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International Center for Tropical Agriculture
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Near real-time data collection for pests and diseases outbreak

part of the Laos Climate Services for Agriculture, LaCSA



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Funded by:



What data has been collected?

The Lao Climate Service for Agriculture (LaCSA) collects near real-time pests and diseases incidence information. Incidence information consists of crop-specific pest and disease outbreak information, name of the pest or disease, grown stage of the affected crops, site location, extent of the affected areas, and infestation rate.




How is this information used?

Monitoring data from Plant Protection Center (PPC) is fed into the Lao Climate Service for Agriculture (LaCSA). LaCSA automatically inserts the information into the weekly and monthly bulletins. In addition, the LaCSA also acts as a pest and disease data management system where the PPC's staff can store, analyze, and retrieve data anytime and everywhere with internet access. The database helps the PPC staff to provide information to high-level planning experts and decision-makers. The present and historical outbreak information are also visible to the public in LaCSA. Through this system, everyone can visualize any significant pest and disease outbreak.

In addition, PPC has produced a Manual for Pest and Disease Management in Lao People's Democratic Republic that will be published soon in both English and Lao Language.

Figure 1: Pests and diseases monitoring data are visible in the LaCSA bulletin



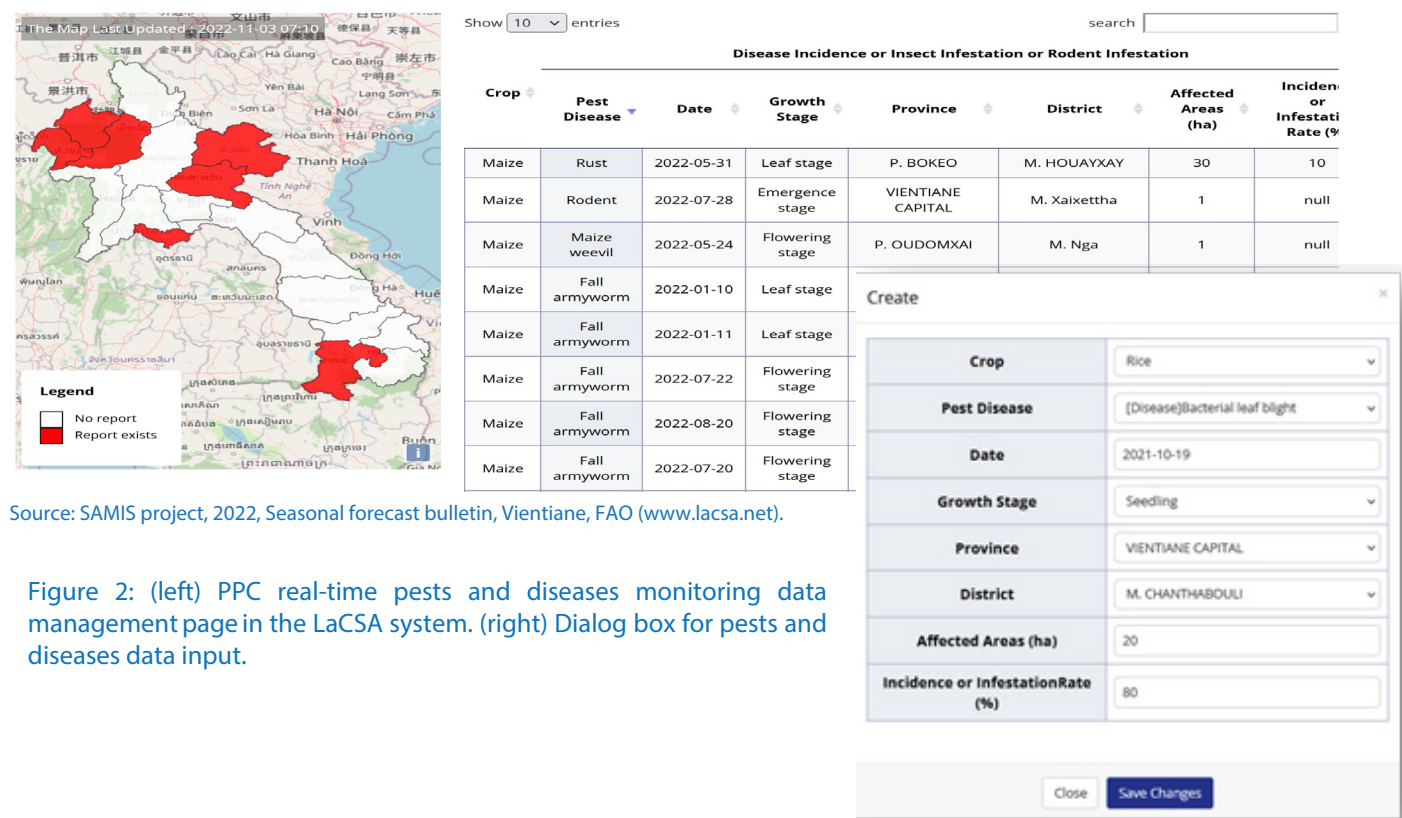
SEASONAL FORECAST BULLETIN	
Climate Smart Recommendations for Maize	
[FARMING MANAGEMENT]	
Land Preparation	<input type="checkbox"/> Plant in moderate well-drained soils (sandy loam, loam, and clay loam), ideally with >80 cm depth, pH 5.3-7.3. Plant in two stages at two weeks apart, especially is for commercial purposes. Plow soil at 30 cm depth. Leave for 7-10 days, then plow and harrow to loosen soil and control weeds. Planting bed should be 25-30 cm width, with canal depth between beds of 8 cm (rainy season) or 10 cm (dry season). Space between beds should be 60cm and spacing between plants should be 30 cm. If soil is acidic (pH < 5.3), apply lime at 5 tons/ha before sowing 7-14 days. Prepare soil before rainy season, or after harvest of rainfed rice in the dry season.
