

rice cultivars, significantly higher amount of 2AP was recorded at reproductive stages. Badh2 expression was found significantly reduced in mature as well as developing stages of Ambemohar-157 and Basmati-370. The badh2 expression was found significantly higher in IR-64 in all the developmental stages. The negative correlation between 2AP content and badh2 expression at all the developmental stages in both scented rice cultivars confirms the recessive nature of badh2 and its role in 2AP accumulation. Since aroma is an important quality character, the study suggest that, precise down regulation of badh2 during maturity stages may enhance the aroma content in rice grain.

[P201] Evaluating macadamia rootstocks

Theme: 4. Science Driven Solutions

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Rootstock has been observed to influence many traits in various horticultural industries, including tree size, disease susceptibility and precocity. In macadamia, rootstock choice has largely been driven by ease of propagation. Relatively little is known about macadamia rootstock effects on tree performance. Twelve cultivars were propagated as open-pollinated seedling and cutting (clonal) rootstocks, and own-rooted cuttings. The same cultivars were also used as scions and grafted to rootstocks in an unbalanced, circular design. Trees were planted at four trial locations in Queensland and northern New South Wales. Scion cultivar accounted for more of the variation in all the measured traits (yield, total kernel recovery, tree height and tree canopy width) than did rootstock cultivar. Rootstock contributed significantly to yield, tree height and tree canopy width, but not total kernel recovery. Rootstock type (seedling, cuttings, own roots) accounted for only a small amount of the variation in yield and canopy width. For these traits the values for own roots were significantly lower than for cuttings or seedlings. The existing Australian industry standard rootstock, 'H2' seedling, performed well across all traits. 'Beaumont' cutting rootstock produced the highest yields, with 13% higher yield than 'H2' seedling. 'Beaumont' cuttings produced similar sized trees as 'H2' seedling. Clonal 'Beaumont' rootstock is already the industry standard in South Africa. Adoption in Australia may provide a small productivity increase and greater uniformity in performance than the genetically diverse open-pollinated 'H2' seedlings currently in use.

[P202] Bananas and Mangoes: Fertiliser and ground cover management to benefit production, soil and the environment

Theme: 4. Science Driven Solutions

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Bananas are the number one selling item in Australia's supermarkets, and had a farm-gate value of \$600 million in 2014. Mangoes, another important crop for domestic markets and for export, had a farm-gate value of \$140 million in 2014. In both industries, fertiliser management, especially nitrogen, is critical for production, but there is little information on optimum rates and application practices. Furthermore, there are concerns that current management practices negatively impact on soil health and the Great Barrier Reef due to losses of nutrients to the environment. Here we report on current grower participatory field evaluations of new fertiliser and ground cover management practices and their effects on crop productivity, soil condition (physical, chemical and biological) and greenhouse gas emissions. For bananas, current farmer nutrient management is being compared with a reduced nitrogen rate, with and without the nitrification inhibitor ENTEC (3,4-dimethylpyrazole phosphate). For mangoes, current farmer nutrient management is being compared with ENTEC-treated and polymer-coated nitrogen fertiliser, all at the same rate. In all cases the nitrogen fertiliser is urea. The ground cover treatments compare the dominant current practice (bare soil) with added mulch in mangoes or living ground cover in bananas. In the first season of the trials, growth of bananas did not differ significantly between the fertiliser treatments, although reduced nitrogen rate led to a reduction in leaf chlorophyll at bunch emergence. Living mulch did not reduce banana growth. Under mangoes, added mulch influenced the soil water balance and greenhouse gas emissions (N₂O and CO₂).

[P203] Screening Queensland grown sorghum for health promoting compounds

Theme: 4. Science Driven Solutions

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Increased intake of whole-grain foods, resulting in increased consumption of bioactive phytochemicals, dietary fibre and slowly digestible macronutrients, has been suggested as one approach to reduce the incidence of type 2 diabetes and cardiovascular diseases. Sorghum is one of Queensland's major grain crops. While most of this crop is used to provide feed grains for the cattle, pig and poultry industries, sorghum has qualities which could prove beneficial to human health. Depending on the genotype, sorghum represents an excellent source of health-promoting phytochemicals, particularly polyphenols. Eighteen different sorghum genotypes and field selections (from pale to dark) grown in Queensland were analysed for free and bound phenolic compounds, and carotenoids by UPLC. Additionally, starch digestion experiments were carried out to measure the release kinetics of glucose. The highest polyphenolic content observed was in Shawaya Black (1371 µg/g dry weight (dw)), with luteolinidin as the predominant free phenolic compound. Karper 669 was the richest source of carotenoids (2.2 µg/g dw), with lutein as the main carotenoid. Furthermore, starch digestion was slowest for Shawaya Black, resulting in a significantly ($p < 0.05$) lower glucose release compared to all other tested sorghum genotypes. Shawaya Black, a dark-purple sorghum genotype, was identified as the most promising candidate in terms of health promoting polyphenols. However, the actual nutritional significance of these *in vitro* results (high polyphenol content and low glucose release) needs to be investigated and confirmed in human studies using different sorghum food preparations.