Coconut is considered as the Philippines’ top agricultural export, with US$1.8B generated revenue in 2017. It is planted in 68 provinces covering 26% of the country’s agricultural land. The coconut industry is the source of income of 3.5M farmers, providing important economic support to the rural communities. However, low productivity (46 nuts/palm/year) caused by old and senile palms is one of the challenges facing the industry. In addition, a significant number of damaged palms require immediate replanting due to the devastation of strong typhoons and coconut scale infestation in some parts of the country. The country is struggling to meet the increasing demand for coconut raw materials and high value products due to various factors affecting coconut production.

The Coconut S&T Program of DOST-PCAARRD which aims to increase productivity (from 46 to 150 nuts/tree/year), increase farmers’ income and reduce pest infestation focuses on the improvement of production of coconut high value products, rapid production of quality planting materials using high yielding coconut varieties/hybrids, genomic-assisted breeding, and management control strategies against insect pests and diseases.

From the previously developed hybrids/varieties by the Philippine Coconut Authority (PCA), best cultivars were recommended for commercial sap sugar and virgin coconut oil (VCO) production. Four (4) hybrids (PCA 15-2, PCA 15-1, PCA 15-3, and PB 121) and 2 dwarf varieties (CATD and MRD) were recommended for coconut sugar production with high toddy yield and sap sugar production. Moreover, 5 hybrids (PCA 15-8, Syn Var, PCA 15-9, PCA 15-3, and PCA 15-2), 5 tall varieties (BAYT, SNRT, TAGT, BAOT, LAGT) and 1 dwarf variety with 5-7 L/palm oil yield were recommended for VCO production.

To address the current problem on the availability of quality planting materials, DOST-PCAARRD together with its partners have identified varieties that are responsive to coconut somatic embryogenesis technology (CSet). Using the enhanced PCA-ARC CSet protocol, more than 106,675 plumules were excised and initiated for callus and somatic embryo formation. To date, a total of 3,428 regenerants are being maintained by the seven upgraded/equipped laboratories (PCA-ARC, PCA-ZRC, UPLB (2 laboratories), UPMin, BUCAF, and VSU).

Genomic studies were undertaken towards genetic and varietal improvement of selected coconut varieties. Among the assembled genome and transcriptome sequences, two (2) varieties - Laguna Tall (LAGT) and Catigan Green Dwarf (CATD) are already deposited at the National Center for Biotechnology Center (NCBI). Several gene markers were designed for high yield and quality copra-oil and by-products, and insect resistance.

On the management of major pests for coconut, protocols for both coconut scale insects (CSI) and Brontispa sp. have been developed which include establishment of indoor and outdoor mass rearing facilities for predators/parasitoids; optimized mass production and field release protocols of CSI biological control agents; and, improved four (4) laboratories for mass production of biological control agents against CSI. Such strategies are now being implemented to control the recent CSI outbreak in Zamboanga which shows tremendous improvement as associated with the high parasitization of Comperiella calauanica on the infested coconut trees.