

Table 35 Summary of the TAPs for agricultural forecasting and early warning systems

Item	Barriers	Solutions	Technology Action Plan			Involved Parties
			Short-term (3 yr)	Medium-term (5 yr)	Long-term (10 yr)	
Technology capability	<ul style="list-style-type: none"> Lack of technologies that can predict pest and diseases outbreaks within the country 	<ul style="list-style-type: none"> Encouraging public and private collaboration to develop such software Developing a simulation model with a scale suited for Thailand's geographic areas 	<ul style="list-style-type: none"> Developing a simulation model/software to predict pest and disease outbreaks (e.g., Aquaculture Information System) 	<ul style="list-style-type: none"> Establishing an early warning system center of pest and disease outbreaks. 	<ul style="list-style-type: none"> Establishing an early warning system center of agricultural disasters that links to those of neighboring countries and covers economic crops (both domestic and international) 	MOAC, NSTDA, TMD, GISTDA
	<ul style="list-style-type: none"> Lack of forecasting tools for biological and physical data, weather conditions (pests) 	<ul style="list-style-type: none"> Promoting research and development on climate forecasts using biological and physical data 	<ul style="list-style-type: none"> Encouraging cooperation between simulation modelers and biologists to develop a model/system using biological data. 	<ul style="list-style-type: none"> Developing, together with international experts, a simulation model that can forecast using biological and physical data 		NSTDA, CCKM, TMD, GISTDA
	<ul style="list-style-type: none"> Lack of skilled personnel to develop climate change simulation models 	<ul style="list-style-type: none"> Collaborating with research institutes from overseas to provide training on the development of pest/disease simulation models 	<ul style="list-style-type: none"> Establishing international research collaboration on modeling Building capacity through simulation 	<ul style="list-style-type: none"> Enhancing the skills of climate change researchers and providing research grants in the area of pest/disease simulation model development 	<ul style="list-style-type: none"> Establishing a collaborative center for the development of personnel in the field of forecasting and early warning systems (Training Hub) 	NSTDA, TMD, GISTDA, CCKM, TRF and universities around the country

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			Short-term (3 yr)	Medium-term (5 yr)	Long-term (10 yr)	
		<ul style="list-style-type: none"> Building a network of simulation modelers and establish domestic research collaboration 	<p>model/software training workshops and seminars</p>			
	<ul style="list-style-type: none"> Lack of linkages between skilled personnel and relevant organizations 	<ul style="list-style-type: none"> Providing training to develop a simulation model in such subjects as GIS, radar, and computerized data analysis Building a research network (visiting professors) for technology transfer from overseas 	<ul style="list-style-type: none"> Providing training to enhance personnel's skills Creating a public-private partnership domestically to link skilled personnel to relevant organizations 	<ul style="list-style-type: none"> Establishing collaboration with overseas research institutes/ governments for technology transfer 		<p>NSTDA, TMD, GISTDA, CCKM, TRF and universities around the country</p>
Infrastructure	<ul style="list-style-type: none"> Limitation on data accessibility and data redundancy 	<ul style="list-style-type: none"> Developing National Spatial Data Infrastructure (NSDI) 	<ul style="list-style-type: none"> Developing NSDI Portal (clearinghouse FGDS) to access systems of other organizations Developing standards and integrate FGDS with NSDI manual Developing a database for 	<ul style="list-style-type: none"> Getting the FGDS ready for data integration and service system Using FGDS by all governmental agencies, with the public being able to access information 	<ul style="list-style-type: none"> Establishing National Spatial Data Infrastructure (NSDI) of which its databases are complete and of high quality and with a unified set of standards. 	<p>GISTDA and Involved parties</p>

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			Short-term (3 yr)	Medium-term (5 yr)	Long-term (10 yr)	
			space-based images, satellite maps.			
	<ul style="list-style-type: none"> Lack of high-quality and efficient forecasting tools 	<ul style="list-style-type: none"> Developing or acquiring powerful forecasting tools such as radar and super computers. 	<ul style="list-style-type: none"> Financing the development or acquisition of such tools as radar and supercomputers to be used for forecasting and early warnings of pest/disease outbreaks. 	<ul style="list-style-type: none"> Developing/using a satellite communication system to give early warnings to farmers. Farmers must be able to connect to the system via computer, radio communication, SMS and mobile phone. 		TMD, NSTDA
	<ul style="list-style-type: none"> Lack of pest/disease databases 	<ul style="list-style-type: none"> Developing unified databases that use the same standards both nationally and regionally. 	<ul style="list-style-type: none"> Assigning a central agency to act as a hub for pest and disease information exchange Encouraging and building a data network for forecasting and early warnings of pest and diseases. Building an early warning system for 	<ul style="list-style-type: none"> Installing sensors and related equipment to collect both geographic and pest/disease data Updating and integrate existing databases that provide complete (nation-wide, regionally and provincially) and high-quality data Collaborating with neighboring countries 	<ul style="list-style-type: none"> Establishing a central agency to act as a hub for exchanging climate change information and pest/disease data Developing a data network to support the distribution and exchange of data among relevant organizations 	MOAC, OAE, GISTDA

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			Short-term (3 yr)	Medium-term (5 yr)	Long-term (10 yr)	
			aquaculture diseases (Aquaculture Information System)	in the Greater Mekong Subregion on developing and using a unified set of standards for data		
Policy and Regulation	<ul style="list-style-type: none"> No action plan to deal beforehand with pest and disease outbreaks 	<ul style="list-style-type: none"> Using the bird flu warning system as a model to develop emergency plans for pest and disease outbreak of brown plant hoppers in rice or an outbreak of pink aphids in young cassava. Implementing policy measures specified in the National Strategy on Climate Change Management B.E. 2551-2555, where possible, while encouraging relevant players to put forward policy mechanisms that will facilitate the adoption of related strategic measures by research organizations. 	<ul style="list-style-type: none"> Assigning responsibility to relevant organizations to promote collaboration on the issues Raising public awareness and encourage technology transfer on pest/disease outbreaks Promoting collaboration between organizations, especially at the regional and international levels 	<ul style="list-style-type: none"> Expanding the National Spatial Data Infrastructure (NSDI) and ensuring public accessibility 	<ul style="list-style-type: none"> Ensuring that the National Strategy on Climate Change Management B.E. 2551-2555 is put in to practice effectively 	MOAC, CMU, BOAC, TRF, MICT, GISTDA, MICT MONRE