

EXECUTIVE SUMMARY

of the report on Coconut Research, Development and Dissemination of Technologies – Growers Perception

The density of palms (including seedlings, non-bearing palms, weak palms etc) per acre varied from 90 in Galle region to 55 in Kalutara region with a mean of 67. Irrespective of region and extent of coconut lands, the mean density of bearing palms alone was 50 per acre and the mean age of bearing palms was 44 years. The mean age of bearing palms of 13% of coconut lands was over 60 years and that was represented by 7% of total extent.

The growers' awareness and practice of traditional technologies such as use of mulch on the manure circle and fertilizer use has improved from 1993 (the year of which last diagnostic survey was carried by the CRI) to 2005. There was no improvement in the awareness and practice of husk pits from 1993 to 2005. The awareness for new technologies recommended after 1993 such as fertilizer recommendation for different soil conditions and different agro-ecological zones, new size and method of husk pits (8'x4'x3' pits and between palms within coconut row), special fertilizer for king coconut, use of ethrel for toddy tapping, use of gliricidia as organic manure, land suitability classes (LSC) for coconut and differential fertilizer recommendation (DFR) was not in satisfactory level (<25%). More than 50% growers were aware of all control measures recommended (prior to 1993 and after 1993) for Black Beetle damage and Red Weevil damage, but the use of integrated pest management was very low (< 20%) for both pest damage except by large extent holders. The awareness of all kernel products was extremely low (< 5%) except 14% for virgin coconut oil and 9% for coconut paste.

The rate of awareness of all technologies significantly increased ($p < 0.005$) linearly with the increase of land sizes. This could be either due to improper planning of technology transfer to small holders or large extent holders had more interest to acquire the knowledge than small holders. There was a considerable gap between the percentage of awareness and percentage of use of all technologies indicating that the technologies were not accepted by the growers or the growers were not convinced about benefits of technologies. The gap between awareness and practice is varied among Coconut Cultivation Board Regions (CCBRR). This could be due to the fact that the average

number of coconut holdings to be served varied from 1978 in Polonnaruwa region to 6885 in Kegalle region with a mean of 4993. It is a very difficult task to serve all these growers individually by a Coconut Development Officer (CDO) and consequently all coconut growers can't meet the CDO even if the CDO works 240 days per year. It is suggested that CDOO to be given more intensives based on the number of growers in the CDO range and distance from the office of CDOO to estates. The offices of CDOO to be kept open during the working hours of the week. More publicity about the new kernel products is urgently needed and technologies on such products to be given to any entrepreneur.

Black Beetle damage (BBD) is a more serious problem in coconut cultivation than Red Weevil damage (RWD). No control measures were 100% effective for both BBD and RWD. Of the four control methods recommended for BBD, extraction of beetles using a hook was ranked the best followed by addition of naphthalene balls/carbofuran. Issuing a beetle hook along with seedling can make compulsory as a measure to popularize this technique and to reduce the BBD. Use of monocrotophos was ranked as the best control method for RWD by the growers. However, growers (irrespective of land size and CCBR) complained the difficulties to obtain monocrotophos. The use of traps and pheromone was ranked as less effective method for RWD by the growers. However, the use of traps and pheromone will be more effective and efficient if mass trapping system can be implemented in community level. It is recommended to conduct such programs at regular intervals in selected areas. An efficient method has to be implemented to obtain both red weevil traps and pheromone whenever the need arises. A sustainable control method is urgently needed for control of coconut mite. The growers' awareness on other coconut pests such as coconut caterpillar, coconut scale and plesispa beetle was good, but their knowledge on the control measures was poor.

Majority of growers were unable to apply fertilizer at correct time due to change of climate and weather pattern. The lack of knowledge of the type of soil conditions, amount of fertilizer, method and time of application of fertilizer were some factors which reduce the efficiency of fertilizer use. Both scientists and extension officers have to play a major role to educate the growers on those aspects of fertilizer application. As DFR is a more economical system, it should be popularized among small holders as well. A simple systematic sampling method can be used for small holdings. The DFR program has to be

improved by integrating LSC for coconut and past yield achieved to make it more location specific. There is a knowledge gap on various aspects on the effect of irrigation on coconut and no method has been recommended by the CRI, consequently coconut growers have lot of doubts.

Twenty five percent of under plantations were established before the old palms reached 35 years. The time taken to bear in seedlings was significantly higher in under plantations than those in re-plantations. Technology transfer system to be geared to motivate growers not to practice pre-mature under planting and to popularize re-planting. The mortality rate of seedlings significantly varied between CCBRR and the mean mortality was 15%. The three main reasons for casualties of seedling (irrespective of CCBRR) was no rain > black beetle damage > weak seedlings. Growers to be convinced to practice recommended technologies at the time of transplanting seedlings and to purchase seedlings from CCB, CRI or registered nurseries only.

Animal husbandry was practiced by 42% of the growers but only 26% had used it as Integrated Production System (that is use of residual of animal as a fertilizer). The stocking rates of cattles and goats (irrespective of land extent) were significantly higher than recommended stocking rates and it leads to land degradation. The common constraints for intercroops and animal husbandry were difficulty to maintain and lack of market for the products. The technology transfer service should be geared to popularize the concept of Integrated Production System (IPS) and identifying marketing channels to the growers.

There were various short comings in research, development and technical transfer activities. It is necessary to re-think and re-shape the direction of coconut research and development and technology transfer on coconut cultivation. More location specific technologies are required. High priority is to be given to implement coconut land/soil policy and thus most of technologies can be based on the land/soil policy. The present communication system between Technology Transfer Division (TTD) in CRI and CDOO in CCB is formal and vertical and so less effective. A direct linkage between TTD of CRI and Regional Managers of CCB has to be implemented ('horizontal communication system') to have a more efficient system of information dissemination.

Training programs conducted by CRI was popular mostly among the growers in the coconut triangle, but all growers interviewed were very enthusiastic to participate such programs. It is recommended to have such programs outside the coconut triangle and include more programs on pest and disease management and fertilizer application aspects.

Researchers in CRI and Extension Officers in CCB should work more collaboratively to motivate growers to use the recommended technologies.