

Geodata to control potato late blight in Bangladesh (GEPOTATO)

Lessons from three seasons of a late blight potato decision support service

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Outline

- Target group
- The problem: Late blight
- The GEOPOTATO service
- Business case
- Challenges & solutions
- Q & A



Target group: Potato farmers in Bangladesh

- Potato area in Bangladesh: 450,000 ha
- 3rd largest potato producer in Asia
- ± 500,000 potato farmers
- Average potato area per farm: 0.5 – 1.5 ha



The Problem: Late blight



Fungal disease *Phytophthora infestans*:

- Yield losses in Bangladesh: 25-60%
- Major constraint for 95% of potato farmers

The Problem: Late blight

- Fungicides are available to control late blight, but
- Farmers apply too early or too late fungicides:
 - **High** environmental, health and financial costs
 - **Low** yields, resource use efficiencies and profits

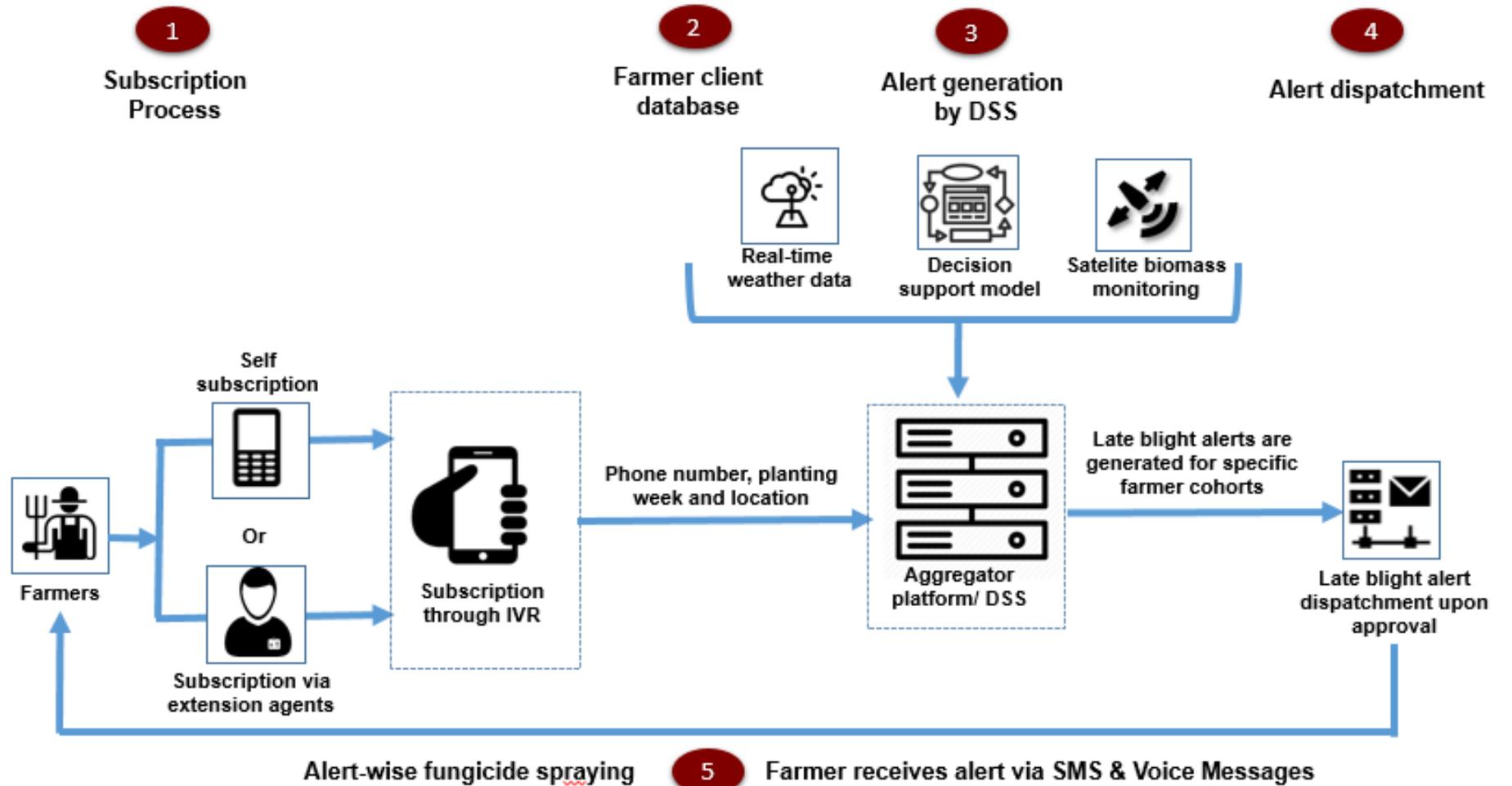


GEOPOTATO Decision support service

- SMS/Voice message three days before expected infestation of the crop
- Four major DSS components:
 1. **Weather data**: Measured & historical weather data
 2. **Geodata**: Crop growth based on NDVI
 3. **Late blight risk model**: Simulation disease life cycle
 4. **Messaging**: Sending SMS & Voice messages



GEPOTATO service system



Business case GEOPOTATO service

Subscribed farmers (2018/19)	42,000
Potato area covered in service area	130,000 ha
Average yield benefit demo farmers	15%
Average financial benefit demo farmers	200 Euro / ha
Aggregate financial benefit of 42,000 farmers	8.4 million Euro
Costs of providing service to 42,000 farmers	35,000 Euro

Advice/marketing service for input suppliers:

1. Advice farmers on optimal control strategy
2. Use SMS / Voice message to advice fungicide brands
 - Test under 700 farmers: 18% higher brand use
3. Contribute to sustainable farming practices



Challenges

Solutions

- | | |
|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Inaccurate weather forecasts and real-time data | <ul style="list-style-type: none">• Own automated weather stations.• Weather statistics in stead of forecasts. |
| 2. Severity of disease epidemics varies due to variations in the presence of primary inoculum. | <ul style="list-style-type: none">• Risk aversive control strategy.• More research needed into identity and quantity of primary sources. |
| 3. Self-subscription of farmers through mobile phone did not result in targeted number of subscriptions. | <ul style="list-style-type: none">• Hiring of trusted contractors (extension agents) to subscribe farmers. |
| 4. Financing business case. | <ul style="list-style-type: none">• Service is free for growers• Many service processes automated to reduce operational costs.• Negotiating with input suppliers. |
| 5. Fast cycling of local staff complicates knowledge transfer, sustainability of service & trust towards clients. | <ul style="list-style-type: none">• ?? |



Thank you for your attention!

