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# Near real-time agronomical data collection

part of the Laos Climate Services for Agriculture, LaCSA

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# What data has been collected?

Near real-time crop information consists of crop growth stages, sowing and harvesting date, area affected by pests and diseases, including infestation rate, and crop yield. Staffs of the District Office of Natural Resources and Environment (DONRE) under technical guidance from Climate and Agrometeorology Division (CAgMD) of the Department of Meteorology and Hydrology (DMH) collects the agronomic information at specific site namely. The data collection is regulated by the departmental order DMH-Director General # 0609/2020.

Near real-time crop information was collected at specific sites since 2019, initially using Kobo app, but at present data are inserted directly to Lao Climate Service for Agriculture (LaCSA) app. From 2022, District Agriculture and Forestry Offices of the Ministry of Agriculture and Forestry (MAF) collected the data based on a departmental order by the Department of Agricultural Land Management (DALAM).

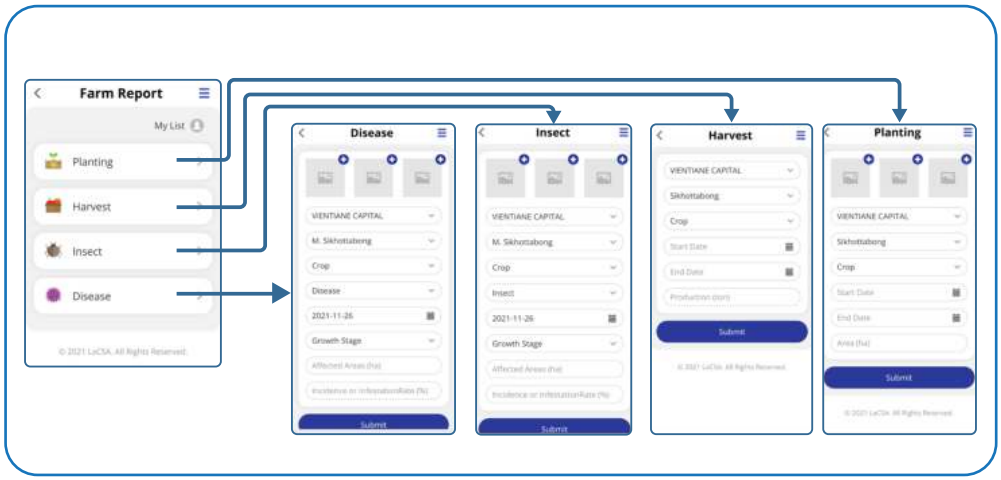



*Figure 1: Interface of the data collection tool used by the District of Agriculture and Forestry Office and District of Natural Resource and Environment Office staff and by any Lao citizen.*

