Report on the GCRF Workshop on Invasive Weeds

An international Workshop on ""Protecting Food Security in SE Asian Countries by Developing Early-Warning and Ready-Response Systems for Invasive Weed Incursions" was organized jointly by National Institute of Plant Health Management, Hyderabad and University of Stirling, Scotland, funded by Global Challenges Research Fund (GCRF) Networking Grant, from 9th to 10th April, 2019. The workshop objective was to bring together experts in weed risk analysis, agricultural economics, agricultural data collection, bio-economic modelling, and digital technology; and plant protection policy-makers and educators from India, Bhutan and United Kingdom and to identify the stakeholder requirements and resource requirements for the development and evaluation of the above said tools. Twenty (20) participants, representing Universities, ICAR Institutes, NPPO etc. from India, UK and Bhutan attended the Workshop.

Day 1 (9th April) focussed on **getting to know each other** and **sharing knowledge**. After opening formalities, there was a lively introductory session, where teams of participants drew pictures or created models with PlayDough or Lego to express their aspirations for the workshop. This was followed by talks about the state of the art of weed management in India and in the UK, and the potential role of technological solutions. The talk titles and speakers are listed below:

- The problem of invasive weeds in SE Asia, Dr Sushil Kumar, ICAR-DWR

- Global Challenges Research Fund (GCRF), Dr Savitri Maharaj, Univ. of Stirling

- Plant protection: UK experience, Dr Glyn Jones, Univ. of Newcastle and Fera Science Ltd

- Weed risk assessment, Dr K. Susheela, NIPHM

- Vegetation monitoring through remote sensing and earth observation, Paul Brown, Fera Science Ltd, and Dr Ankush Prashar, Univ. of Newcastle

- Artificial Intelligence for plant protection, Dr R Srikanth, ICRISAT

- Current approaches to decision making, Ms Latha, DPPQ&S

- Bioeconomic modelling and decision support systems, Prof Adam Kleczkowski, Univ. of Strathclyde

Day 2 (10th April) focussed on **understanding the problems** and **designing solutions**. Participants were put into four teams, each working on a specific weed (pests and pathogens were also allowed) of their own choice. Each team spent the morning discussing and drawing a visual representation of their chosen problem, which they then presented to the whole group. In the afternoon, the teams brainstormed about possible solutions, again presenting these to the whole group. The problems that the groups chose were papaya mealy bug, parthenium, striga, and water hyacinth. Group working was followed by a brainstorming session in which participants identified common gaps, barriers, and possible solutions for better management of invasive weeds.

The session ended with discussion on a number of issues ensuing the following deliberations on gaps, barriers and solutions-

Gaps

- Co-ordination among the stakeholders
- Awareness among the stakeholders
- Monitoring and Surveillance
- Lack of response systems
- Lack of policies
- Lack of funding
- Lack of enforcement/implementation
- Research leading to policy decisions
- Lack of national data base

Barriers

- Knowledge gap
- Skill gap
- Team work
- Lack of commitment
- Work attitudes

Solutions

- Modelling
- Research using advanced technologies
- Integration of different technologies
- Improved communication/collaboration among different stakeholders
- Policies for risk management
- Inclusion of decision making techniques during policy making
- Data gathering/integration
- Ready response systems in place
- Learn from the past by collecting stories
- Media coverage
- Community conversations
- Enforcement
- Evaluation
- Feedbacks

The discussion at the Workshop made it possible to draw together all the insights, observations and proposals for action. The workshop participants identified a number of gaps, barriers and solutions. Specific issues discussed included modelling, decision support systems, policy making, ready response systems, databases etc. The deliberations framed during the workshop will be documented and follow-on funding will be explored for the research. At the date of writing, a GCRF funding proposal has been submitted to the UK's Arts and Humanities Research Council, on the topic of "Water Hyacinth Stories: understanding and improving how Indian coastal communities live with 'the most troublesome weed of the world'". This project will be a partnership including NIPHM, ICAR-DWR, Centre for Research in Aquatic Weeds (Sanatana Dharma College, Kerala), University of Stirling, University of Strathclyde, and the Open University. Further, a smaller meeting is planned provisionally in early 2020, in the UK. The individuals and organisations are expected to have been motivated by these discussions to take up the appropriate biosecurity strategies and find solutions for sustainable agriculture and protecting food security.

Further information can be found at the workshop website:
http://www.cs.stir.ac.uk/events/gcrf-weeds/