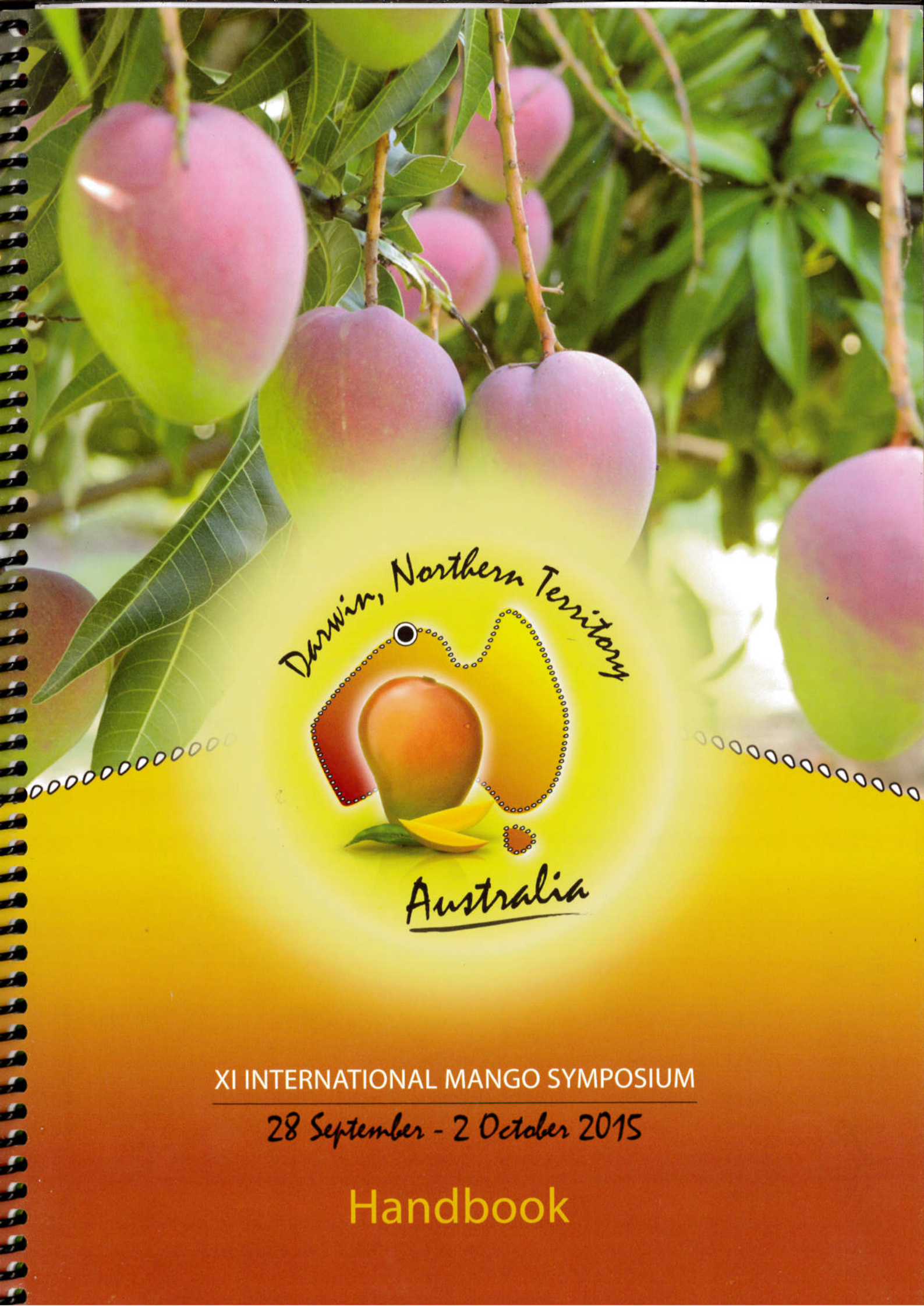

XI INTERNATIONAL MANGO SYMPOSIUM

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Handbook

mango relatives and most information in the literature was derived from herbarium specimens. Information collected includes colour, petal number, hermaphrodite/male ratio, aroma, and panicle architecture. The study was conducted from November 2012 to January 2013 and again from November 2013 to February 2014, which coincides with the flowering season of these species. Inflorescences were randomly selected from each tree, photographed and drawn for evaluation of flowering morphology structure of the 7 species. In terms of floral morphology, they all have differing percentages of hermaphrodite and male flowers; 5 to 6 petals; range in colour from cream to white, burgundy and red; aromas from lilacs to jasmine; and variable panicle branching patterns. *Mangifera casturi*, *Mangifera lalijiwa*, *Mangifera rubrapatela*, *Mangifera zeylanica* and *Mangifera lauraina* have more hermaphrodite flowers than *M. odorata*, and M. sp 'Rampgani'. Hermaphroditic to male ratios were greater in these two species in both years. *Mangifera casturi* has hermaphrodite flowers (74%). and male flowers (24.5%). *Mangifera lalijiwa* has hermaphrodite flowers (71%). and male flowers (26%), *Mangifera rubrapatela* has hermaphrodite flowers (88%) and male flowers (12%), *Mangifera lauraina* has (62%) and male flowers (38%), compare with *Mangifera odorata* than had (21%) hermaphrodite flowers and *Mangifera sp.* (*'Rampagni'*) with (15%) of hermaphrodite flowers. The relationship between hermaphrodite and male flowers are discussed as well as the ramifications for breeding and fitness as parents for crosses with *Mangifera indica*.

