Strengthening Knowledge Management for Greater Development Effectiveness in the Near East, North Africa, Central Asia and Europe

IRRI-SMART

Smartphone App for Precise Irrigation

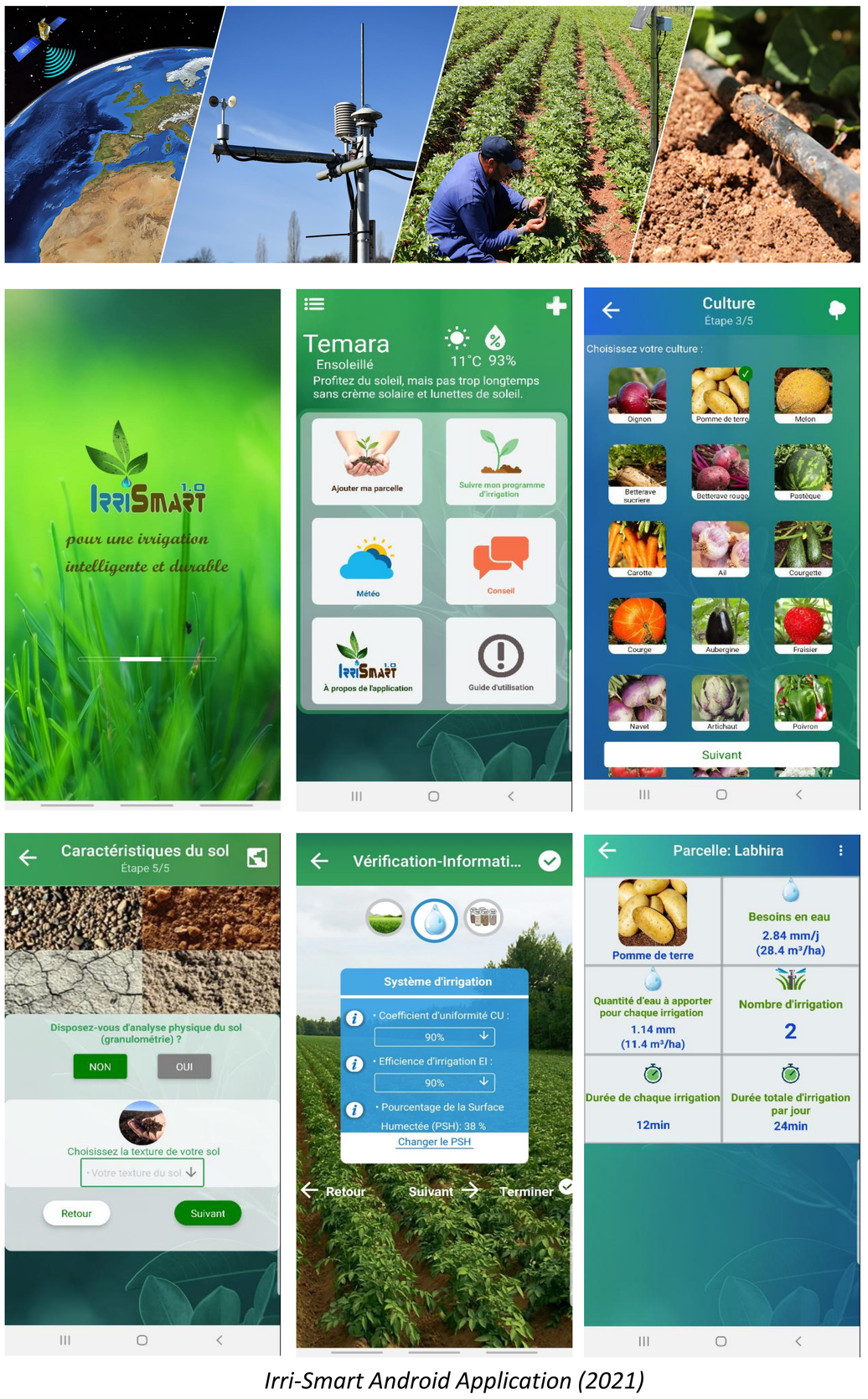
In semi-arid and arid regions, water management is a major constraint for crop production, given the dramatic increase in the demand for this resource and the consequences of climate change. In **Morocco**, irrigation has known a considerable development in recent years, but agricultural water management practices are still of concern, as there is limited knowledge for irrigation parameter determination among farmers (e.g. crop requirements, timing, frequency, etc.). Despite major efforts to switching from surface to drip irrigation systems, farmers are yet to make sound use of available water. The **Irri-Smart** application has been developed by the SPEC-trum research team at **ENA-Meknes** (Morocco) to help optimize on-field drip irrigation by providing farmers, farm managers and other end users with the necessary irrigation parameters (daily irrigation needs, calendar in order to implement precision irrigation and help improve profitability.

App main components & inputs

The Irri-Smart code and algorithm are the combination of a scientific approach and advanced IT technology. Irri-Smart (v1.0) integrates all components of the crop-climate-water-soil continuum The main entries of the app include:

- **Climate** data is used to estimate the reference evapotranspiration “ET0”. Geopositioned data (for specific field location) is real-time accessed through satellite.
- **Crop** requirements for a large list of vegetable crops (commonly grown in the country) are estimated using adapted kc coefficients, taking into consideration the start and the length of the growing period.
- **Irrigation system c**haracteristics (dripper flow, line and dripper spacing, etc.) are taken into consideration to define and manage the irrigation duration.
- **Soil** features (mainly texture and depth) are used to estimate water holding capacity which is determinant in managing irrigation frequency.

The application stores data on a dedicated cloud server for use and updates, as well as for providing the users with historical records.



Irri-Smart Android Application (2021)

Connectivity, information delivery & updates

Irri-Smart analyses the required information and provides the user with **5 key output parameters**: daily crop water requirement “ETc”, daily crop irrigation duration, water quantity by single irrigation, irrigation frequency and single irrigation duration. Irri-smart keeps track of the history record of irrigation for each parcel and each crop to help farmer monitor irrigation over the entire growing season. In case of non-access to internet, the user can request outputs via SMS.

App download

The v1.0 app can be downloaded from **Google Play Store** and used for free**.** Since its release in early January 2021, more than 1000 users have been registered in the following two weeks. A good feedback from many farmers and water management decision makers in Morocco has been received.

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