



## Training of Trainers (TOT) of Agricultural Extension Agents and Contact Farmers on the use of *LandPKS* Mobile App in Tunis, Tunisia

**Bridging Climate Information Gaps to strengthen Capacities for Climate Informed Decision-making**

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**Date:**

**November 2019**



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## Executive Summary

The African Technology Policy Studies Network (ATPS) successfully organized the *LandPKS* mobile app training workshop for farmers and extension agents in Tunis, Tunisia on 22<sup>nd</sup> October 2019. The workshop brought together about 70 participants (extension agents and farmers) from different regions of Tunisia to gain knowledge and skills on the use of the *LandPKS* mobile app for the collection of soil and climate information. The workshop aimed at creating awareness about the *LandPKS* mobile app as well as strengthening the technological capacity of extension agents and farmers to generate reliable soil and climatic information that can inform decision-making on sustainable land management and land use planning.

This report provides detailed proceedings of the *LandPKS* mobile app training workshop. The workshop sought to address capacity development needs in Cameroon. The strategy recognizes the need to build individual and institutional capacities to take advantage of emerging opportunities in the area of Information and Communication Technologies (ICTs) such as mobile phone technology to accelerate access to and application of reliable information for decision-making on agricultural production, land use planning and climate resilience.

The workshop provided a learning and knowledge exchange platforms for networking and discussion among extension agents and contact farmers on the use of *LandPKS* mobile app to support agricultural production and sustainable land management practices in the country. The training was successful in engaging farmers and extension agents to understand the collection, use and interpretation of climate and soil data, as well as know how to identify the different types of soils and the suitable crops for these soils. Participants at the training workshop were satisfied with capabilities of the *LandPKS* mobile app in providing accurate information on soils and climate. Participants also expressed confidence in the ability of the *LandPKS* mobile technology to contribute positively to the agricultural production and climate resilience in the country.

The training workshop also provided participants with an opportunity to provide feedback that may be useful in improving the features and performance of the app. Through this training workshop, we anticipate that participants especially extension agents will train other extension agents and farmers on how to use the *LandPKS* mobile app to collect soil and climate information and use the information to make important decisions on land management and planning.

## 1. Introduction

As part of the activities of the project “Bridging Climate Information Gaps to Strengthen Capacities for Climate Informed Decision-making”, the African Technology Policy Studies Network (ATPS) organized a training of trainers’ (ToT) workshop for extension agents and farmers on the use and application of the *LandPKS* mobile app in Tunis, Tunisia. The workshop was co-organized with Sahel and Sahara Observatory (OSS), and the Ministry of Agriculture. The workshop aimed to build the capacity of participants to acquire knowledge and skills on the use and application of the *LandPKS* mobile app; farmers are able to collect soil and climate information through the use of the app to make farm management decisions. The *LandPKS* mobile app is a product of the Land Potential Knowledge System (LandPKS) project, which was developed through a collaborative effort by the ATPS and the United States Department of Agriculture's Agricultural Research Service (USDA-ARS) and other partners.

This report provides an overview of activities at the training workshop including the expected outcomes of the workshop, and feedbacks from the participants. The workshop was designed to address capacity development needs in Cameroon by contributing to the development of individual and institutional capacities to gain knowledge and skills in the application of the *LandPKS* mobile technology so as to generate useful data and information that can effectively inform decisions at different levels to improve agricultural productivity, sustainable land management and climate change resilience. The workshop aligns with the Climate for Development in Africa Program (ClimDev-Africa), which aims to address the problem of lack of reliable climate information required for decision-making at all levels, bridge the gap between climate services and national development priorities and lastly, to establish a continuous flow of climate information between providers and users.

The training workshop responds to the growing concerns in many African countries on the need to rethink about current land use mechanisms, and to devise innovative measures that will ensure that the available land under agricultural production becomes more productive, sustainable and resilient to the impacts of climate change. It is now evident that efforts to increase agricultural productivity will not only come from land expansion and conversion, but rather the generation of accurate, robust, and timely information and knowledge of land potential will be key in supporting decision-making for sustainable land management and improved agricultural production.

### 1.1 Overall goal and objectives

The workshop aimed to build the capacity of agricultural extension agents and farmers on the use and application of the *LandPKS* app for the collection of valuable information (climatic and soil) so as to improve agricultural productivity. Specifically, the workshop:

- Introduced participants to the underlying principles of the *LandPKS* mobile app including the biophysical characteristics of soils, vegetation and the concept of land potential;
- Informed participants about the different features, components and characteristics of the *LandPKS* mobile app as well as the operation of the mobile app for data collection;
- Undertook participatory field demonstrations of *LandPKS* app with participants at a selected site and;
- Guided farmers on how to identify different soil types, their crop suitability and appropriate land management practices needed to contribute to improved agricultural productivity, sustainable land management, and climate change resilience.

