sole crop millet population in the intercrops and the yields in intercrop seem to be 50% of the sole crop. Is it possible to get double the yield of cereal due to intercropping?

Reddy (answer): As you have seen, the use of sunlight was a major factor for yields. The yield was double because the number of tillers and heads were double in intercropped millet compared with sole crop tillers.

Mills (question): Why was partitioning done in your intercropping experiment?

Reddy (answer): The main objective of partitioning was to inhibit root interaction. Generally, it is considered that there is a transfer of nitrogen from legumes to cereals; hence, we wanted to confirm it with partition.

Malithano (question): How comparable are the results under artificial water stress to those under conditions of lack of rainfall?

Reddy (answer): We have a rainy season from June to September and during this period the control of moisture stress is not possible. However, it can be done in October. Hence, we can have a moisture stress experiment then.

Wilson (question): Have you ever tried millet and groundnut in the same row, like the farmer does in practice?

Reddy (answer): The farmers grow a bit more groundnut but they do it under mixed cropping.

Effects of Moisture Availability on Intercropping and Yield Advantages — Summary

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In the semi-arid tropics, the availability of water is a major concern. Although there have been specific suggestions that intercropping may result in more efficient use of water, there has been little factual evidence on whether or not the relative advantages of intercropping are affected by changes in water supply. A series of experiments on the effect of moisture regime has been initiated at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and some of the results to date are summarized in this paper.

Three experiments were carried out on alfisols that had a water holding capacity of 100 mm in the 90 cm profile. The three crops involved were groundnut, millet, and sorghum; their monocrop populations in all experiments were 333 000, 333 000, and 150 000 plants per hectare respectively. In the first experiment, the cereal/groundnut intercrops consisted of 50% of the sole cereal population plus 100% of the sole groundnut population, but thereafter all intercrops had simple "replacement" populations as indicated by their row arrangements. All treatments were in 30 cm rows. The basic fertilizer applied was 46 kg P_2O_5/ha and 18 kg N/ha. Nitrogen was top-dressed to the sole cereal plots at a rate of 62 kg/ha, and the same rate per row was applied to all cereals in the intercrops.

During the postrainy season of 1977, stress and no-stress treatments were created in the main plots by flooding twice and four times, respectively, to bring the profile moisture to field capacity each time. Rainfall during the growing period amounted to 75 mm. In addition to the monocrops, intercrop treatments included: 1 row millet: 2 rows groundnut; 1 row sorghum : 2 rows groundnut; and 1 row millet : 1 row sorghum. All monocrops showed a good response to different moisture regimes. The three combinations gave significant advantages ranging between 20-25% in the stress treatment but little or no advantage in the no-stress treatment. Examination of the yields of the individual crop components, however, indicated that in the no-stress situation the balance of competition favoured the dominant component.

During the postrainy season of 1978, no-stress and stress treatments were achieved by irrigating every 10 days and every 20 days, respectively, with a "Perforain" spray. The total amount of water applied through irrigation was approximately 470 mm in the no-stress treatment and approximately 270 mm in the stress treatment.

Rainfall during the growing period amounted to 65 mm. In addition to the sole plots, there were six intercrop treatments.

The results were different from those of 1977, and they suggested that, although differences in moisture regime could have affected the competitive balance of component crops, such differences could have less effect on yield advantages than previously thought. The different seasonal effects also highlighted the complexity of this field of study and the need for further research.

During the summer season of 1980, an experiment was set up to examine a wider range of moisture regimes and to include more intermediate treatments. This was achieved using a "line source" sprinkler system. The line source irrigations were started 42 days after sowing and were given at 10-day intervals, with every third irrigation a uniform one. In addition to the monocrops, there were six intercrop treatments arranged at right angles to the line source. Results showed that moisture regime had a marked effect on the monocrops. The wide range of moisture stress situations that could be studied using this technique was also indicated.

Considering the results of the three experiments, it is evident that intercropping may give relative advantages under conditions of moisture stress but little or none under no-stress conditions. It is also evident that the effects of moisture stress are very complex and they vary with crop combination and row arrangement within a combination.

Performance of a Maize-Legume Intercrop System in Sri Lanka — Summary

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In Sri Lanka, farmers with limited resources have traditionally multiple-cropped their lands to minimize the risks associated with single crops. Owing to increases in population and the price of agricultural inputs, there is a growing interest to seek technological alternatives for increasing food production. Intercropping, therefore, is receiving greater attention in Sri Lanka. Areas requiring enhanced understanding with respect to multiple cropping systems include the use of nitrogen fertilizer, an expensive resource often not readily available to farmers, and interactions between legumes and nonlegumes. The present study, therefore, was designed to evaluate N utilization in some locally important systems embodying legumes and maize and to compare their nutritive value and economics with corresponding monocrop systems.

Six experiments were conducted during 1977/1978, with three trials each, at the university farm, Kundasale, and Peradeniya. Experimental sites were located at an elevation of about 450 m. Rainfall ranged from 250 mm at Kundasale to 2516 mm at Peradeniya. Because the rainfall received during the experiments also showed considerable variation, the crops received supplemental irrigation as needed.

An augmented experimental design was used to include several maize-legume intercrop systems having local importance. Six treatments replicated three times formed three experiments, whereas the other experiments were augmented or nonreplicated. Replicated treatments consisting of maize-soybean intercrop systems were included to systematically vary the row intercrop species between locations for comparing the trends of the treatments. Maize variety "Thai Composite" and soybean cultivar SJ-2 were used in these experiments. In the augmented intercrop combinations, four locally grown legumes were intercropped with maize to identify compatible intercrop systems. Among the legumes, cowpea cultivar MI 35, mung bean cultivar MI-1, groundnut cultivar A 92, and French bean cultivar Wade were used based on their past performance.

Maize-soybean intercrop and monocrop systems were tested at three levels of N, namely, 0, 25, and 50 kg/ha. The recommended N level of 50 kg/ha applied to the row crop was used as a control. Nitrogen was band applied adjacent to the