



## Effect of incorporated cowpea stover on succeeding cauliflower curd yield and N, P, K status in soil

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### ABSTRACT

An investigation was carried out at Regional Agricultural Research Station, Assam Agricultural University, Gossaigaon during *Rabi* season of 2004, 2005 and 2006 to assess the influence of cowpea stover incorporation with five levels of N (0, 20, 40, 60 and 80 kg/ha) on succeeding cauliflower curd yield production and residual available N,P,K status and economic feasibility. Stover incorporation into the soil increased the curd yield of cauliflower by 10.1 q/ha (6.09%) and 18.4 q/ha (11.68%) as compared to stover removed and fallow land, respectively. Stover incorporation into the soil increased leaf N (%) by 0.71 and 0.82 and curd N (%) by 0.53 and 0.66 than that of stover removed and fallow land, respectively. Compared with control, application of 20 kg N and 40 kg N/ha, application of 60 Kg N/ha resulted in significantly higher yield by 29.8 q/ha (20.16%), 17.2 q/ha (10.72%) and 11.3 q/ha (6.8%), respectively while application of 60 Kg N/ha being statistically at par with 80 kg N/ha level. Leaf N content (%) was higher by 0.64, 0.51, 0.32 and curd N content (%) by 0.53, 0.46 and 0.35 with 60 kg N/ha level than with control, 20 kg N/ha and 40 kg N/ha, respectively. Stover incorporation increased residual organic matter content (%) by 0.19, available N content by 16.56 kg/ha (6.7%), available P content by 2.6 kg/ha (20.63%) and available K content by 23.7 kg/ha (18.23%) than that of initial value. Maximum net returns (Rs. 63430/ha) and B: C ratio (2.59) accrued when planted at stover incorporated practices with the application of 60 kg N/ha compared to other N doses applied. The practice of stover incorporation into the soil along with 60 kg N/ha applied was found optimum for obtaining higher cauliflower curd yield and building up of NPK status in soil.

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### INTRODUCTION

Management of soil health and reduction of chemical fertilizers application in crop production is the prime importance in organic farming system. As the crop residues are the potential source of plant nutrients, these may be managed properly for getting sustainable soil and crop productivity. In summer, cowpeas are grown widely and as a legume crop, has the ability to fix atmospheric N (80–85 kg/ha) in soil by their root nodules. In autumn, cauliflower curd is one of most important demandable popular vegetable and widely grown in our region. Among various factors influencing on the increased curd yield, plant nutrition is one of the major factors for which low curd yield is produced by the farmers. Cultivation of

cauliflower requires a higher dose of chemical fertilizers and organic manure for better growth and good production. However, the native fertility is always decreasing due to lack of proper maintenance of soil health which fails to sustain the high crop yield and sustainable soil health. The effect of preceding legume crops on the yield of other field crops has already been studied (Seth and Balyan, 1985; Velayudham and Seth, 1986; Seth and Balyan, 1989). Since the information on incorporation of cowpea stover on vegetable crops are very meagre in our locality, an effort was made to reduce the use of chemical nitrogen in cauliflower cultivation through the practices of cowpea stover incorporation for increased curd yield of cauliflower, sustainable soil fertility

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