

Towards establishing a molecular marker based accreditation laboratory for coconut hybrids



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Seed market is becoming global and globalization is growing very fast. To compete favourably in this new global seed world, quality and cost are and will be certainly the key issues. High seed quality can only be obtained by a thorough control of the entire seed production process, step by step, from planning to final delivery. That requires science, technology, expertise, experience, good management and certainly, the most important, an absolute and unconditional commitment with quality. Seed testing for quality assurance is one important step in the process of production of high quality seed.

The increasing price for nuts, expanding markets for tender nut water, arrival of neera and other value added products have rekindled the interest in coconut, both among farmers and consumers. Farmers are turning to coconut cultivation for better returns, taking advantage of the situation. The changing scenario has been creating huge demand for coconut planting material, but has worsened the already strained environment of planting material production and distribution, opening avenues for unscrupulous elements to exploit the situation by pushing dubious seedlings. The situation warrants development of strategies to improve the availability of quality planting material and to develop a mechanism to check the quality of the material in distribution chain.

The development of hybrid varieties should be supported by the availability of high quality seeds. Genetic purity is one of the quality criteria required for successful seed production of hybrids. In



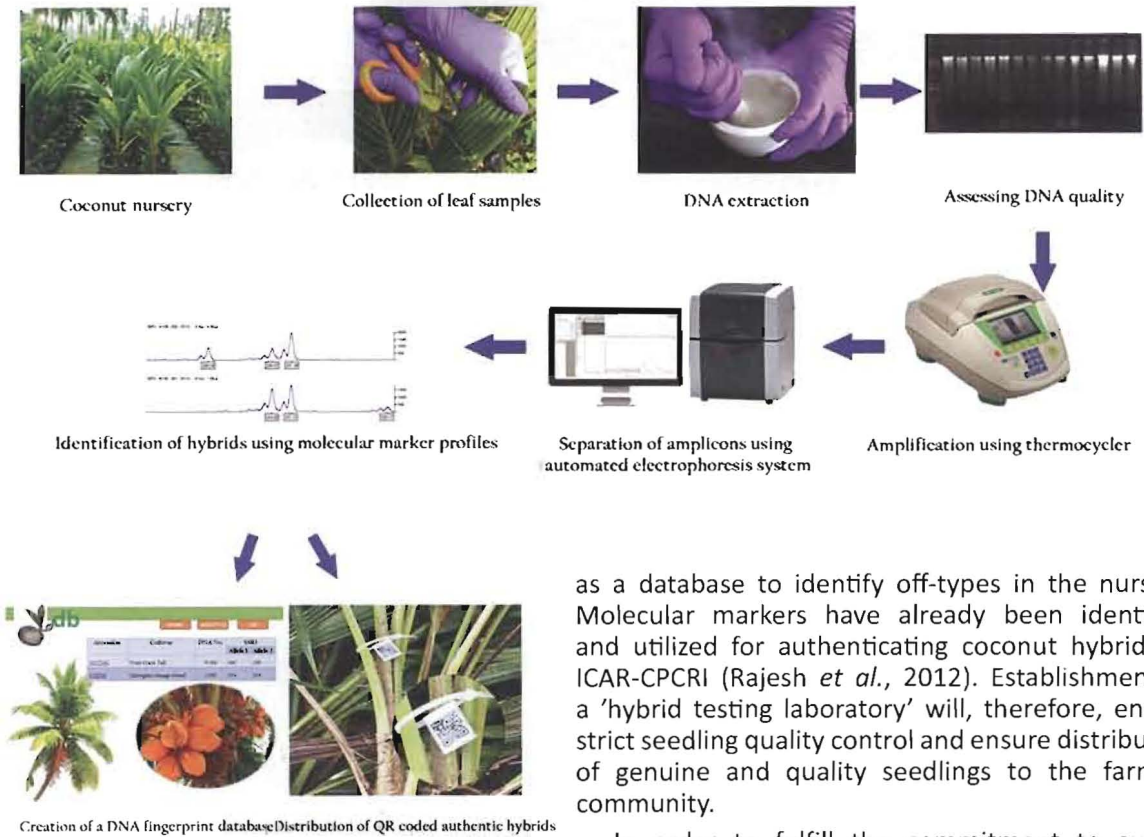
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producing hybrid seed nuts in coconut, it is frequently contaminated by crossed pollen from another variety or the occurrence of selfing. In a long duration crop like coconut, to assure the uniformity and stability of field performance and yield, it is necessary to examine the genetic purity of hybrid seedlings prior to distribution to farmers and other stakeholders.

Presently, hybrid coconut seedlings are generally identified in the nursery stage based on morphological characters like early germination,

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as a database to identify off-types in the nursery. Molecular markers have already been identified and utilized for authenticating coconut hybrids at ICAR-CPCRI (Rajesh *et al.*, 2012). Establishment of a 'hybrid testing laboratory' will, therefore, ensure strict seedling quality control and ensure distribution of genuine and quality seedlings to the farming community.

petiole colour, collar girth, number of leaves and early splitting of leaflets. Petiole colour is the most widely used marker to select hybrid seedlings in the nursery stage. In coconut many of the varieties and hybrids are phenotypically less distinct, making morphological evaluation more difficult. It is not possible to identify genuine hybrids if both the parents possess the same petiole colour. Hence, identification of molecular markers associated with hybridity will be the solution which will aid in selecting genuine hybrid seedlings in the nursery stage itself and will benefit farmers as they are assured of the performance of hybrid seedlings purchased.

To test the conformity of hybrid seedling, one must be able to distinguish the true hybrid resulting from cross between the male and female parents and one coming from self pollination of the female parent. The DNA finger printing of parental lines, hybrid and off-types can be used

In order to fulfill the commitment to supply quality coconut seedlings to the farming community, ICAR-CPCRI has started distribution of QR (QR response) code tagged coconut seedlings (Thomas *et al.*, 2016). Scanning the QR code, affixed on the labels tagged on individual coconut seedlings, will enable the farmer to reach ICAR-CPCRI's website which will provide specific information about the characteristics of each seedling being distributed from ICAR-CPCRI. This QR coding is aimed to help the farmers to get only quality assured seedlings for planting in their field. This is more important at time when spurious seedlings are being sold by vendors who claim that they are distributors/dealers of ICAR-CPCRI's authentic coconut seedlings.

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2. Thomas RJ, Shareefa M and Krishnakumar V. (2016) QR coded labeled coconut seedlings. *Kalpa CPCRI Newsletter* 35 (2): 3.