Light interception by Gliricidia hedgerows in relation to the position of alley and cropping season in the Dry Zone of Sri Lanka

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Light interception behaviour of Gliricidia hedgerows planted 2 m apart and pruned at 1 m height was evaluated for four cropping seasons in the Dry Zone. Hedgerows were oriented east – west direction. These were pruned at the beginning and end of each season and crop was not planted in the alley. Above ground solar radiation in the alley was measured using two 97 cm - long tube solarimeters throughout each season. Solarimeters were placed across the alley being one on the northern half and the other on the southern half of the alley.

While the diurnal pattern of solar radiation transmission was not affected by hedgerows, the total seasonal light transmission into the alley was reduced by 30 % - 41 % in the four seasons. The light interception by hedgerows of the alley varied within the season from 0 at the start of the season to 77% maximum at the end of the season. However, maximum interception during yala was lower than maha.

Higher light interception was observed at the northern half compared to southern half of the alley in yala seasons and it was the other way in maha seasons at any given time. The seasonal mean fractional light interception at northern and southern halves were 0.53 and 0.26 in yala 98, 0.39 and 0.21 in yala 99, 0.26 and 0.49 in maha 98/99, and 0.31 and 0.5 in maha 99/00. While, average maximum interceptions of yala at the northern half and southern half were 0.7 and 0.5, and of maha were 0.6 and 0.7 respectively.

The study shows that the Gliricidia hedgerows intercept considerable amount of light affecting the availability to the crop grown in alley depending on the season, stage of the season and position of the alley. Therefore, the performance of the crop grown in alley may be affected accordingly.

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