

Partnerships Strengthening for ICT in Agricultural Extension: Towards Smallholder Farmer Development

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Introduction

The Government of South Africa provide cost-free public extension and advisory services in support of the development of the agricultural sector, especially targeting smallholder and emerging farmers. The agriculture sector is also supported through private extension and advisory services by commodity groups, NGOs and input companies. The sharing of relevant technical and market related information as well as facilitation of appropriate skills to enhance farm productivity; pluralistic extension has the potential to play a major role in the sustainable development of smallholder agriculture in South Africa, recently augmented also through Information and Communication Technology (ICT).

Project Description

To support the development of efficient and effective extension and advisory services, the Agricultural Research Council (ARC) and the Department of Science and Technology (DST) implemented the ICT-Enabled Extension and Advisory Services Delivery model pilot project from 2015 to 2017. The project collaborated with the Department of Agriculture, Forestry and Fisheries (DAFF) and the respective Provincial Departments of Agriculture. The model adopted a few strategies, including **Knowledge Brokering**; through the enrolment of and on empowering young agricultural graduates with efficient agricultural extension and entrepreneurship skills.

Graduates were also supported to start advisory services based businesses that are complementary to public extension for strengthening access to research outputs by the farmers through innovation brokering. According to Klerkx et al, (2012), *innovation brokering is about performing several linkage building and facilitation activities in agricultural innovation systems, creating an enabling context for effective policy formulation and implementation, development and innovation.*



Figure 1: The 28 Knowledge Brokers, pictured here with ARC staff during training on extension skills

Methodology

Based in Mpumalanga, Limpopo, KwaZulu Natal and Eastern Cape provinces, **30** graduates from diverse agricultural training backgrounds were recruited, contracted to the project. They were then trained and mentored on extension, entrepreneurship and advanced agricultural production; with support from ARC experts. Each graduate had to support 20 local farmers, on basis of farmer-to-farmer extension/farmer-led extension. Linkages with local extension office for the benefit of the 20 supported farmers were established.



Figure 2: Knowledge Brokers attending practical training on Beef Performance at ARC's Irene

The potential of ICT enabled-extension platforms was implemented through a number of ICT tools. Pre-loaded tablets containing scientific information on various commodities, production guidelines and other related information were supplied to the knowledge brokers.

Project Outputs

An ARC Information Hub; which is an *advisory services hub application that allows for virtual interaction and interface between researchers and farmers* (HSRC Policy Brief, 2016) was developed through the project (Table 1).

Table 1: Information Hub content scope

Technical Production Information	Marketing and Economic Information	Early Warning Information	Training Information
<ul style="list-style-type: none"> • Production Manuals • Plant health • Animal health • Natural resources management 	<ul style="list-style-type: none"> • National markets information • Production economics 	<ul style="list-style-type: none"> • Fires • Animal health • Plant health • Weather/climate 	<ul style="list-style-type: none"> • Courses • Books

Subsequently, a mobile application containing the AR hub information was developed as depicted in figure 3.