## 1.2 Expected Outcomes

The expected outcomes for the training workshop were:

- Participants to deepen their knowledge of the biophysical characteristics of soils, vegetation and land potentials;
- Participants to gain knowledge of the *LandPKS* mobile app operation and its application in the field;
- Participants to utilize knowledge to make informed decisions on land use planning and farm management to sustainably increase agricultural productivity;
- Participants to have open access to the *LandPKS* mobile app at any time and anywhere;
- Participants to instantaneously access the best available information and interpret it in the context of local socio-economic conditions and local values, including crop preferences for a particular farm location; and
- Participants to contribute to future app improvement by providing valuable feedback to the app

## 2. Workshop Methodology

The workshop employed a participatory approach that consisted of classroom presentations, discussions and field demonstrations. The workshop entailed both theoretical and practical learnings that allowed participants to gain both theoretical and practical understanding of the *LandPKS* mobile app. **(See ANNEX 1 for the workshop programme)**. As part of the training package, a training guide containing step-by-step instructions on the functionality of the *LandPKS* mobile app was provided for the participants.



*A cross-sectional view of participants who attended the workshop training*

## 3. Introductions and Expectations

The participants introduced themselves by giving their names, where they work and what they expect to learn from the workshop. Participants listed the following as some of the expectations they hoped to realize from attending the training workshop:

- i) To understand how *LandPKS* mobile App is applied practically.
- ii) To know the accessibility of the *LandPKS* mobile App to farmers and Extension agents.
- iii) To know if the *LandPKS* mobile app can be used as an information management tool.
- iv) How to use the *LandPKS* app to mitigate the effects of climate change especially on agriculture.
- v) To know how they can use the *LandPKS* app to improve their agricultural productivity.
- vi) To acquire knowledge about the new technology and share it out with other farmers and extension agents as well as advise farmers on good agricultural practices.
- vii) To gain knowledge about the potential of *LandPKS* mobile app in order to enhance the agricultural value chain in terms of increased market access for farmers' produce and job creation for women and youth.
- viii) To know the importance, relevance and benefits of the *LandPKS* app to farmers, extension agents and other stakeholders.
- ix) To gain insights into how the *LandPKS* mobile app can predict weather patterns in order to inform preparedness and land use decisions.

#### **4. Functions and Operation of the LandPKS mobile app**

*By Dr. Ernest Acheampong, Senior Research Officer, ATPS*

The *LandPKS* App is a mobile technology application produced from the Land Potential Knowledge System (LandPKS). The App allows individuals and organizations to use a smart mobile phone to determine land potential at a specific location based on local and global knowledge and information about the potential of similar types of land (i.e. land with similar climate, soils and topography). The *LandPKS* App currently operates on Google android and iOS platforms, connected to a more sophisticated web tools that can be accessed via personal computers and linked with other decision tools.

Tapping into recent advances in cloud computing, digital soil mapping, Global Positioning System (GPS) enabled camera phones, the *LandPKS* mobile app allows users to enter point-specific information about soil texture, topography and easily observable soil properties and in turn obtain site-specific data including temperature, rainfall, estimated amount of water the soil can store for plants, and growing season length. The *LandPKS* mobile app can be downloaded at a google play store or iTunes store. It functions on both android and iOS platforms. Participants were taken through each interface of the app and how it functions.



**Dr. Ernest Acheampong leads a presentation on the functionality of the LandPKS mobile app**

## 5. Field Demonstrations of the *LandPKS* Mobile App

After the theoretical exposition of the *LandPKS* mobile app, there were field demonstrations on how the app works. This practical session provided a better understanding of how the app can be used in the collection of soil and climatic information. Participants were taken through the process of using the *LandPKS* mobile app to collect information from the field. Field data was captured into the *LandPKS* mobile app in following ways:

- Through an observational assessment of the land cover type, use, slope, slope shape, the occurrence of soil erosion, runoff and soil conditions.
- Up to 1 meter pit was excavated to identify the different layers and types of soil layers by examining the soil texture at different depths. Soil testing was done at different layers of 10 cm intervals (starting from 0-10 cm) from the top level soil to the bottom of the pit, soil texture analysis involved basic actions on soil texture analysis following a set of leading questions (with video tutorials incorporated in the app) that guide users on how to form a soil ball and make soil ribbons. By following instructions and prompts on the app, participants were able to test the physical characteristics of the soil and determine the type of the soil at different soil layers.
- Geo-referenced photographs are taken to serve as benchmarks for future monitoring.
- Based on the available information on soil generated by the *LandPKS* mobile app, a soil-crop matrix developed by the ATPS is used to assist farmers and extension agents to match the identified soil texture type with the most suitable crops.



***Dr. Ernest Acheampong, ATPS Senior Research Officer leads participants in the field demonstrations***

## **6. Conclusion**

There has been an increasing role and contribution of mobile phone-based technology towards the transformation of the agricultural sector across Africa regardless of the infrastructural challenges associated with it. In this report, we have documented the proceedings of the *LandPKS* training workshop, organized by the ATPS in collaboration with OSS and the Ministry of Agriculture in Tunisia. The participants showed positive response to the training and were very enthused and keen. They embraced the *LandPKS* mobile app as a valuable tool that can significantly impact on their lives especially with increasing challenges in the agricultural sector caused by the changing climate. As a community-driven tool, the feedbacks and responses received from the participants as they continue using the tool will be vital in informing the future upgrade of the app. The ATPS and its partners will continue to monitor the progress of the adoption and use of the *LandPKS* mobile App Tunisia by engaging with the different stakeholders.