Method of Cultivation	<input type="checkbox"/> Plant in the middle of the bed during rainy season.
Nutrition Management	<input type="checkbox"/> Apply fertilizer thrice. Apply compost or manure during land preparation at 5 tons/ha, then basal fertilizer (15-15-15) before planting at 25-30 kg/rai (1600m2). Place in bottom of hole or bed and cover with soil. Lastly, apply Urea (46-00-00) 25-30 days after planting at 20-25 kg / 1600 m2. Sweet corn and waxy maize should have 135 kg/ha of N, and 45 P2O5- 45 K2O. Proper fertilizer rate should be based on soil fertility: apply 8 kg of N, 2.9 kg of P, and 4 kg of K to increase yield by 1 ton.
[PEST&DISEASE MANAGEMENT]	
Fall armyworm	<input type="checkbox"/> On-farm monitoring: The FAW caterpillar attacks all stages of maize, i.e. seedling, vegetative, tasseling and grain filling stages. Check for small to large irregular and elongated holes on the leaves. Window panes of translucent patches are caused by small FAW in the first to second instars while large irregular elongated holes on leaves are caused by bigger FAW in the third to sixth instars. Partial resistance is present in some sweet corn varieties but is inadequate for complete protection. <input type="checkbox"/> Non-chemical: (Before planting) Use sex pheromone traps for monitoring populations of fall armyworm in the field. Destroy the eggs, larvae and pupae in the crop residues after previous harvest by burying the plant residues deep in the soil (at least 12 cm deep). ; (During growth) Probably the most practical option for small farmers is simply to monitor fields carefully and crush egg masses and young larvae. Lime, soap, ash, sand, sawdust or dirt can be placed into whorls. Sugared water can be sprayed into whorls to attract

Source: SAMIS project, 2022, Seasonal forecast bulletin, Vientiane, FAO (www.lacsa.net).

How is the data generated?

The real-time pests and diseases outbreaks data are collected by Plant Protection Center since many years. Under the collaboration with the SAMIS project, the data are now used as part of the Lao Climate Services for Agriculture. Near real-time pests and diseases incidence and outbreak information are collected in all the 144 districts of Lao People's Democratic Republic. In case of a major outbreak, the farmers alert the local officials. The site specific pests and diseases information are collected at local level and reported to the Plant Protection Center (PPC) via telephone, fax, and email.