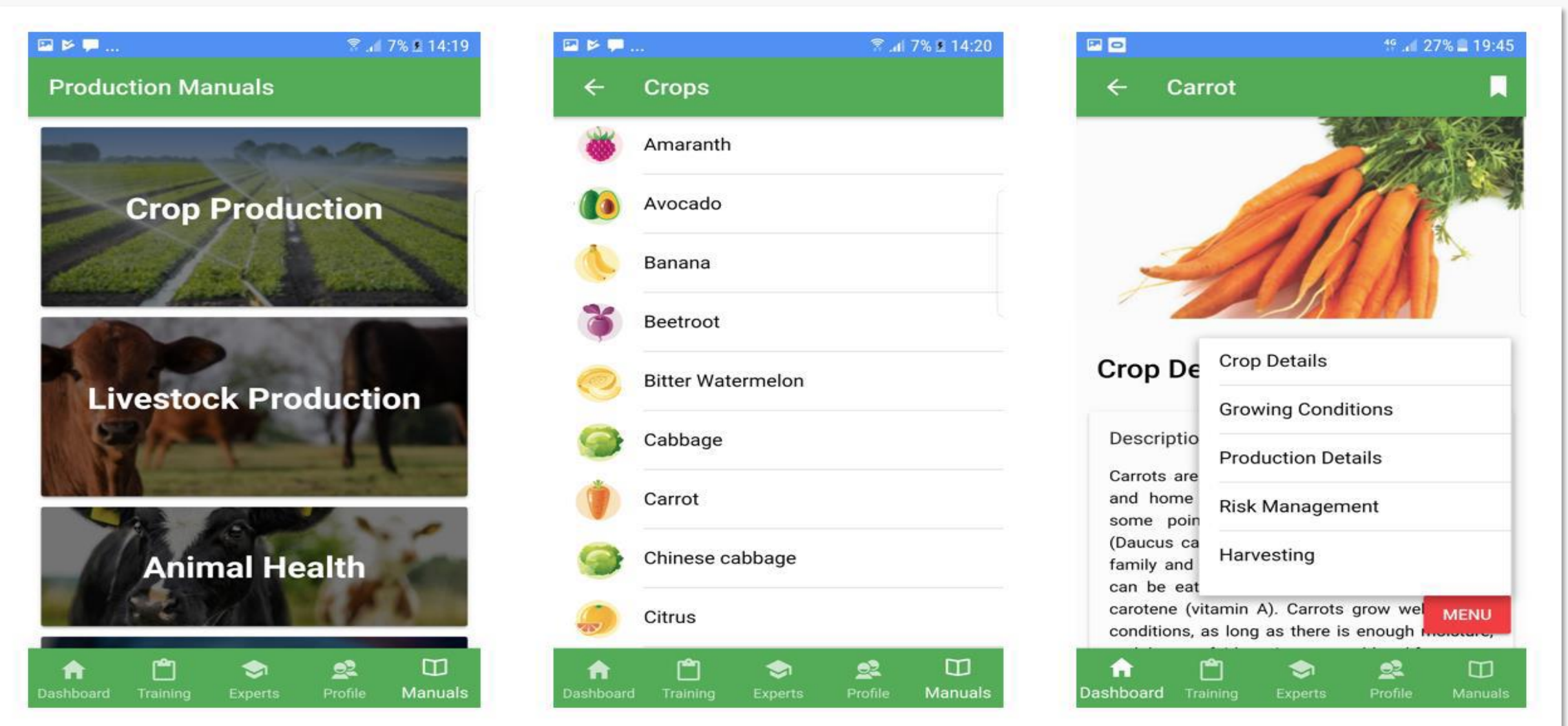


Figure 3: Schematic diagram of the ARC Information Hub mobile application

Observations & Lessons:

- As foundation to access farmers, the collaboration and networks established with local extension office, the municipality and ARC varied greatly from one broker to another with both commendable and dismal results.
- Farmers trust other farmers due to practical understanding of technology promoted than scientists, with perception that their advice is theory-based
- Access to smart phones/ ICT tools as well as internet coverage and costs are major factors for successful knowledge brokering allowing for real-time access to information.
- There is a need to commercialize information access amongst smallholder farmers, albeit at nominal costs.
- ICT4Agriculture does not eliminate the need for physical extension support.
- The entrepreneurial skills developed exposed and prepared the youth to varying career and study options post project, as depicted in Table 2.

Table 2: Post project placement of Knowledge Brokers

Current Activity	# Knowledge Brokers
Full-time employment	7x
Entrepreneurs (Agricultural Technology Franchisors)	4x
Full-time postgraduate studies (RSA/Abroad)	4x PhD, 3x MS, 1x BSc
Contract employment	8x
Extended internship	1x

Conclusions

Models that combine mobile technology and expert networks to help smallholder farmers get accurate and timely information to improve their businesses and livelihoods holds better promise of success. For this to work, stakeholders need to provide a comprehensive set of information across the agriculture value chain to ensure that farmers are knowledgeable of the different aspects of production to markets. There is value in the exploitation of e-agriculture (ICT) as a support tool for smallholder farmers. However, careful selection of farmers is needed for successful adoption of agro-technologies.

References

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2. Exploring ICT4agriculture for Agricultural Development: Key Lessons, Challenges & Recommendations, 2016, http://www.hsra.ac.za/uploads/pageContent/6277/Concept%20Note_ICT%20in%20Agric%2022%20July%202015.pdf