

Pineapple is incorporated as a 3rd crop to get early return from coffee/pepper mixed crop models. Though root distribution pattern is important to design and evaluate resource efficient mixed crop models, such information is very limited. Therefore, root distribution of 2 crop combinations was studied at the Research Station, Matale, during May - September 1996. Two mixed crop models are: T₁ - Land was peg-marked at 1.2 x 1.2 m interval, black pepper (*Piper nigrum*) with Gliricidia (*Gliricidia sepium*) supports at each point of 2.4m x 2.4m and coffee cv catimor was planted at all the other points. Plant density was 1680 of pepper and 5040 of coffee/ha. T₂ - Same mixture of Black pepper with Gliricidia supports and coffee cv. catimor and one pineapple (*Ananas comosus*) plant at centre of each 1.2m x 1.2m planting points. Plant density was 1680 of pepper, 5040 of coffee and 6000 of pineapple/ha. The crop models were field planted in Oct. 1993. Soil sampling for root study was made on the basis of 6 depth classes in the ascending order from the surface to 90cm by 15cm intervals and 6 distance classes in ascending order from the base of a pepper vine of each model to 120cm distance by 20cm intervals. Soil bulk density, soil texture, % aggregate stability and soil organic matter content were also studied. The root counts and root length were collected and root length density (LV) in mm/cc were tabulated.

Pepper root lengths were concentrated to distance classes 1 and 2 showing 40% and 45% respectively under T₁. Similarly, 31% and 25% of pepper root length were observed for distance class 1 and 2 respectively under T₂. 75% of total pineapple roots were observed within 30 cm depth but the quantity was much smaller than each of the other species. Coffee showed the highest (1.995 mm/cc) individual LV among the species at second depth (16 - 30m) and fifth distance (81 - 100 cm) under T₁. The maximum total LV of 2.642 mm/cc for all the species was observed under T₂. Relatively better aggregate stability values were observed under T₂ when compared to respective values of T₁.

Coffee cv catimor was the dominant species under both models. Comparatively low root length density values show the possibility of growing pineapple in the first 2 years under mixed cultivation of coffee and pepper.