**Table 2** *Excised leaf culture of different grain legume crops at 21±1°C*

| Crop | No of leaves cultured | Rooting and survival up to 40 days |
|---|---|---|
| Soybean | 140 | 140 |
| Chick pea | 140 | 140 |
| Groundnut | 140 | 140 |
| Black gram | 140 | 136* |
| Pigeon pea | 140 | 134 |

*Rooting was not observed; excised leaf survival up to 30 days.

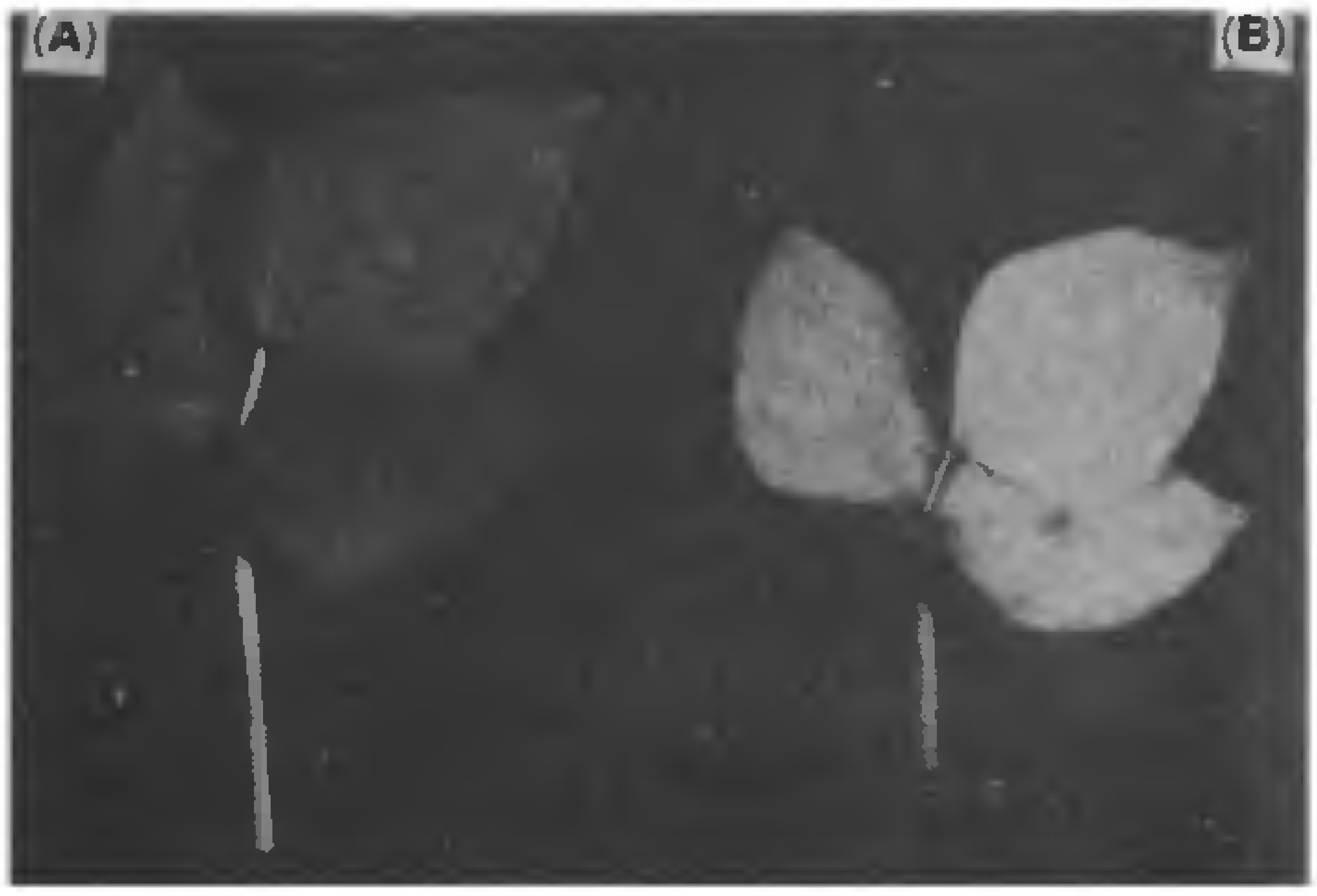


**Figure 2.** Resistant (LBG-17) (A) and susceptible (T-9) (B) reaction to *Erysiphe polygoni* DC. on excised leaves of *Vigna mungo* (L.) Hepper 16 days after inoculation; distinct disease lesions are seen in the susceptible type (B).