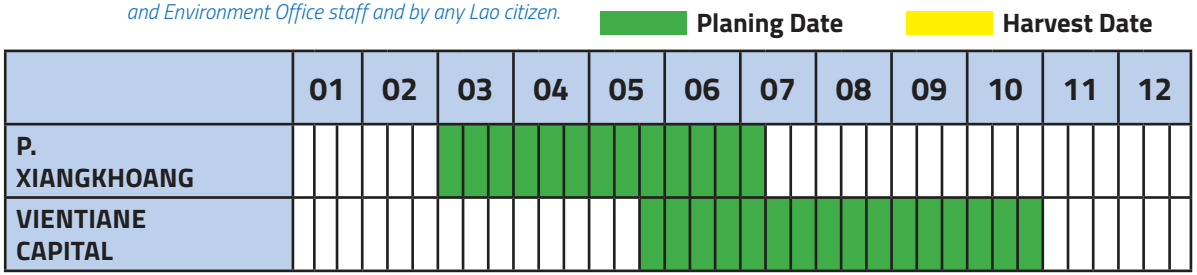



*Figure 2: LaCSA data collection report.*

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

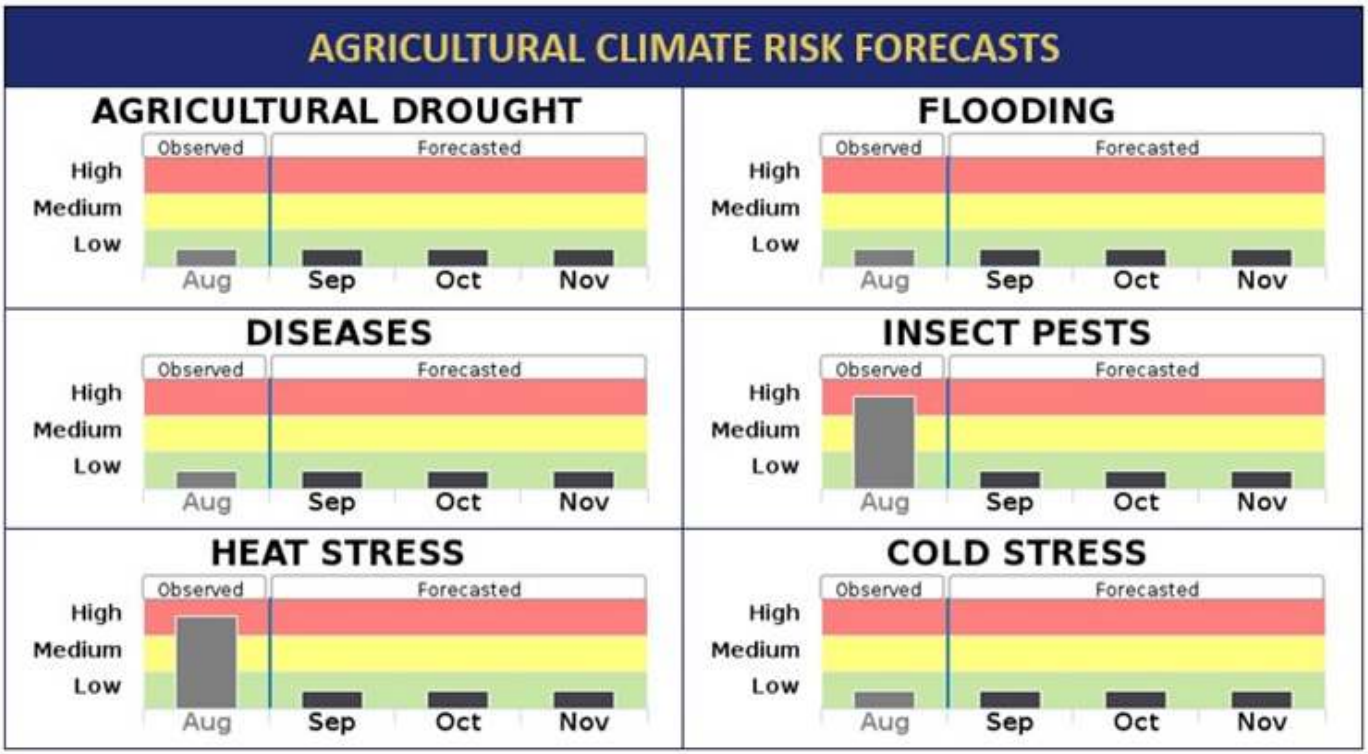
# How is this information used?

The data is used for monitoring the cropping season, the farming management, and the state of the crops, and for assessing the crop yield production.

In addition, the data is integrated into the weekly and monthly agro-meteorological bulletin to give an overview of the cycle and pests and diseases infestation reports (observed data).

Finally, the information tailors the Lao Climate Service for Agriculture modelling results and recommendations, as an input to the Lao Climate Service for Agriculture crop models. In-deed, the data will be used to calibrate the crop modelling procedure. At the moment, Lao Climate Service for Agriculture crop growth is calibrated using district statistics produced by the Department of Agriculture. In the future, the calibration will happen in near real-time using the newly collected data.

*Figure 3: Observed data are visible in the Lao Climate Service for Agriculture bulletin.*




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

# How is the data generated?

The site-specific agronomic data collection is a part of the work activity of the SAMIS project. The questionnaire was developed and tested by international experts from the The International Centre for Tropical Agriculture De-Risk project in collaboration with experts from the National Agricultural and Forestry Institute (NAFRI).

At the local level, the first duty of the District of Natural Resource and Environment and District of Agriculture and Forestry staff consist of defining three plots per crop within the distance of a maximum one km from the office, when possible. After that, staff will go to the target plot and collect the questionnaire data via mobile phone or tablet. The data should be collected on 25$^{th}$ day of every month.

