J. Phytol. Res. **15**(1) : 113-114, 2002

NUTRIENT MANAGEMENT IN CASTOR BY COMBINING INORGANIC WITH ORGANIC AND BIOLOGICAL SOURCES

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Farmers traditionally use local varieties of castor in Tamil Nadu. The frontline demonstrations have shown that introduction of hybrid castor TMVCH1 increased the yield by two to three folds. Effect of inorganic and organic fertilizers along with biofertilizers on the yield of rainfed TMVCH1 castor hybrid was observed during the present study.

Keywords : Castor hybrid TMVCH1; Nutrient management.

India stands first in area, production and productivity of castor in the world and earns a foreign exchange of Rs. 650 crores annually from this crop[1]. In Tamil Nadu castor is grown mainly under rainfed condition as an intercrop with groundnut. The farmers traditionaly use only local varieties which are poor yielders and generally they apply only organic manures. The frontline demonstrations conducted in the farmers' fields at Salem, Namakkal, Erode and Dharmapuri districts proved that by the introduction of hybrid castor TMVCH1 the yield level has been increased two to three folds when compared with local varieties. To sustain the yield of hybrid castor TMVCH1, integrated nutrient management plays an important role in addition to the other package of practicies. No study has been conducted so far on the effect of inorganic and organic sources of fertilizers as well as biofertilizers on the yield of rainfed hybrid castor TMVCH1 and the possibility of reducing the recommended fertilizer dose by adopting Integrated nutrient management. Hence the study was undertaken.

Field Experiments were conducted for two years during 1999 and 2000 at Tapioca and Castor Research Station, Yethapur to study the effect of INM involving inorganic and organic sources of fertilizers and biofertilizers on the yield of rainfed hybrid castor TMVCH1. The soil of the experimental site was fine loamy, isohyperthermic, Typic Rhodustalf with sandy loam texture. The pH of the soil was 6.6 and the EC was 0.2 dSm^{-1}. The soil was low in available nitrogen (245 kg/ha), low in available phosphorus (2.5kg/ha) and high in available potash (563 kg/ha). There were totally twelve treatments comprising of different levels of inorganic fertilizers (NPK) along with organic sources and biofertilizers namely Azosprillum and Phosphobacteria. The organic sources of nitrogen selected for this study includes FYM, neem cake and green mannuring with cowpea. The cowpea was sown one month perior to the sowing of castor and incorporated *in situ* at the time of sowing of castor seeds.

The recommended dose of fertilizers applied for the study was 40:40:0 kg NPK/ha. The quantities of FYM and Neem cake were applied based on their N contents to supply the required quantity of N as per treatment schedule. Necessary plant protection and cultural practices were followed as and when needed. The seed yield of castor for two years is furnished in Table 1. The data was subjected to statistical scrutiny as per the procedure suggested by Panse and Sukhatme[2]. Statistical scrutiny of the data showed that application of 100% RDF (40:40:0kg NPK/ha) through inorganic source recorded the highest seed yield of 1774 and 3231 kg/ha during the years of 1999 and 2000 respectively. However comparison of the integration of the inorganic and organic sources of fertilizers and biofertilizers indicated that application of 75% RDF (30:30:0 kg NPK/ha) through inorganic and remaining25% through FYM (3t/ha) gave the second highest yield of 1345

Table 1. Yield of Castor kg/ha.

Treatments	1999	2000	Mean
T1 - Absolute control	780	921	850
T2 - 100% RDF (40:40:0kg NPK/ha)	1774	3231	2502
T3 - 75% RDF + 25%N through FYM @ 3t/ha	1345	2469	1907
T4 - 50% RDF + 50%N through FYM @ 6t/ha	1147	2313	1730
T5 - 75% RDF + 25%N through Neem cake	1143	2439	1791
T6 - 50% RDF + 50%N through Neem cake	1039	2205	1622
T7 - 50% RDF + Azosprillum + 25%N through FYM	1096	2140	1618
T8 - 50% RDF + Green manuring	1141	2148	1644
T9 - 50% RDF + 25%N (FYM) + GM	1067	1792	1429
T10 - 50% RDF + 25%N (FYM) + 25% N (Neem cake)	1121	2129	1625
T11 - 50% RDF + Azosprillum + 25% N (FYM) + PSB	1142	2259	1700
T12 - 25% RDF + 25%N (FYM) + 25% N (Neem cake) + PSB	885	1562	1223
SE	11.93	69.73	
CD (P=0.05)	25.29	139.05	

and 2469 kg/ha during 1999 and 2000 respectively. Similar results were also reported under Andhra Pradesh conditions[1,3].

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