leaves could be maintained for up to 40 days, with 100% survival in soybean, chick pea and groundnut and 96% in pigeon pea (table 2). Though there was no rooting in black gram, 97% of leaves could be maintained for up to 30 days. This period was found adequate for screening for powdery mildew reaction (figure 2). At 24°C all the excised leaves survived in groundnut and chick pea, but survival was 85%, 89% and 90% in pigeon pea, soybean and black gram respectively. At 28°C survival of excised leaves of chick pea, groundnut, soybean, pigeon pea and black gram was reduced to 44%, 31%, 19%, 12% and 8% respectively. The study shows that cultured excised leaves would be ideal for evaluation of plants for foliar disease reactions under controlled environment.

3 November 1988


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## GROWTH ANALYSIS IN SIRATRO AS INFLUENCED BY GIBBERELLIC ACID AND BORON TREATMENTS


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GROWTH analysis is a technique that separates growth into component processes to reveal the effects of endogenous and exogenous influences, focusing on rates of growth rather than on the final yields. The present investigation was aimed at assessing the effects of gibberellic acid (GA) and boron on growth parameters of Siratro (*Macroptilium atropurpureum*).

Healthy seeds of Siratro were sown in pots filled with soil and 45-day-old plants were sprayed with aqueous solutions of GA (25, 50 and 100 ppm) and boron (0.5, 1 and 2 ppm). A set of untreated plants served as control. Various growth parameters were calculated from fresh weight and dry weight. Leaf area data were also obtained for successive stages of plant growth[1].

Crop growth rate (CGR), relative growth rate (RGR) and net assimilation rate (NAR) were influenced by GA and boron treatments (figure 1). CGR and RGR were maximum at 50 ppm GA but decreased at the highest concentration (100 ppm) of GA. In the case of boron-treated plants, 1 ppm produced increase in CGR and RGR. These growth rates attained maximum in the earlier stage (15–30 days) of plant growth and subsequently decreased. NAR was also increased at lower doses of GA and boron, but the highest dose had inhibitory effect. In general, NAR increased in early stages of plant growth but decreased at senescence. GA increases plant growth and total dry weight resulting in increased dry matter accumulation in different plant organs[2]. Leaf area ratio (LAR) decreased with age. In the GA-treated plants, LAR increased with increasing dose of GA[3]. In the case of boron, 1 ppm gave the highest LAR among the three doses

