

15th Triennial Symposium of the International Society for Tropical Root Crops

Summary from Oral Presentations

Session IX

Crop Improvement for Sustainable Intensification of Root & Tuber Crops

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The lead lecture by **Hernan Ceballos** (CIAT) gave an overview of Root and tuber crops for feed and industry. It was remarked that to obtain a successful impact on different industries in this area it is necessary to have a close and intimate interaction between the agricultural and industrial components. Researches must combine a clear understanding of the needs by the industry with suitable breeding and laboratory tests. The use of new techniques particularly on molecular markers (TILLING) and genetic transformation are becoming available and need to be used likewise RTC. Cost and time wise the sequencing of a crop genome have become almost irrelevant issues. The availability of sequenced genomes and the increasingly efficient application of molecular tools would facilitate enormously the work to develop RTC cultivars that better fit the needs of different industries

Two presentations on use of sweet potato as food and feed were presented by **Carlos U. Leon-Velarde**: Potential role of sweet potato to improve smallholder crop livestock production systems and Searching for feeding strategies based on sweet potato silage to improve smallholder crop-livestock production systems in Vietnam. Main concluding remarks indicated that the sweet potato varieties can be classified by the ratio of root biomass to total biomass considering the leaf shape and its vines soil covered. Also it can be used as dual purpose considering a cut of vines between 75-90 days after planting. Vines can be storage as silage as well as at the end of the crop combining 75:25 vines and roots. Its use to feed pigs confined or foraging allows a satisfactory weight gain reducing feed cost and increase gross margin. Foraging of SP fields by pigs tends to improve soil nutrients condition.

Two papers on Kinetics of starch digestion in Australian sweet potato as affected by particle size and Digestibility of starch and potassium in sweet potato from Papua New Guinea were presented by **P.A Sopade**. Results indicate that the starch digestion of sweet potato (Beauregard cultivar of Australia) proceeded by diffusion mechanisms, and more starch was digested when the particle size was reduced. Differences in the mechanical action and frictional heat during milling were suspected to be responsible for the differences in the mills, but this demands further investigations In-vitro pancreatic digestion of the flours was time-dependent in a non-linear manner. In similar form 20 sweet potato samples from PNG showed differences in the release of potassium and digestion of starch irrespective of the sample, potassium was readily released and

independent of time of digestion. However, more potassium was released during pancreatic digestion than during gastric digestion. Some samples potentially exhibited high resistant starch, and being natural food systems, these samples could be used to lower glycaemic index in processed foods, where high glycaemic index is a concern.

The stability of fermentation of carbohydrates in sweet potato slurry were examined by **Li Hongmin**. The fermentation becomes important in the ethanol process. pH stabilization constitute the major issue. Use of antioxidant favored its stabilization

The evaluation of several clones of cassava considering altitude was analyzed by **Dominique Dufour**. The papers focus the preparation of bread considering the response variety to the altitude. Cassava produced at high altitude tends to produce a better fermentation and more suitable bread.

The Post-harvest deterioration in cassava: from understanding towards control was presented by **John Beeching**. A clear scheme of Cassava PPD was showed indicating that is a limitation to achievement the full potential of this crop. However, under a complex response the current understanding of the problem suggests experiments in which the expression of likely candidate genes involves in both anti-oxidant defense and the regulation of PCD pathways. Sufficient lines of cassava plants containing eight candidate genes have been produced and their transgenic nature confirmed. The full analysis of these plants will not only increase our understanding of PPD by should also point to specific genes with the potential to control the deterioration response.

A paper on a Peruvian root “maca” was presented by **Larry Ramos**. The paper examined the “Extraction and characterization of polisaccharides of *Lepidium meyenii* Walpers root. A comparison of a processed product and fresh root after drying and grinding” was presented. Results were based on aqueous extraction of maca powder (*Lepidium meyenii*) inactivated, defatted and free of starch. Mixtures of polysaccharides were obtained, whose composition suggests the presence of glucans and acid polysaccharides. Comparing the composition of the fractions obtained by aqueous and alkaline extractions of the commercial product as maca powder and fresh roots, some compositional differences were detected, suggesting the occurrence of changes during post-harvest processing that affect the solubility of polymers.