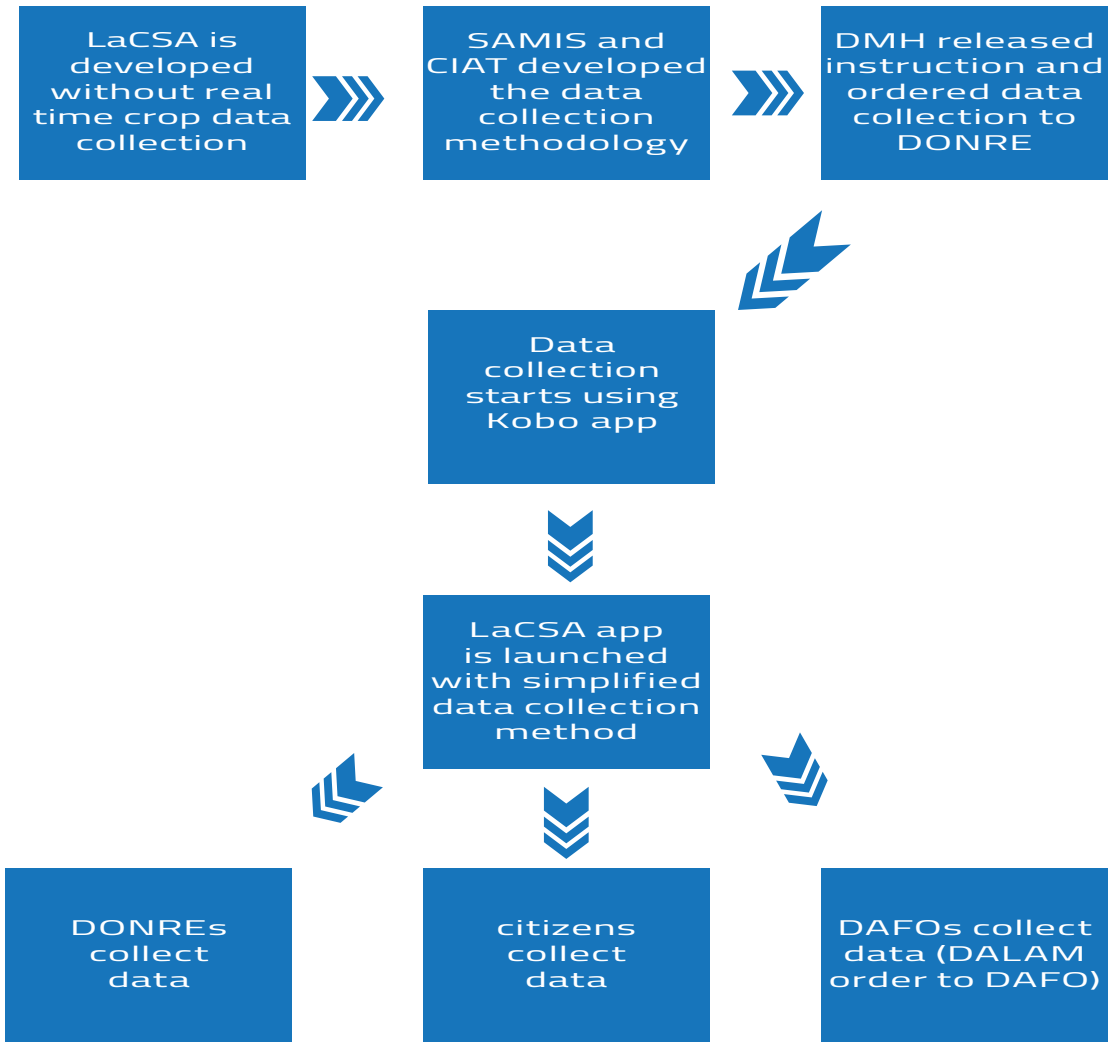
The next phase will include having more District of Agriculture and Forestry offices also collecting the data, so that the data collection network is expanded. This activity will include the selection of District of Agriculture and Forestry offices, the training, and the use of the Lao Climate Service for Agriculture app to collect the data.

Finally, citizen data collection is also possible, with any farmer able to access the app and upload the agronomical data. This will potentially significantly expand the number of data collection points.



*PPC staff working in the field to detect pests and diseases.*

# The generation process




Elaborated by the authors.

