



Sustainable pest and disease control

Integrating advanced Earth Observation (EO) and environmental information for sustainable management of crop pests and diseases.

PROJECT LEAD CABI

AREAS IN FOCUS

Langfang, Heibei province. Dongyang, Shandong province.
Xilinhot, Inner Mongolia.



“By bringing together EO scientists and biologists we can make a real difference in saving crops to feed the ever-increasing population of China.”

Project Leader, Belinda Luke, CABI,



PROJECT SUMMARY

Crop pests and pathogens can diminish yields by up to 40% and finding sustainable means of reducing such losses is a high priority for Chinese growers. This project is seeking ways of reducing loss through applied use of information derived from integrated satellite Earth observation, weather and in-situ monitoring.

SOLUTION

Two main sources for crop loss in China, pests and pathogens, are being addressed in this project by focusing on 1) Locusts and 2) Wheat rust.

In the first case locust numbers are currently managed by spraying heavy chemicals over breeding grounds. This practice has significant negative impact such as water pollution and a reduction in biodiversity of beneficial insects. Biopesticides are being explored as a sustainable alternative however as they are living organisms they vary in their speed of kill. The project is seeking to develop models based on satellite derived temperature data to advise when biopesticide methods will be most effective. Combined with detailed mapping of locust breeding

grounds, more targeted and effective use can be made of both chemical and biopesticide options.

In the case of wheat rust, central and local government authorities need actionable evidence to determine the location and extent of outbreaks to inform intervention measures and understand multi-annual patterns of occurrence. Satellite imaging is the only reasonable source of wide area surveillance data. Combined with EO-driven modelling of climatic factors affecting wheat rust distribution, the project will produce forecast models that provide decision makers with more targeted actionable information.

PROJECT IMPACT

The project partners are working closely with Chinese Ministry of Agriculture officials and extension service workers from NATESC to ensure the outputs are appropriate and usable in operational situations. In addition, Chinese UAV manufacturers are seeking to use model outputs to help their clients plan more effective and sustainable spraying campaigns.

UK PARTNERS

- Project Leader, Dr Belinda Luke, CABI
- Kings College London
- Rothamsted Research Ltd
- Assimila Ltd

CHINA PARTNERS

- Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences (RADI, CAS)
- Institute of Plant Protection, Chinese Academy of Agricultural Sciences (IPP, CAAS)
- Zhejiang University (ZJU)

IMPACT FACTS



- China is responsible for 14% of the global consumption of pesticides.
- China feeds 22% of the Earth's population with only 7% of the world's arable land.
- China has set a target to achieve zero growth in pesticide use by 2020.