ing lines have increased the genetic diversity of groundnut in the national program. Six manuscripts are being prepared for publication in association with ISC scientists.

**Looking ahead.** INRAB will continue its efforts to popularize promising new varieties and the use of integrated disease management strategies to increase and stabilize production. There is a need for a Memorandum of Understanding between INRAB and ICRISAT to institutionalize this useful collaboration. Future collaboration could cover other ICRISAT mandate crops (sorghum and pearl millet) in addition to groundnut.

**Effect of Transparent Polythene Mulch during the Reproductive Stages of Groundnut**

S D Golombok, H S Talwar, and C Johansen (ICRISAT Asia Center, Patancheru 502 324, Andhra Pradesh, India)

Under low-temperature conditions in Korea, polythene mulch applied at the beginning of crop growth accelerated emergence, seedling growth, and flowering, and increased pod number and 100-seed mass of groundnut by increasing soil temperatures (Choi et al. 1979). This technique has also been popular in China since 1967. In a preliminary postrainy-season study at ICRISAT Asia Center (IAC), polythene mulching from sowing onwards reduced the time to emergence and flowering, and increased pod yield by 73% (Nigam, S N, Rao, R C N, and Talwar, H S, unpublished data).

To study the effects of soil temperature during reproductive growth and development, we investigated the effects of transparent polythene mulch treatments applied during the early and later reproductive stages. The experiments were conducted on an Alfisol at IAC during the 1994 rainy season. There were three treatments—a control treatment (without mulch), polythene mulching applied from the start of pegging (50 days after sowing, DAS) until harvest (113 DAS) (treatment M1), and mulching from pod filling (71 DAS) until harvest (treatment M2).

Treatments were laid out in a split plot design, with mulch treatments in main plots and genotypes in subplots, with three replications. Plot size was 1.5 × 2.4 m. The mulch was applied by placing polythene sheets between rows, and stapling the sheets together between plants in each row. Three Spanish type groundnut cultivars were used; TMV 2, AH 6179, and Comet. They were

![Figure 1. Soil and air temperatures (weekly means) recorded at 1300 hrs, starting from 51 days after sowing (DAS) until harvest (113 DAS). M1, M2 are mulching treatments (see text).](image-url)
in seed yield was the significantly lower partitioning of assimilates to pods which are still immature or juvenile at harvest (unpublished data).

Application of polythene mulch in the later reproductive stages (M2) marginally decreased the seed yield. This might be due to a change in temperature sensitivity at the later growth stages and/or the generally higher soil temperatures during these stages (Fig. 1).

Polythene mulching during the early reproductive stages can improve seed yield by increasing seed number, at least within the temperature ranges of this experiment. Thus the beneficial effects of polythene mulching appear to extend beyond the early vegetative growth stages, for which the technique is primarily used in East Asia.

Acknowledgments. We gratefully acknowledge the discussions with R C N Rao and the assistance of M Narasi Reddy in conducting the experiment.

Reference


Bioenergetic Considerations in Increasing Groundnut Yield

J B Mishra and S K Yadav (National Research Centre for Groundnut, Post Bag No 5, Junagadh 362 001, Gujarat, India)

The biomass productivity of a crop plant depends on its efficiency in intercepting and utilizing solar radiation for photosynthesis. Selection and breeding have enhanced the yield potential of several crops by improving partitioning in favor of the harvested portion of the plant. The radiation-use efficiency of groundnut has been compared with wheat (a C₃ crop) and Cynodon dactylon (a C₄ plant), and groundnut has been found to be more efficient both in trapping solar energy and in energy partitioning (Dwivedi et al. 1985).

In developing countries like India, groundnut is primarily grown as an oilseed crop. Consequently, breeding programs are formulated to develop varieties with a higher oil content or higher productivity. The bioenergetic costs of increasing oil percentage have been discussed