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**78<sup>th</sup> Plenary Meeting – Brisbane (Australia)**  
**MINUTES**  
**Second Open Session**  
**Disruptive Technologies**

09:00 hrs, Tuesday 3 December 2019

Chair: Emeritus Professor Les Copeland, Director, Cotton Research & Development Corporation, Australia.

Prof. Richard Venditti, Department of Forest Biomaterials, North Carolina State University, USA.

Prof. Venditti spoke on the topic of, "*Microfibers from laundering and their fate in the aquatic environment.*" He noted that microplastics in water bodies have been established as a significant environmental pollutant and can originate from the laundering of clothing. It has been estimated that a minimum of 5 trillion plastics particles weighting 270,000 tonnes are floating in the world's oceans. Some studies have found that wastewater treatment plants are a source of microplastics, and they are derived from sewage via the washing of clothes. He presented the results of a study conducted by the North Carolina State University and Cotton Incorporated. In their findings, Prof. Venditti said that natural-based fabrics released more fibres during small scale laundering than polyester. The detergent use causes more microfibres to be released from fabrics during laundering. However, the microfibre fate assessment after laundering is not complete without the understanding of the behaviour of these fibres in aquatic environments. Cellulose-based cotton biodegrades quickly in aerobic aquatic environments, while microfibres released by polyester aren't compatible with the environment. Cotton degrades at a very high extent; the degradation within about one month is at least 65% and it can approach 100% with enough time and enough nutrients. Prof. Richard concluded its presentation by pointing out that polyester and the cotton promote different type of changes in the microbiome.

Dr. Alice Payne, Associate Professor in Fashion in the School of Design, Queensland University of Technology, Australia.

Dr. Payne spoke on the topic of, "*What does a circular economy mean for cotton?*" She noted that the circular economy principles were - design out waste and pollution, keep products and materials in use and regenerate natural systems. Reducing the environmental impact by having fewer resource depletion, yet still maintaining economic growth. Dr. Payne indicated that when thinking about a circular economy refers to wearers, resellers, repairers and re-processors. Brands and retailers having a different relationship with their customers, where they are renting, buying back from wearers, and collecting back their garments. She pointed out that even though the circular economy is an economic system aimed at eliminating waste and the continual use of resources, virgin fibres are essential for the system to work, as they help to keep maintaining the strength and the quality of whatever product is in circulation.

Dr. Oliver Knox, Senior Lecturer, School of Environmental and Rural Science, University of New England, Australia.

Dr. Knox spoke on the topic of, “*Soil your undies*.” He noted that soil health is a platform for construction and different functions will have a different health rating or assessment. The cotton industry has mainly focused on soil compaction and questioned if it was even possible to grow cotton and not use machinery. Nevertheless, there are systems like control traffic farming or limiting the number of passes in the farm that could help to solve the problem. Some other solutions are cover cropping, erosion control, watering filtration, rebuilding soil organic matter and fostering an active biology in the systems. A decline in soil physical properties takes considerable time and cost to correct and maintaining good soil quality is vital for the economic sustainability of annual cropping. Healthy soils are the basis of healthy crops and biodiversity enhancement. Dr. Knox mentioned that the world is full of various soil types and huge climate variation. Measuring soil health could use different approaches to accommodate these variations:

- Visual assessment of Soil is a very good method if the person is a soil scientist.
- Visual Evaluation of Soil Structure (VESS), is a spade method that assesses soil structural quality by comparing features of aggregates and roots with a description chart to attribute a soil quality score.
- FAO Visual Soil Assessment (VAS), is based on the visual assessment of key soil ‘state’ and plant performance indicators of soil quality, presented on a scorecard. One of the advantages in the VAS system, is that the farmer can often relate on what he is looking at back to management and crop decisions.
- #Soilyourundies, the goal of this approach is to assess soil health in a simple and fun way. It requires that people bury their underwear that is 100% cotton (and brand new) in the top 5 cm of the soil. Keep a bit of the waistband showing and flag it. Eight weeks later, people must dig up the pants. If the cotton is almost all gone, that’s a good sign that the soil life is healthy and doing its job of decomposing organic matter.

Meeting was adjourned at 10:30 hrs.