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CARBON SEQUESTRATION POTENTIAL OF RRII 400 SERIES CLONES OF *HEVEA BRASILIENSIS*

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Sequestering atmospheric CO_2 through tree cultivation is an environmentally acceptable option. Recently the Rubber Research Institute of India released several high yielding clones of *Hevea* (RRII 400 series) and the present study was taken up to determine the carbon sequestration potential of these clones by two methods *viz.* conventional tree felling and allometric equation without tree felling. The trees planted in a clone evaluation trial in RBD design with three replication at RRII, Kottayam were used for the study. The clones selected were RRII 414, RRII 417, RRII 422, RRII 429 and RRII 430 and RRII 105. In the first method, carbon stock per tree was determined using the carbon content of plant parts *viz.* trunk, branches, leaf and root and the carbon sequestration potential of clones at the plantation level was estimated. In the second approach, the biomass accumulation at different growth stages was estimated using allometric equation based on girth of the trees for a period of 17 years the carbon accumulated at each growth stage was estimated assuming the carbon content as 42 per cent of the biomass. The study showed that the clones varied in growth pattern, biomass accumulation and carbon sequestration potential. The carbon sequestration potential of RRII 429 was 113.73 t/ha and it was significantly superior to that of all the other clones. The clones RRII 414 and RRII 417 also had a significantly higher carbon sequestration potential than RRII 105.

Keywords: Biomass, Carbon sequestration potential, *Hevea brasiliensis*, RRII 400 series clones

Global warming due to green house gases (GHG) emission and associated climate change are important concerns. Reduction of GHG emissions limitting the temperature increase to 2 - 2.5 °C by 2050 is necessary (UNCTAD, 2009). Land use systems differ in their ability to sequester atmospheric CO_2 and perennial tree crops are better than annual crops since they can sequester carbon for longer time. *Hevea brasiliensis*, the primary source of natural rubber in the world, is a fast growing and high biomass producing perennial tree crop ecosystem and in general it attains 50 cm girth in the first 7 years. Rubber trees can stock large amounts of carbon in their standing biomass and the rubber wood used for making diverse long term products and rubber sheets used for tyre manufacture constitute an additional fixed carbon sink. ?????????????•??•??????•??•?????• ???•?? rubber plantations is to the tune of 0.0782 Pg C/yr (Jacob, 2003) and it reduces 2 per cent of the current rate of rise in atmospheric CO_2. In view of the importance of biomass estimates and carbon storage trees in the

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