

Influence of Irrigation and Phosphorus on Nodulation of Groundnut (*Arachis hypogaea* L.)

Nodulation plays a vital role in production of leguminous crops. Besides inoculation, phosphorus has its own say on nodulation which in turn reflects on grain yield. Both extremities in soil moisture has unfavourable effect on nodulation and peak nodulation was observed under optimum soil moisture status (Verma and Rao, 1975 and Sprent and Gallacher, 1976) Sahu (1973) recorded increased number of nodules at higher levels of phosphorus. To provide congenial moisture regime for peak nodulation, various irrigation regimes were tried along with phosphorus fertilization for groundnut in this study.

During summer 1980 (January - April) an experiment was conducted at Bhavanisagar on groundnut with three irrigation levels (0.60, 0.75 and 0.90 lw/CPE ratio) and four levels of phosphorus (0, 20, 30, 40 kg P_2O_5 /ha). Number of nodules per plant was taken on 40th day, 75th day and at harvest.

At 75th day, number of nodules per plant attained its peak. This is in agreement with the findings of Ratnasen and Bhaduri (1971). Applied phosphorus significantly influenced nodulation.

At 40th and 75th day, phosphorus at 0 kg/ha had fewer nodules compared

to that at higher levels of phosphorus. At harvest the trend was erratic probably because of senescence of nodules. The increased number of nodules per plant with applied phosphorus was established by myriad workers (Prasad 1977 and Singh 1977).

Various irrigation levels tried did not exhibit any significant influence on nodulation because of slight differences between irrigation levels at all stages.

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TABLE Effect of irrigation and phosphorus on nodulation of Groundnut

| Phosphorus levels kg/ha | Number of nodules/ plant | | | Irrigation levels IW/ CPE ratio | No. of nodules/plant | | |
|----------------------------|-----------------------------|----------|------------|------------------------------------|----------------------|----------|------------|
| | 40th day | 75th day | at harvest | | 40th day | 75th day | at harvest |
| P ₀ | 20.3 | 50.3 | 30.6 | 1 0.60 | 24.4 | 58.6 | 29.4 |
| P ₂₀ | 25.4 | 62.7 | 31.3 | 1 0.75 | 26.7 | 62.4 | 30.6 |
| P ₃₀ | 28.9 | 67.5 | 33.8 | 1 0.90 | 25.8 | 64.1 | 30.9 |
| P ₄₀ | 32.1 | 71.9 | 34.4 | | | | |
| SED | 2.9 | 3.8 | 2.6 | SED | 3.3 | 5.2 | 3.2 |
| CD (0.05) | 6.8 | 10.7 | NS | CD (0.05) | NS | NS | NS |