Technology transfer goes online

Knowledge becomes truly powerful when it is shared and applied – which is what the ARRIE-App. hopes to achieve.

IN A MARKET where competitiveness can hinge on the smallest of details, the importance of knowledge sharing cannot be overestimated. In the fresh fruit industry, it is an ongoing challenge to keep producers and exporters abreast of the latest research findings and technology developments.

Not only is such information sharing fundamental to the improvement of the industry; the effective and timeous uptake and application of research and technology development information is imperative for optimal return on the resources invested in research.

Vast quantities of intellectual capital are contained in countless research reports, and technical and academic publications. It would benefit the fruit business to develop a centralised, user-friendly information system that can be continuously improved over time.

Realising this need inspired a team at ExperiCo, consisting of Arrie de Kock, Dr Johan

Fourie and Dr Martin Taylor, to explore the possibilities to optimise targeted post-harvest technology transfer for stone fruit, and improve skills development in the fresh fruit industry.

Their vision was a real time, interactive digital platform, in the form of a website with mobile phone and desktop apps. Backed up by a help desk, the technology would assist extension officers and technical advisors, smallholders and commercial producers, as well as packhouse managers and exporters, to maximise income for the benefit of all involved.

"The overall aim is to improve the sustainability of the South African fruit business," says Arrie. "The intention is to make the information available in digital format so that users have 24/7 access to important verified stone fruit quality maintenance and management information. Our focus is to help all role players understand why and how applicable technologies are used."

When Arrie first submitted the funding application for the project, he suggested four distinct phases:

- Phase 1 – development of a digital template.
- Phase 2 – population of the template with applicable information.
- Phase 3 – commercialisation of the digital system.
- Phase 4 – integration into the Hortgro Science platform.

Given his area of specialisation, he decided to start with stone fruit. A successful outcome would pave the way for expansion to pome fruit and, thereafter, other fruits.

The PHI Programme and Hortgro Science agreed to fund the first phase, stipulating that a decision on the way forward would be based on the information generated.

Phase 1

Phase 1 entailed formulating a digital template – also known as an organisational library or

wireframe – and creating a mock-up of a functional system.

The project started with a number of brainstorming sessions, involving a wide spectrum of role players, facilitated by Rubixile on behalf of the system developer, Polymorph.

The information that was gathered was used to create a digital template that identified stakeholders, business goals, business drivers, information flow, information verification, customer segments, pains and gains of customers, and the use of social media for interaction and dissemination of information.

At the first meeting, it was decided to develop an acronym to name the system. It would also serve as a reminder of what the system wants to achieve.

The acronym decided on was ARRIE:
A – Accurate
R – Real time
R – Reliable
I – Information
E – Extension
The workshop participants further agreed

that the digital system should be kept as simple as possible, and that it had to be extremely user friendly.

Based on the brainstorming results, an application walk through, or mock-up, was created by Rubixile with inputs from ExperiCo and Hortgro Science.

It was envisaged that where verified information is available for specific cultivars, it would be accessed by selecting FRUIT KIND, FRUIT TYPE, CULTIVAR, VALUE CHAIN and QUESTION.

For additional information, the WHAT, HOW and WHY would be provided in different formats including video, images, text and, if possible, useful links.

Started in July 2015 and completed in September of that same year, Phase 1 provided the information needed to decide on the future of the project. A review by Hortgro Science concluded that Phase 2 must entail the population of the digital template with cultivar-specific and generic information for apricots, peaches, nectarines and plums.

Ask Arrie …

PROJECT TITLE
Establishment of proof of concept for innovative post-harvest digital quality management in the form of an APP. to assist technology transfer for fruit

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DURATION
18 months

PHI PROGRAMME & INDUSTRY CONTRIBUTIONS
R428 778 & R428 778

LEAD INSTITUTION
ExperiCo (Pty) Ltd

BENEFICIARY
The South African fruit industry

FOCUS AREA
Technology transfer

HUMAN CAPITAL DEVELOPMENT
Other scientists from ExperiCo were involved in this project with the intention to build capacity for future technology transfer needs.