*Participants installing the LandPKS App during the training*



*Participants who attended the LandPKS Mobile App Training*

## ANNEXES

### ANNEX 1: Workshop Programme Outline

**LANDPKS TRAINING AND SENSITIZATION WORKSHOP**  
**22<sup>nd</sup> October 2019**  
**PROGRAMME OUTLINE**

|                      |  |
|----------------------|--|
| <b>08:00 – 08:30</b> | <b>Registration</b>  |
| <b>08:30 – 09:00</b> | <b>Opening and Welcoming Remarks</b> <ul style="list-style-type: none"><li>• OSS Representative</li><li>• Alfred Nyambane – Research Officer, ATPS</li><li>• Representative of the Directorate of Agriculture</li></ul>                  |
| <b>09:00 – 09:40</b> | <b>Introductions</b><br><br>Teasers and Expectations from Participants   |
| <b>09:40 – 10:10</b> | <b>HEALTH BREAK/GROUP PHOTO</b>  |
| <b>10:10 – 12:00</b> | <b>Introducing the <i>LandPKS</i> App</b><br><br>Principles underlying the <i>LandPKS</i> app <ul style="list-style-type: none"><li>• Functions and features of <i>LandPKS</i> App</li><li>• How to use the <i>LandPKS</i> App</li></ul> |
| <b>12:00 – 13:00</b> | <b>LUNCH</b>   |
| <b>13:00 – 15:30</b> | <b>Field Demonstration of <i>LandPKS</i> App</b>   |
| <b>15:30 – 16:00</b> | <b>Feedbacks, Responses and Comments</b>   |
| <b>16:00- 16:30</b>  | <b>Award of certificates</b>   |
| <b>16:30- 17:00</b>  | <b>Closing remarks and Departure</b>   |

**ANNEX 2: Photo Gallery**



**Participants keenly listening to the opening remarks from OSS representative during the workshop opening**



**Participants keenly following during field demonstrations on the use of the *LandPKS* Mobile App to classify soil**

### ANNEX 3: List of Participants



LIST OF PARTICIPANTS FOR THE LANDPKS MOBILE APP TRAINING IN TUNIS, TUNISIA ON  
22<sup>nd</sup> OCTOBER, 2019

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| 10. ✓ | Brahim Inti'beti     | chef service CRDA souss (sol)  | 97 227 232                        |           |
| 11. ✓ | Fabien Rouatli       | CRDA Souss                     | 98 416 081                        |           |
| 12. ✓ | Belloumi Mabrouk     | CRDA Bizerte                   | 97 234 551                        |           |
| 13. ✓ | Elghali Mouna        | CRDA Bizerte                   | 26 188 968                        |           |
| 14. ✓ | Rhimi Intissar       | CRDA Kasserine                 | 98 403 559 / 53314247             |           |
| 15. ✓ | Gharsalli Roubi      | CRDA Kasserine                 | 98600592                          |           |



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| 23 | Hammam Ali         | CRDA ZAAGHOUAN             | 97.400 004                              |              |
| 24 | Anis Ben Mustapha  | Direction des sol / DGACTA | 23 497 324                              |              |
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| N°  | NAMES                          | INSTITUTION                  | PHONE NO & EMAIL                      | SIGNATURE |
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| 34. | Ben M <sup>ed</sup> Abdelmajid | DRPS- CRDA Zagh              | 24.304 629                            |           |
| 35. | Icham Fethi                    | chef mod sol jaf             | 92 9 57 216                           |           |
| 36. | Hamri Nadhem                   | chef mod sol jaf             | 98 553 303                            |           |
| 37. | larchi Mohamed Bekkaf          | CRDA CES Zagh                | phonon 98 611 816                     |           |
| 38. | KRabil jma                     | CRDA Beja / sol              | 98 471 611                            |           |
| 39. | Taboobi Saber                  | chef mod sol Beja            | 58461 665                             |           |
| 40. | Laxard Aymer                   | chef mod sol Ariant          | 5060 2228                             |           |
| 41. | Ben Abdallah Ali               | chef C.T.U GRDA Beja         | 2244 3324                             |           |
| 42. | Houssou Hadouda                | chef J. Amn. Beja<br>sol jaf | 50. 989. 812                          |           |
| 43. | Issam Hamraoui                 | CRDA jaf                     | —                                     |           |
| 44. | Samir Hadadi                   | CRDA jaf                     | —                                     |           |
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OBSERVATOIRE  
DU SAHARA  
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| 59. | Sam Sassi         | Cabinet           | 58056384                           |           |
| 60. | Ghannouchi        | CRDA ADRIANA      | 98200351                           |           |
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| 62. | كريم جوي          | Ju                | 23427949                           |           |
| 63. | Nejib Kachin      | CRDA Zaghoue      | 94876285                           |           |
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| 66. | Bechir Hajri      | CRDA Monastir     | 27218991                           |           |

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