Performance of ginger in tamarind plantation (as intercrop) compared to sole cropping (Ginger)

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ABSTRACT
A field trial was conducted on medium black soil during 2003-2004 to study intercropping of ginger in tamarind plantation compared to sole cropping under irrigated condition. The experiment was laid out in six years old tamarind plantation spaced at 6 X 6 m (as intercrop) with three replications. Interception of Photosynthetically active radiation (PAR) by ginger crop at 150 days after planting (DAP) as intercrop in tamarind plantation was 25,229 lux compared to 31,643 lux in open area. Significantly higher numbers of rhizomes were recorded under intercropping compared to sole cropping. Ginger grown as intercrop in tamarind plantation recorded higher yield (173.89 g/plant) compared to sole crop in open area (117.17 g/plant).

Key words : Ginger, Tamarind, Sole cropping, Intercropping

INTRODUCTION
Tamarind (Tamarindus indica L) is one of the most important multipurpose domestic tree species grown commercially in dry zone of Karnataka. Intercropping in perennial plantation is one of the major forms of multiple cropping for increasing production and profit in available land. In intercropping system, productivity is improved either by efficient interception of available solar energy or by having crop of greater radiation use efficiency (Anon., 1979). There is no background information available on the performance of ginger as intercrop in tamarind plantation suitin the agronomic conditions of northern dry zone of Karnataka. Hence, a scientific approach to intercropping of ginger in tamarind plantation was undertaken to assess the comparative performance in young tamarind plantation and as a sole crop in open area.

MATERIALS AND METHODS
A field experiment was conducted at Kittur Rani Channamma College of Horticulture, Arabhavi. The soil of the tract was medium black with pH of 8.2.

The available nitrogen, phosphorus and potassium of the soil were 128, 56 and 140 kg per hectare, respectively. Ginger cv. HUMNABAD was grown in three replications both in tamarind plantation (as intercrop) and in open area (as sole crop). Statistical comparison was worked out to find out significance of results based on student’t’ test (Pause and Sukhatme, 1978) Recommended cultivation practice was followed as per the package of practices of University of Agricultural Sciences, Dharwad (Anon., 2002). Distribution of photosynthetically active radiation (PAR) was studied with the help of digital photometer (Lux meter). Intercepted PAR was calculated by deducting reflected radiation (Q_r) and radiation reaching soil surface (Q_s) with total radiation (Q_t). Reflection coefficient was worked out by dividing reflected radiation by total radiation. Economics of ginger cultivation was worked out on prevailing market prices during March 2004.

RESULTS AND DISCUSSION
Interception of photosynthetically active radiation (PAR) increased from 30 DAP to 120 DAP and it was maximum both in sole cropping 32114 and intercropping 26129 lux at 120 DAP (Table 1). Ginger grown as intercrop intercepted less PAR compared to ginger grown as sole crop. Reflection coefficient from crop canopy was lower in intercropping than sole cropping, indicating efficient use of available PAR. Similar results were also reported earlier by Kasturibai et al. (1991) and Balasimha. (1989). Significantly higher plant height and number of tillers per clump were recorded at harvest by ginger tamarind intercropping (33.40 cm and 11.33, respectively) compared to sole cropping (26.50 cm height and 7.06 tillers) as indicated in Table 2. Higher plant height and number of tillers per clump in ginger grown as intercrop in tamarind plantation is attributed to low light intensity and shade loving nature of ginger. Plant under diffuse light generally grow taller and produce more of foliage as observed in the present study. Similar results were also
reported by earlier workers in ginger when grown as intercrop in popular (Jaswal et al., 1993) and in arecanut (Thangaraj et al., 1983). Ginger under tamarind plantation recorded significantly higher leaf area. Index (LAI) at harvest (4.73) compared to sole cropping (3.59). Higher LAI is attributed to shade prevailing in the plantation (Sujatha et al., 1994). Significantly higher fresh weight of rhizome was recorded under intercropping (173.89 g/
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plant) compared to sole cropping (117.17 g/plant) (Table 3). Yield attributes of ginger, viz., number of primary rhizomes and length of primary rhizomes were higher in tamarind shade (5.80 and 5.35 cm, respectively) compared to sole cropping (3.13 and 4.33 cm, respectively). Higher yield of ginger tamarind intercropping may be attributed to increase crop duration (27 more days in shade than sole crop), higher harvest index (87.43% under intercropping compared to 80.61% in open) and shade loving nature of crop. Ginger as intercrop recorded higher benefit cost ratio (2.69) compared to ginger as sole crop (1.30). Similar findings were also reported by Jaswal et al. (1993) Jayachandran et al. (1992) and Thangaraj et al. (1983).

REFERENCES


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