PUBLICATIONS
Pending

PRESENTATIONS AND PAPERS
Once functional, the system will be presented and demonstrated at various forums, including for training and education. As an introduction, the concept was presented at the Hortgro Science technical symposium and at the PHI Programme technical symposium in 2016.

Stone Fruit

Phase 2

Between November 2015 and December 2016, the framework was populated with cultivar-specific information, including harvest maturity, packaging and cold-storage requirements, for the five main apricot cultivars.

Generic apricot information was also added, covering the topics of harvest maturity, handling after harvest, quality requirements at packing, cooling and shipping, gel breakdown, over-ripeness and decay.

The populating process was reported on in January 2016.

In the next stage, the framework was populated with information on 19 of the main plum cultivars, as well as generic plum information on harvest maturity, harvesting, handling after harvest, quality requirements at packing, cooling and shipping, internal break down, gel breakdown, over-ripeness, flesh breakdown, bladderiness, shrivel, decay, mixed maturities, mixed shipping loads and airfreight.

Cultivar-specific information for the 12 most important peach and nectarine cultivars – based on export volumes – as well as generic information on woolliness, over-ripeness, decay, pre-conditioning and airfreight was added to the framework.

Next steps

Hortgro Science used the populated template to contract a company to build the website and compress it into a mobile phone App. in Phase 3.

Once the website is functional, the App. will have to be introduced to smallholder farmers and commercial producers alike.

Not intended to exist in isolation, the tools the project set out to develop will be integrated into the existing technology transfer structures within Hortgro Science, with technical support from ExperiCo.

All emerging growers in the deciduous fruit industry are members of the Deciduous Fruit Development Chamber (DFDC), and are registered on its database. Once the website and App. are completed, information about it will be channeled through the DFDC to its members and to the extension departments in all provinces.

A project to update and expand the information was registered with Hortgro Science, and will include the development of colour charts for internal disorders on plums.
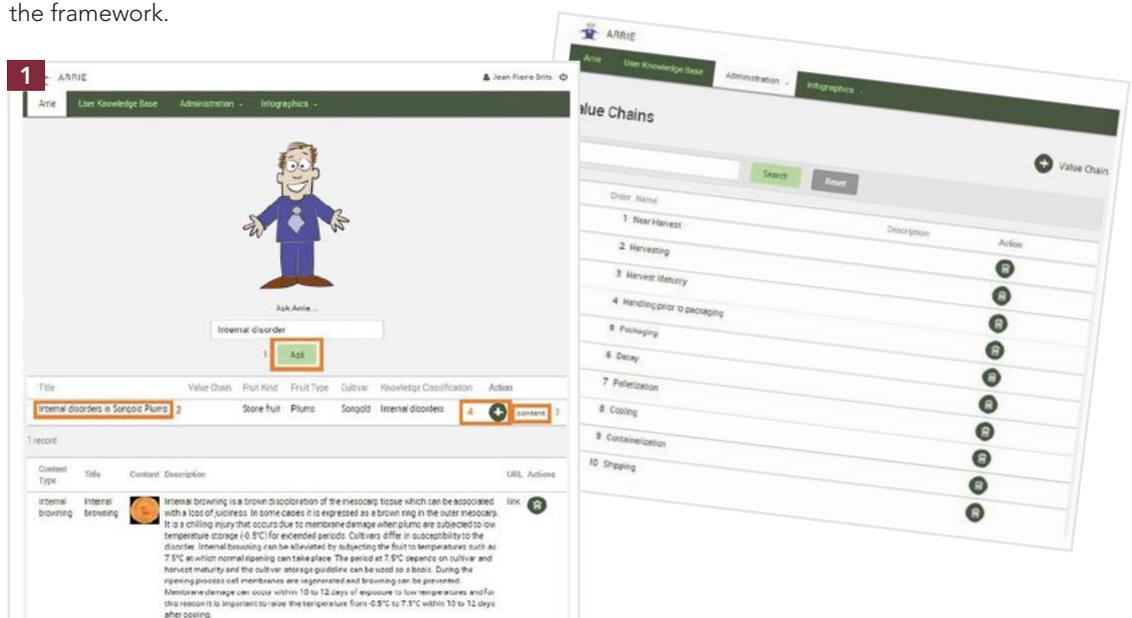
1 Examples of the App. layout which is still under construction.