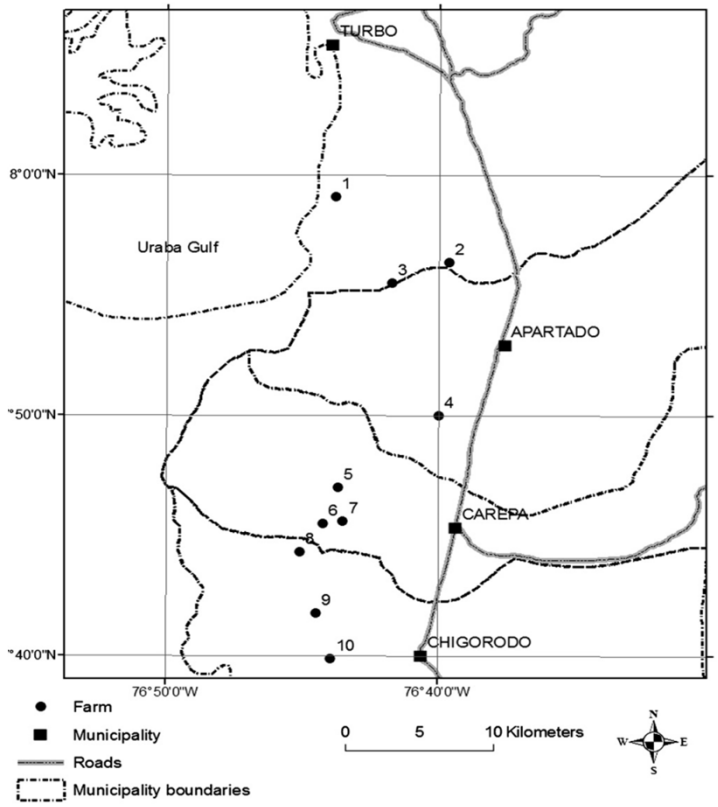


Case Study

Study Area:

- Colombia, Urabá.
- temperature is 27 C.
- precipitation is 2650 mm.
- 10 banana farms.

(Oscar et al, 2010)



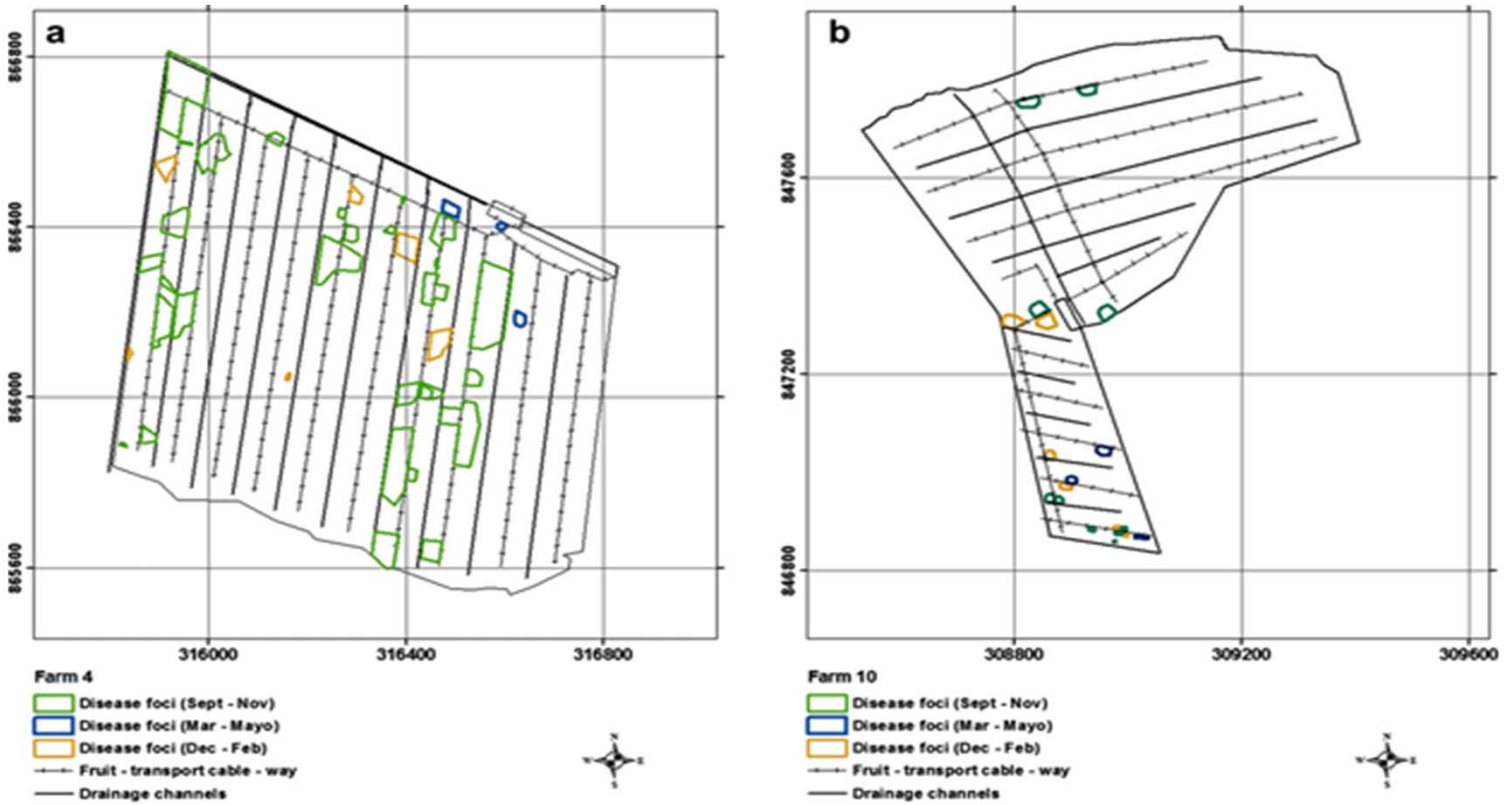
Case Study

What is Moko Disease?

Moko disease, a bacterial wilt of banana, is recognized as Ralstonia sola nacearum race 2, biovar 1.

Case Study

- Discussion:



Case Study

- Solutions:
  - Foot and hand wear.

  - Tool sterilization.

Conclusion

- (GIS) tool can contribute in precision agriculture by analyzing, interpreting and evaluating the yield.
- GIS base-map can reduce the cost by reducing the inputs of agriculture like (Nutrients / Fertiliz er, Pesticides).
- Reduce the environmental risk.