The staff of the District of Agriculture and Forestry Office (DAFO), under the technical guidance from Plant Protection Center (PPC) of the Department of Agriculture (DoA), Ministry of Agriculture and Forestry (MAF), participated in the activity. The PPC experts run data quality control and records the information in the database of the Lao Climate Services for Agriculture (LaCSA) web application. The information will be recorded around the 25th of each month.

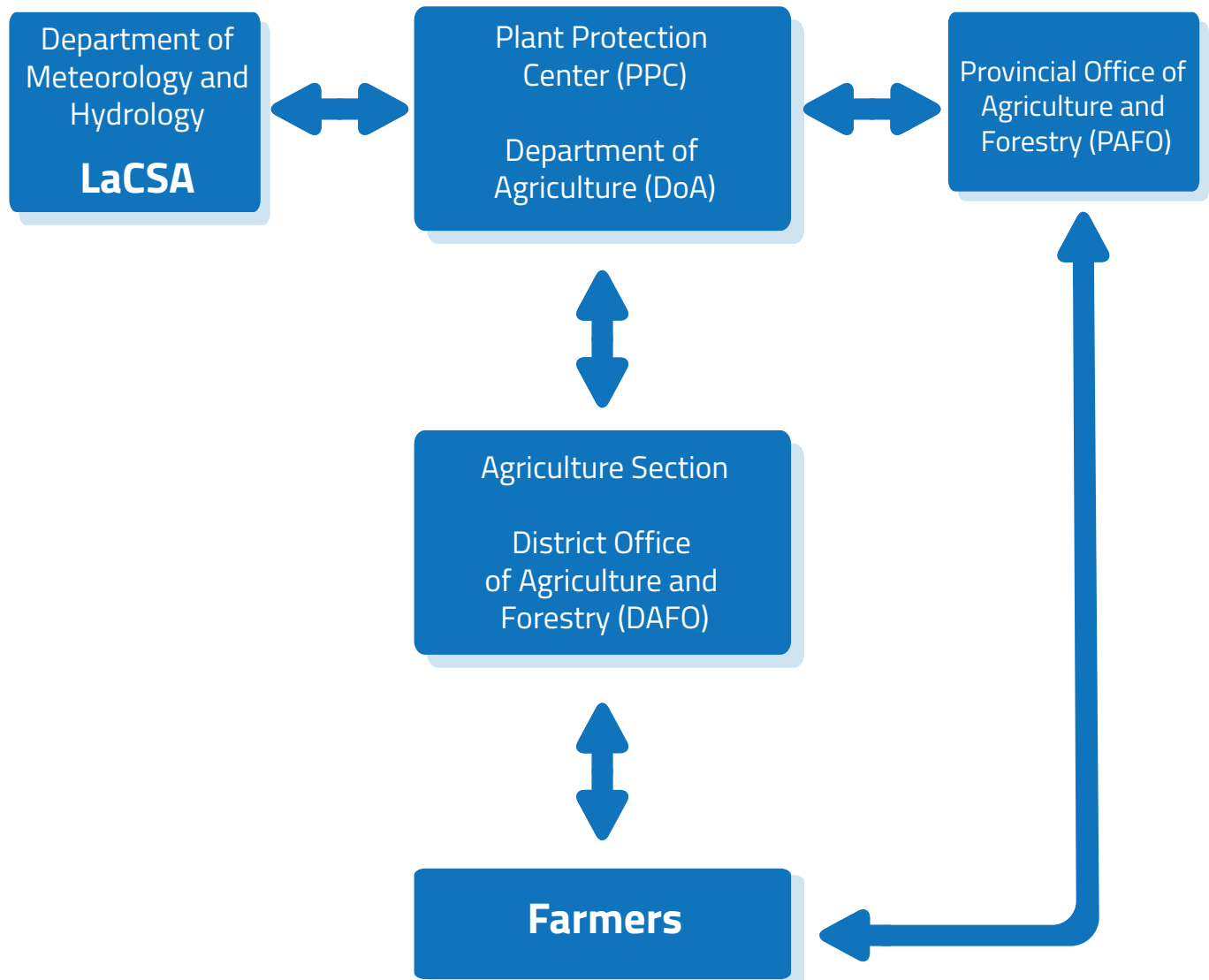


Source: SAMIS project, 2022, Seasonal forecast bulletin, Vientiane, FAO (www.lacsa.net).

