Technology Fact Sheet for Adaptation

Decentralised rapid pest and disease diagnosis service [i]

Technology: Decentralised rapid pest and disease diagnosis service (plant clinic)	
Sector :Agriculture	
Subsector :foodcrop	
Technology characteristics	
Introduction	A decentralized pest and disease diagnosis is an innovative/ rapid way to ensure better plant health advisory services for small-scale farmers. It involves delivering primary plant health care to planters through on-site diagnosis in fields for timely management and to mitigate their negative impact on crop production, rationalise use of pesticides and reduce risk of crop loss. It will allow pest & disease to be rapidly managed and contained thus preventing spreading to new areas or fields. This service help to **empower farmers to improve food security and protect the environment**
Technology characteristics/highlights	A decentralized pest and disease diagnosis service requires linking the farmer with an integrated support network consisting of input suppliers (e.g. pesticide supplier), diagnostic laboratories, researchers and national plant protection office (NPPO). This also requires also supports the trained local lead farmers, extension officers and researchers with long experience. It also requires the sharing or knowledge in surveillance, pest distribution data gathered, diagnostic techniques, treatment support, integrated pest management and pesticide use. The setting of this technology relies on the support of the extension service to disseminate /delivers free plant health advice to farmers to overcome their plant health problems and improve their crop yield and income. It requires - A mobile plant health clinic that visit main agro ecological zones to provide diagnosis service - training of local lead farmers in scouting, examination and identification of P & Diseases and taking appropriate treatments - Advertising for decentralised plant clinic (banners,posters, radio, TV..) - Field equipment for diagnosis - Pest & disease identification kit / - Field demonstration
Institutional and organizational requirements	Implementation of this technology requires a broad institutional commitment backed up by the necessary formal agreements between P & D diagnosis /Plant clinic operators, MAIFS, NPPO, Extension services, Researchers and other relevant actors(input suppliers (e.g. pesticide manufacturers), diagnostic laboratories) to ensure its sustainability. The role and responsibilities of all partners is to be clearly defined to create ownership, ensure effective operations and for seeking financial sustainability. AREU Entomology and Pathology Division along with extension can support this project but require an equipped utility van with both light

	and stereomicroscopes and construction of a specialized mini lab for support in diagnosis to the mobile unit. Access to ITC is required to offer online diagnosis and treatment support information to best assist farmers. **Setting of such a service will require expert support and capacity building**
Operation and maintenance	Maintenance of microscopes and equipment will be required.
Endorsement by experts	Plantwise initiative led by CAB International (Centre for Agricultural Bioscience International, CABI), has supported some 14 countries to establish community–based plant health clinics designed to improve plant health service available to farmers. The aim is to reach small scale farmers and help them to tackle pest and disease problem so as to produce healthy crop and productive yield. The expertise(plant Extension/Entomology / Pathologist) to running a decentralised, mobile plant diagnosis service for potato exist locally and could be upscaled to other major foodcrops such as tomato, crucifers, onion
Adequacy for current climate	Adequate for present and on-coming climate.
Scale/Size of beneficiaries group	Some 8,500 planters including large and small farmers as well as general public can benefit from this service .
Disadvantages	Quality of service may be hampered after natural calamities due to inaccessibility of farm roads.
Capital costs	
Cost to implement adaptation technology	The cost of implementing the service will include 1. Utility van 2. Construction of mini-diagnosis lab 3. Stereomicroscope 4. Light microscope/ hand lens 5. Resources for regular field visit 6. Camera , computers for online diagnosis 8. Capacity building of extension and farmers/ publications Estimated cost per implementing the technology per beneficiary/yr = Rs 234 Total estimated cost (6375 beneficiaries)Rs 912,500
	Total additional cost per = Rs 580,000
Long term cost (i.e. 10, 30, or 50 years) without adaptation	Increase crop damage and economic loss / food insecurity / farmers becoming more vulnerable. It is reported that some 40 % of the food grown in the world is lost due to pest and diseases before it can be consumed (CABI, 2006)
Long term cost (i.e. 10, 30, or 50 years) with adaptation	Maintenance or repair of diagnosis equipment Continuous training of extension and farmers due to new emerging pest & disease problems
Development impacts, direct and indirect benefits	
Direct benefits	Decrease crop damage by pest and disease. Reduce expenses on

	pesticides, improve crop yield , farm income and farmers livelihood
Reduction of vulnerability to climate change, indirect	Improve farmer capacity to deal with outbreak of pest and disease and reduce risk of crop damage The technology contributes to climate change adaptation at planters level primarily through: -Provision of advice to planters on how to handle diseases problems through on -site diagnosis, -monitoring pest and diseases outbreak and act as surveillance
Economic benefits, indirect	
Employment **Growth & Investment**	The setting up of such rapid diagnosis service will require additional staff The mobile clinic is expected to play a major role in assisting the planters to better manage diseases in their crops. / increase crop yield and reduce dependence on imports
Social benefits, indirect **Income** **Education** **Health**	 With timely management of diseases via on-site diagnosis, increase in agricultural production with judicious use of pesticides is expected. Thus, decreasing the cost of production for planters which in the long run will increase their income Improve knowledge for the plant pathologists when regularly confronted with different disease situations in the field itself, for e.g, occurrence period of diseases, climatic conditions and management practices. With a decrease in the use of pesticide due to timely management of diseases, both planters and consumers will be less exposed to pesticides; planters while spraying less in their plantation and consumers while consuming agricultural produce free from pesticides.
Environmental benefits, indirect	With a reduction in the use of pesticides, environmental pollution will be reduced.
Local context	
Opportunities and **Barriers**	**Opportunities -**The establishment of the mobile plant clinic will give opportunities to planters to improve their livelihood by serving them rapidly and efficiently on-site. It will also allow planters' fields to be under continuous disease surveillance in cases of new disease emergence and epidemics. **Barriers** - inaccessible fields and funding to sustain the service over time -limited information sharing for effective monitoring and reporting for control -weak national ownership and commitment - to make the service sustainable over long term (may charge for diagnosis)
Market potential	This service provision can be adopted by public or private sector as a service to the farming community
Status	Plant Pathology Laboratory of AREU has experience in running a similar rapidly and efficient pilot pest and disease diagnosis service for potato growers during the growing season but due to lack of fund the service has stopped. The service need to be revived, expanding /upscaling to a larger number of crops (onion ,tomato, cucurbits, crucifers,…)to service farmers

	in the main agro ecological zones .
Timeframe	Implementation will be as soon as the utility van equipped with the microscopes is made available.
Acceptability to local stakeholders	The easy accessibility and quality of this quality service with trained and equipped personnel is likely to increase its acceptability by the farming community and general public to help to efficiently deal with pest and disease problems.

[i] **This fact sheet has been extracted from TNA Report – Technology Needs Assessment Reports For Climate Change Adaptation – Mauritius. You can access the complete report from the TNA project website http://tech-action.org/**