EFFECT OF INTEGRATED NUTRIENT MANAGEMENT ON POTATO AND ITS RESIDUAL EFFECT ON SUCCEEDING MOONG CROP UNDER IRRIGATED CONDITION OF SOUTH BIHAR

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A field experiment was conducted at Patna during winter and summer seasons of 2003-04 and 2004-05 on sandy clay loam soil low. The trial on potato was laid out in randomized block design and that of moong in split plot design with three replications. The tuber yield of potato increased significantly with increase in fertility levels from 75% recommended dose of fertilizers (RDF) to 100% RDF. Highest tuber yield and total dry matter production, NPK uptake and net return were recorded with integrated application of FYM @ 15 t/ha + 100% RDF followed by 100% RDF + crop residue + bio-fertilizer. Application of FYM @ 15 t/ha + 75% RDF recorded significantly higher tuber yield over 75% RDF alone but remained at par with 100% RDF. Highest value of all the yield attributes and grain yield of moong was observed with the residual effect of combined application of 100% RDF + FYM @ 15 t/ha. Direct effect of NPK application to moong was more pronounced over residual effect. Yield attributes, grain yield and net return improved significantly with each increment of NPK from 50% RDF to 100% RDF. Nutrient management practices brought about significant variation in organic carbon, phosphorous and nitrogen status of soil and non-significant variation in K status at harvest. Highest improvement in soil fertility was observed with application of FYM @ 15 t/ha + 100% RDF followed by 100% RDF + biofertilizer + crop residue incorporation.

EFFECT OF FARMYARD MANNURE, GREEN MANNURE AND FERTILIZER LEVELS ON SEED POTATO PRODUCTION IN NORTH-WESTERN HILLS

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In a field experiment conducted at Kufri, peas, cowpea, bean, amaranthus and oats were evaluated as a rotational-cum-green manure crop for potato. At the time of potato planting, two more treatments, viz. FYM @ 15 t/ha and 100% NPK (control) were included without any previous green manuring. Doses of NPK were reduced to 50% where green manure crops were grown or FYM was added.

Among all the green manure crops, maximum bio-mass was added by amaranthus (207.8 q/ha) followed by oats (107.2 q/ha) and minimum by cowpea (23.87 q/ha). The vegetative growth of plants in terms of number of shoots, compound leaves and haulms weight/plant were maximum in 100% NPK, followed by pea, FYM and cowpea. Maximum number of total and seed size (20-80g) tubers (5.60 and 4.36 lakh/ha, respectively) as well as maximum yields (326.9 and 275.7 q/ha, respectively) were obtained with FYM + 50% NPK followed by 100% NPK. Among the various green manure crops, bean + 50% NPK resulted in maximum number of total tubers (4.58 lakh/ha) as well as total yields (300.3 q/ha), which were statistically at par with those obtained with 100% NPK without green manuring. Whereas, peas + 50% NPK gave highest number of seed size tubers (3.53 lakh/ha) as well as yield (235.4 q/ha). The results showed that growing beans / peas as a rotational-cum-green manure crop in seed potato fields will be beneficial for the farmers of the region to reduce the doses and thus the costs of fertilizers to half (50%) without compromising the potato yields. Whereas, addition of FYM @ 15th/ha along with 50% dose of NPK can be used profitably for the ware potato crop where rotation or green manuring practices are not followed.