Figure 2: (left) PPC real-time pests and diseases monitoring data management page in the LaCSA system. (right) Dialog box for pests and diseases data input.

Source: SAMIS project, 2022, Seasonal forecast bulletin, Vientiane, FAO (www.lacsa.net).

The data collection flow



Elaborated by the authors.

Who is this data for?

Pests and disease monitoring is used by the Plant Protection Center (PPC), the Department of Agriculture (DoA), and the Ministry of Agriculture and Forestry (MAF). It helps for strategic pests and disease planning and outbreak management. The Department of Technical Extension and Agro-processing can use it to improve the capacities of farmer at the local level. The education and research sector will also use it.

At the field level, these data are used through the Lao Climate Services for Agriculture System (LaCSA), that is a key platform producing climate services and distributing the information to a wide range of users. It help farmers and agri-business to be aware of outbreaks and leverage proactive farming practices.

In addition, national and local Non-Government Organizations who work in agriculture promotion use this information for capacity building and rural development programmes.

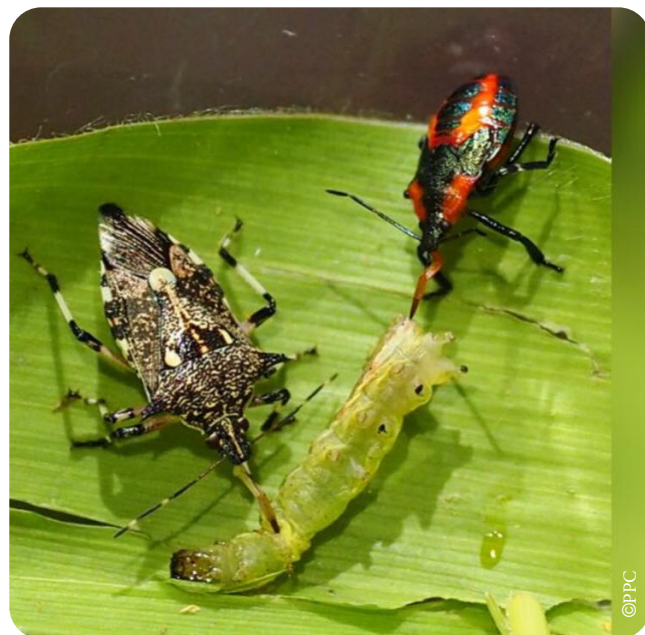
Department of Meteorology and Hydrology, National Agriculture and Forestry Research Institute. FAO and International Center for Tropical Agriculture experts developping and testing the Kobo tool in the office and in the field at the Naphok Rice Research Center (FAO/SAMIS)



Specification

The following pests and diseases are monitored:

- Asian corn stem borer
- Bacterial Leaf Blight
- Banana bunchy top
- Banana Scarring beetle
- Banana skipper
- Banana weevil
- Brown Planthopper
- Brown Spot
- Cassava pink mealy bug
- Coffee borer beetle
- Coffee white stem borer
- Corn aphids
- Cutworm
- Downy mildew
- Fall armyworm
- Fusarium wilt
- Rice Armyworm
- Rice Blast
- Sheath Blight
- Smut, Stemborers
- Witches' broom
- White Backed
- Planthopper



The team

- Overall management and implementation: Plant Protection Center (PPC);
- Participant list: District Office of Agriculture and Forestry (DAFO) staffs;
- Technical in-field coordination: PPC, PAFO, DAFO;
- And financial support: SAMIS, FAO.



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Further information

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Further information on the generated dataset and the SAMIS project under which they were developed can be found on the respective FAO page: <http://www.fao.org/in-action/samis/en/>

LaCSA is available at www.lacsa.net and in the Android and App stores.

Funding proposals and concrete inquiries can be directed at :
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(0)21 812164, or by email: psitthiphone@yahoo.com.



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