results agree with the findings of Singh and Chatterjee (1980) and Ramanathan (1980).

Thus, short duration rice crop can be dry seeded in the middle of June without losing the optimum season and can be maintained by giving soaking irrigations from ground water at weekly intervals during the vegetative stage upto the receipt of water in the canals and with the receipt of canal water, the crop can be converted to low land condition without sacrificing the yield. The effect of moisture stress faced during the vegetative stage can be minimised by hardening the seeds with 100 ppm Succinic acid.

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EFFECT OF NITROGEN AND PHOSPHORUS FERTILIZATION ON YIELD OF HORSEGRAM *(Macrotyloma uniflorum Lam)*

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ABSTRACT

The studies on effect of fertilization on yield of horsegram *(Macrotyloma uniflorum L)* Cv. *Dapoli-1* revealed that application of 37.5 kg.ha $^{-1}$N had significant effect in increasing grain and straw yield of horsegram. However it was on a par with the application of 25 kg.ha^{-1}N. Similarly, applications of 60 kg.ha^{-1} P_2O_5 produced significantly more grain and straw yield over control, 40 and 20 kg.ha^{-1} P_2O_5

KEYWORDS: Horsegram, Nitrogen, Phosphorous Fertilisation, Konkan Region.

Pulses are chief source of proteins predominantly in vegetarian population of India. Recently on realization of the declined availability of pulses in Indian diet and their importance in crop rotation as a source of renewable nitrogen, efforts are being made to increase the pulse production in the country. Horsegram is the most hardy pulse crop which can be suitably grown on marginal, light soils. The Konkan region of Maharashtra state receives about 3500

to 4000 mm annual rainfall, mostly from June to September. As a result, rice is the main crop during *Kharif* season. However, due to meagre irrigation facilities and more percolative nature of soils, it is difficult to take rice crop during *rabi*-hot weather season. After harvesting of *kharif* rice, considerable moisture is retained in low lying fields which can be properly used by raising a suitable crop during *rabi* season. To have a better crop rotation in rice fields it was therefore, proposed to grow a legume crop like horsegram on residual moisture. Feasibility of growing pulses under dryland condition of Konkan region during *rabi* season has been reported by Kalra et al. (1983). Dapoli-1 being a new genotype of horsegram, its agronomic evaluation under the agro-climatic conditions of Konkan region needs no emphasis.

MATERIALS AND METHODS

With an objective of testing the response of horsegram to N and P levels, a field trial was conducted during *rabi* season of 1983-1984 at the research farm of the Konkan Krishi Vidyapeeth, Dapoli (Maharashtra). An experiment was laid out in a factorial randomised block design with three replications. The treatments comprised four levels of N viz. 0, 12.5, 25 and 37.5 kg.ha^{-1}, and four levels of phosphorus viz. 0,20, 40 and 60 kg.ha^{-1}.

Soil was predominantly lateritic (Alfisols) clayloam with pH 6.4. Organic carbon content was 0.41 per cent. Crop was sown by drilling on 2-12-1983. Various doses of N and P were applied at sowing time as per the treatments. Two hand weedings were given to the crop. Need based plant protective measures were undertaken to protect the crop from insect pest and diseases. Crop was harvested at maturity i.e on 18-3-1984.

RESULTS AND DISCUSSION

It is seen from Table 1 that N fertilization had significant effect in enhancing the grain and straw yield of horsegram. A dose of 37.5 kg. ha^{-1}N produced significantly higher grain yield over a dose of 12.5 kg.ha^{-1}N and control treatments. However, the yield differences due to application of 25 kg.ha^{-1}N and 37.5 kg.ha^{-1}N were at par with each other. Similarly, applications of 37.5 kg.ha^{-1}N and 25 kg.ha^{-1}N produced more straw yield over rest of treatments. The straw yield differences between former two treatments were not observed. Similar results in respect of grain and straw yield of other pulse crop like redgram were reported by Patil *et, al.* (1978).