The growing conditions do not affect the allometric estimation of fresh fruit weight, but affect the estimation of dry fruit weight of the Kent mango

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An essential aspect of studies on fruit growth is the accurate and nondestructive on-field estimation of key variables of interest such as fresh or dry fruit weight. Allometric relationships between a key variable of interest and one or several easy-to-measure variables that are used as predictors are convenient and powerful tools for this goal. However, these relationships could be affected by different factors. Allometric relationships were built to assess fresh and dry fruit weight of mango, cv. Kent, and the effects of growing conditions on these relationships were investigated. Length (L), orthogonal diameters (D1, D2), fresh and dry weights were recorded on individual fruits sampled at three dates during fruit growth in six orchards, one irrigated orchard in Réunion island and five irrigated and non-irrigated orchards in Senegal. Allometric relationships were estimated between fresh and dry fruit weights and the product LD1D2. The relationship between fresh fruit weight and LD1D2 was linear and unaffected by the growing conditions. The relationship between dry fruit weight and LD1D2 was allometric, i.e. followed a power function. It was then linearised by log-transformation of the two variables. The growing conditions did not affect the slope of this relationship, but affected the y-intercept. The y-intercepts estimated for each orchard were significantly explained by the fruit dry matter content that was also affected by the growing conditions. These results are discussed with regard to the significance of the studied relationships, and to the limits of the allometric method to estimate fruit weight.

Effects of vegetative growth on flowering and fruiting at the tree, scaffold branch and growth unit levels. Implications for irregular bearing studies

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The productivity of most of tropical and temperate perennial fruit crops, in particular the mango tree, is limited by irregular bearing. Studies on irregular bearing generally tackle the effects of fruit production in one year on flowering and fruiting in the following year, and do not consider vegetative growth between fruiting seasons. However, strong reciprocal relationships between vegetative and reproductive growth have been evidenced in some fruit species, suggesting they are involved in irregular bearing. Four mango cultivars with contrasted fruit bearing patterns were investigated, Cogshall, Kensington Pride, Irwin and José. We studied the relationships between vegetative growth and reproduction at the tree, scaffold branch and terminal growth unit scales. Vegetative growth was quantified at those scales by the number of new growth units set up during the vegetative growth season preceding flowering. Reproduction was assessed at those scales by the rate of flowering and the rate of fruiting. The relationships obtained were mostly cultivar-dependent and the following results are general trends. At the growth unit scale, we observed positive relationships between vegetative growth and flowering, but no relationship between vegetative growth and fruiting. At the scaffold branch scale, we observed few positive relationships

between vegetative growth and flowering. At the tree scale, we observed negative relationships between vegetative growth and fruiting. Relationships between flowering and fruiting were weak or absent for the different scales and cultivars. The effects of vegetative growth on mango reproduction are discussed in light of these results.

A crop simulation model to predict fruit yield and quality on mango tree: overview, progresses and perspectives

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Our aim is to develop a crop model for mango that synthesises the knowledge acquired on the processes involved in fruit yield and quality development, and biotic and abiotic factors that affect them. To our knowledge, a crop model predicting fruit yield and quality development for a perennial tropical fruit crop is unique.

The crop model combines complementary phenological, architectural and eco-physiological viewpoints and relies on two sub-models developed for the cultivar Cogshall in Réunion Island.

The first sub-model accounts for carbon and water processes occurring at the branch level during the fruit growing season. It considers weather and source–sink factors and predicts fruit growth and quality development. It is currently completed with fruit maturation processes. It is also being extended to the tree scale and growing cycle by accounting for carbohydrates exchanges at these scales and through its linkage to the second sub-model. This latter accounts for architectural development and phenology. It is based on endogenous factors and temperature-controlled laws. It predicts the number and budburst date of vegetative growth units and inflorescences at the tree scale over successive growing cycles, and represents their development and growth on dynamic 3D models. The crop model will then be linked to a pests model, in particular fruit flies, through phenological stages and the level of fruit maturity.

From an applied point of view, the global model will allow simulation-based design of management solutions able to improve mango performances by handling the processes involved in fruit yield and quality development.

Concurrent session 21

Standardisation of pot media for the rapid growth of mango nursery plants

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In Pakistan, presently mango nurseries are being grown in the mango orchards under the trees and young plants are contaminated with all the diseases present on grown up trees. To produce clean and healthy plants, mango nurseries need isolation and clean pot media. For mango seedlings only appropriate pot media can serve the purpose. In this study different ingredients with fine and coarse texture were mixed in a range of combinations and 12 different treatments were tested for plant survival (per cent), plant height (cm), stem diameter (cm) and physical and chemical properties. Among all the treatments T10 having Bagasse:Silt:Coconut fiber with 70:25:5 per cent by volume respectively was found most suitable to achieve maximum survival (94%) of the seedlings after one year. Similarly plant height (60cm) and stem girth (1.2cm) was also found maximum under this treatment. As far as physical and chemical properties of T10 concerned these were; 38% water holding capacity (WHC), 13% air filled porosity (AFP), 1300 µS/cm electrical conductivity (EC) and 7.8 pH after one year respectively. Moreover farm yard manure (FYM) when used at any level (20 to 50%) with any other ingredients caused the plant mortality within three to four months in pots. This experiment was conducted under ACIAR funded Pak-Australia Agriculture Sector Linkages Program (ASLP II) and as a result of this study mango potting mix has been standardised for the first time in Pakistan which is another milestone of this project for Pakistani mango industry.

Raising healthy seedling rootstocks of mango

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Mango orchards of Pakistan are continuously declining their productivity due to the soil borne fungal disease 'Sudden Death' and the entophytic fungal disease 'Mango Malformation'. The possible cause of the diseases can be spread from the infected nursery. Growing trees in containers with soilless potting mixes