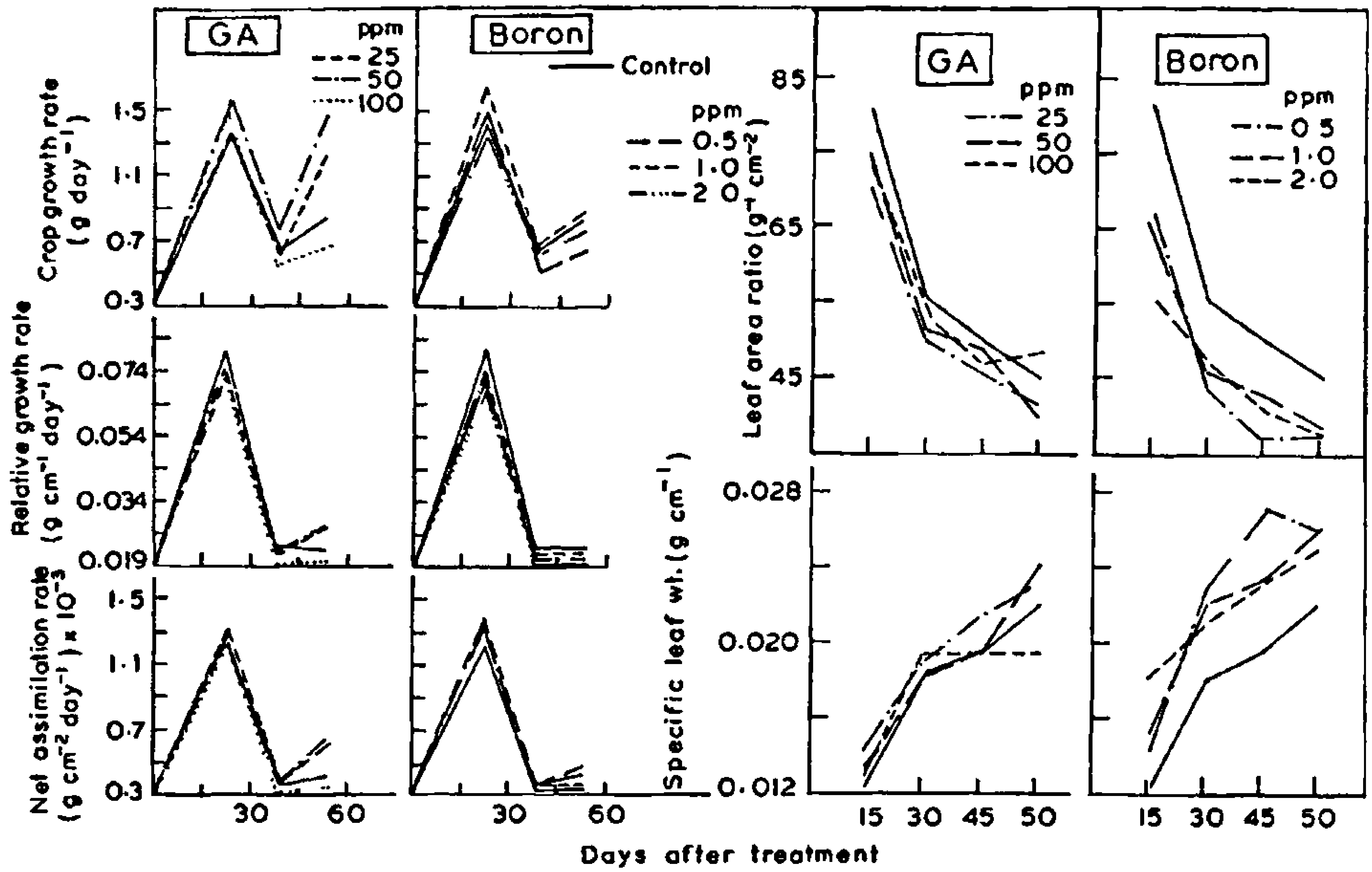


**Figure 1.** Effect of GA and boron on growth parameters of Siratro.

Specific leaf weight (SLW) increased with age, and was maximum at 50 ppm GA and 1 ppm boron. SLW has been shown to be related to NAR activity[4]. The present results are also supported by the findings of Dong and Arteca[5] on tomato plants treated with phytohormones.

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## RESPONSE OF DIFFERENT RICE CULTIVARS TO *AZOSPIRILLUM* INOCULATION

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*AZOSPIRILLUM* is known to fix atmospheric nitrogen and increase the yield of several crops such as rice, wheat, maize, sorghum and pearl millet[1,2]. *Azospirillum* is a microaerophilic bacterium and survives well and fixes nitrogen in rice rhizosphere[3]. The bacterium promotes plant growth also by mechanisms other than nitrogen fixation in rice[4,5]. It produces auxins in culture and in its natural habitat[2,6]. Differential varietal response to *Azospirillum* has been reported in wheat and sorghum[7]. Hence we assessed the responses of different rice varieties to *Azospirillum lipoferum* Tarrand *et al.*

Peat-based *Azospirillum* inoculum containing approximately $10^8$ cells/g was used. Inoculation was by three methods. Seeds were first treated with 2 kg of inoculum by soaking the seeds in water containing the inoculum for 24 h. For 60 kg of seed required for