The yield attributes viz, number of pods plant^{-1}, weight of pods plant^{-1}, weight of grains plant^{-1} and thousand grain weight were significantly influenced by N fertilization. In general these attributes were maximum when crop was supplied with 37.5 kg.ha^{-1} N (Table 1). These results are in conformity with the results by Rathi and Singh (1976).

Phosphorus also played a significant role in increasing the grain and straw yield of horse gram. (Table 1). The yield attributes viz, number of pods plant^{-1}, weight of thousand grains etc, were influenced by the P fertilization. A dose of 60 kg.ha^{-1} P_2O_5 produced the grain yield of 9.52 q.ha^{-1} which was superior than the yields obtained due to application of 20, 40 and 60 kg.ha^{-1} P_2O_5. The grain yield produced by 20, 40 and 60 kg.ha^{-1} P_2O_5 was on a par with each other but was significantly more over control treatment (O kg.ha^{-1} P_2O_5).

Response of horsegram to various doses of P in respect of producing straw yield was graded and significant. Similar results were reported by Singh (1975).

Table 1. Yield and yield contributing characters of Horse gram as affected a by different Nitrogen and phosphorus levels.

Treatments	No. of pods plant^{-1}	Weight of dry pods plant^{-1}	No.of grains plant^{-1}	Weight of grains plant^{-1} (g)	Thousand-grain weight (g)	Grain yield (q.ha^{-1})	Straw yield (q.ha^{-1})
Nitrogen (Kg.ha^{-1})							
0	19.97	2.84	53.00	2.34	26.58	6.83	13.07
12.5	23.97	3.44	76.63	2.77	27.47	8.45	15.49
25.0	24.88	3.80	86.44	3.07	28.19	8.92	17.47
37.5	27.99	4.27	105.04	3.50	28.65	9.52	18.21
S.E	1.60	0.18	4.17	0.18	0.31	0.29	0.30
C.D (5%)	4.62	0.52	12.04	0.52	0.90	0.84	0.87
Phosphorus (Kg.ha^{-1})							
0	18.72	2.88	42.98	2.47	26.70	7.06	13.57
20	24.83	3.60	81.34	2.97	27.80	8.32	14.99
40	25.88	3.75	91.07	3.05	28.07	8.73	16.26
60	27.37	4.13	100.72	3.18	28.32	9.62	19.42
S.E	1.60	0.18	4.17	0.18	0.31	0.29	0.30
C.D (5%)	4.62	0.52	12.04	0.52	0.90	0.84	0.87

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EFFECT OF ADVANCE PLANTING OF RAINFED GROUNDNUT IN POLLACHI TRACT

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ABSTRACT

Field experiments were conducted to find out the correct sowing date for rainfed groundnut with one pre-sowing irrigations for three years. The results showed that pod yield in all the three varieties increased, if the sowing was advanced by ten days. The yield increase was a result of improvement in shelling out turn and SMK percentage. Crops sown 10 days early than recommended sowing date was significantly higher (1612 kg.ha^{-1}) than other sowing dates. Among the varieties, Co 2 and JL 24 responded better than TMV2.

KEYWORDS : Groundnut, Date of Sowing, Rainfed.

In Tamil Nadu more than 60 per cent area is rainfed cropping. This situation warrants developing viable technologies in areas of low rainfall to increase agricultural production. Sowing crops in anticipation of monsoonic rains was reported to result in a better utilization of precipitation (Anon.1971). Rainfed groundnuts are sown on varied dates during *Kharif* season, depending on the onset of south west monsoon. The differences in the date of sowing bring about plant-environment interactions which alter the inherent physiological processes leading to variations in pod yield. Shantimallaih *et. al.* (1979) was of the opinion that in any given locality early sowing and harvest at the right time ensured maximum pod yield of groundnut and better quality attributes. Delayed planting reduces the potential yield considerably. Farmers have also found by experience that sowing rainfed season leads to proper growth and high pod yield. Therefore the effect of advance sowing of groundnut with one pre-sowing irrigation was studied with