

## Effect of seed rate and weed-management practice on nodulation and yield of chickpea (*Cicer arietinum*)

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A field trial was conducted during the winter season of 1987–88 at Faizabad, to study the effect of 3 seed rates (75, 100 and 125 kg/ha) and 4 weed-management practices (unweeded check, hand-weeding twice at 25 and 45 days after sowing, fluchloralin @ 1.0 kg/ha and fluchloralin @ 1.0 kg/ha + hand-weeding at 25 days after sowing) on nodulation and yield of chickpea. The experiment was laid out in randomized block design with 4 replications. The soil was silty clay-loam containing 191.0, 16.6 and 263.0

kg/ha of available N, P and K respectively, with pH 8.1. Chickpea 'Type 3' was sown in rows, 45 cm apart. A uniform basal dose of 100 kg/ha as diammonium phosphate was applied in furrows. The irrigation was given at 60 days after sowing. Fluchloralin was sprayed with the help of hand-operated knapsack sprayer fitted with flat-fan nozzle and incorporated into the soil just before sowing.

Nodules/plant decreased significantly with increasing seed rate from 75 to 125 kg/

Table 1. Effect of seed rate and weed-management practice on nodules/plant and grain yield (q/ha) of chickpea

| Seed rate<br>(kg/ha) | Weed-management practice |                    |                             |                                            | Mean          |
|----------------------|--------------------------|--------------------|-----------------------------|--------------------------------------------|---------------|
|                      | Weedy check              | HW<br>(25, 45 DAS) | Fluchloralin<br>(1.0 kg/ha) | Fluchloralin<br>(1.0 kg/ha +<br>HW 25 DAS) |               |
| 75                   | 11.77                    | 24.14              | 17.31                       | 19.15                                      | 18.09 (29.50) |
| 100                  | 11.67                    | 21.95              | 17.18                       | 18.24                                      | 17.26 (19.75) |
| 125                  | 11.35                    | 19.88              | 17.21                       | 18.51                                      | 16.73 (17.25) |
| Mean                 | 11.59<br>(24.00)         | 21.99<br>(27.33)   | 17.21<br>(17.00)            | 18.67<br>(20.33)                           |               |
|                      |                          | Seed rate          | Weed-management<br>practice |                                            | Interaction   |
| CD (P = 0.05)        |                          | 0.85<br>(1.60)     | 0.98<br>(1.85)              |                                            | 1.70<br>(NS)  |

HW, Hand-weeding; DAS, days after sowing

Figures in parentheses indicate the nodules/plant at 90 DAS

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ha at 90 days. This may be owing to less number of plant population under the lower seed rate, which resulted in better root development and formation of root nodules. Hand-weeding twice recorded the maximum number of nodules/plant.

The seed yield decreased with an increase in seed rate from 75 to 125 kg/ha (Table 1). The results are in agreement with those of Ahlawat *et al.* (1985). All the weed-control treatments proved superior to the unweeded check treatment. However, hand-weeding at 25 and 45 days was found most promising in increasing the grain yield of chickpea as compared with alone application of

fluchloralin @ 1.0 kg/ha and in combination with 1 hand-weeding at 25 days after sowing. Malik *et al.* (1988) also reported similar results. Uncontrolled weeds reduced the crop yield by 47.3 % compared with hand-weedings at 25 and 45 days.

#### REFERENCES

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- Malik, R. K., Balyan, R. S. and Bhan, V. M. 1988. Effect of herbicides and planting dates on weeds in chickpea. *Indian Journal of Weed Science* 20 (2) : 75-81.

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### Effect of soil ameliorants on production potential of gram (*Cicer arietinum*) in salt-affected environment and their residual effect on pearl millet (*Pennisetum glaucum*)

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Crop growth and yield are adversely affected by saline-alkaline soil and water. A sizeable area in the flood-prone Eastern Plains Zone of Rajasthan faces problems of saline-alkaline soil and irrigation water. Gram (*Cicer arietinum* L.) is a preferred rainy-season pulse crop. Hence an experiment was conducted during 1988-91 to study the effect of easily available soil ameliorants, viz. gypsum and farmyard manure, for increasing the production of gram and their residual effect on succeeding crop

of pearl millet [*Pennisetum glaucum* (L.) R. Br. emend. Stuntz] at Navgaon.

In gram ('RSG 2') the treatments were 3 levels of gypsum (0, half and full gypsum requirement in finely ground form) and 3 levels of farmyard manure (0, 10 and 20 tonnes/ha) applied 3 weeks prior to sowing and only once at the start of the experiment. The experiment was conducted in randomized block design with 3 replications. The residual effects of the 2 soil ameliorants were assessed in terms of production poten-