*Figure 4: the generation process of LaCSA data collection.*

# Who is this data for?

Farmers are the main beneficiaries of these data through the use of the Lao Climate Service for Agriculture weekly and monthly bulletins. The Lao Climate Service for Agriculture system functions both as an early warning system and as a tool for the development of the capacity of farmers, including increased awareness about climate smart technologies that are resilient to climate change.

Provincial ad District Offices of the Ministry of agriculture and Ministry of Natural Resource and Environment and other entities engaging with agricultural activities are expected to benefit from the innovative information displayed for analytical and educational purposes.

At a national and international level, the dataset will support the targets of the National Socio-Economic Development Plan implementation.



*Department of Meteorology and Hydrology, NAFRI, FAO and CIAT experts developing and testing the Kobo tool in the office and in the field at the Naphok Rice Research Centre.*

At the national level, the Department of Planning and Cooperation of MAF could use the information to address urgent needs for high impact climate resilience intervention. Generally, this tool will be mostly used seasonal crop production planning and for high level early warning planning.

In addiction, the tool can also support anticipatory actions planning.

Finally, research centers such as National Agriculture and Forestry Research Institute and universities and colleges will be able to access the data to develop capacities and undertake research.

## Next steps

The main next steps related to the near real-time will include:

- FAO, Department of Meteorology and Hydrology and Department of Agriculture Land Management are preparing the next phase of the project to further develop LaCSA App.
- Use of big data collected at citizen level might be used for validation and improvement of the crop modelling accuracy.

**Andriod**

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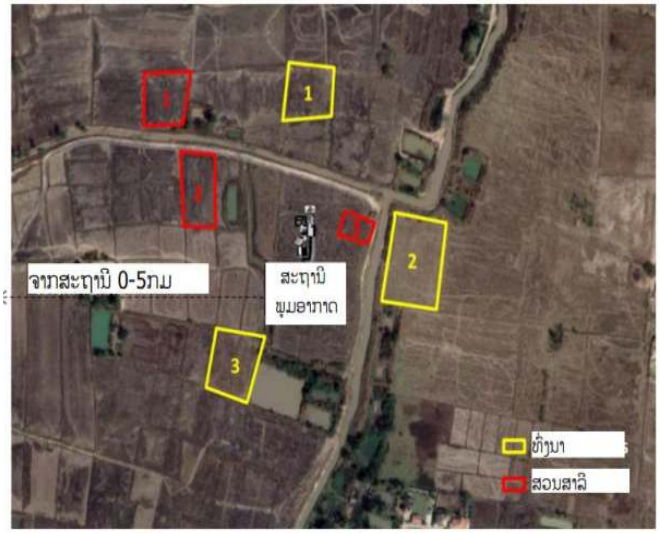
*Please download the LaCSA app in your phone (Source: Department of Meteorology and Hydrology)*

# Specification

In the 22 stations the following information is collected every month, depending on the crop growing phase, for three representative crops: rice, cassava, and maize.

Collected data

- Date of sowing/planting;
- Date of flowering;
- Date of harvesting;
- Area planted in representative field;
- Yield;
- Pest or disease infestation presence;
- Pest or disease infestation name;
- Pest or disease infestation rate;
- Surveyor's information;
- Pictures of farm plot.




*Source: Example of mapping farmers' plot by District of Natural Resource and Environment Office officers by De-Risk project, The International Centre for Tropical Agriculture, 2020.*

*Laos map, Google satellite image, 2020.*

## The team in Lao People's Democratic Republic

- Overall management and implementation: Department of meteorology and hydrology;
- Participant list: District of Natural Resources and Environment Office (DONRE) weather station staff, District of Agriculture and Forestry Offices (DAFO), and Lao citizens;
- Technical in-field coordination: SAMIS, FAO;
- Financial support: SAMIS, FAO and De-Risk project, The International Centre for Tropical Agriculture;
- And scientific expertise: The International Centre for Tropical Agriculture De-Risk project.





## 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 avaiable at www.lacsa.net and in the Android and App stores.

Funding proposals and concrete inquiries can be directed at :
Division of Climatology and Agro-meteorology of the Department of Meteorology and Hydrology (DMH) under the Ministry of Natural Resources and Environment (MONRE), which can be reached by phone: +856 (0)21 510030, or by email: samisdmh@gmail.com

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