INTRODUCTION

Next to food crops, the oilseeds constitute a very important agricultural commodity and play a vital role in Indian economy. Inspite of the commendable achievements in crops productivity and production, the progress on oilseeds front has been rather dismal. Indian has 26.8 million hectares area under oilseeds, out of which 18.6 percent is irrigated. However, self sufficiency in oilseeds could not be achieved and consequently the country has to import edible oil in large quantities which, in turn comprises a heavy expenditure in terms of foreign exchange. In 1996-97, Rs. 2926.22 crores (Ministry of Agriculture DAC) were spent to import edible oil to meet the domestic requirement.

There is an ever increasing demand for edible oils and the efforts proposed or currently under way are falling short of the projected demands. To make this wide gap between the demand and supply at present and also to fulfil the needs of an estimated population of 1 billion by the turn of the century; there is no suitable substitute other than to produce about 26.0 million tonnes of oilseeds by that time.

Linseed (Linum usitatissimum L.) is an excellent
source of drying oil for paint and varnish industries in India. It occupies 882 Th. ha, contributing 323 Th. tonnes (1996-97). Linseed though an unirrigated crop and cultivation of pulses are also confined to dry lands. The unirrigated linseed is fertilized with small doses of nitrogen, pulses on such lands is seldom fertilized. This is despite fairly high merits of fertilizers applications noted on soils receiving adequate precipitation. The average Indian diet being cereal based is unbalanced on its composition. A very large section of our people a pivotal position in respect of protein supply and are a more practical means of reducing the protein malnutrition problem at the present stage of our economic development pulses form an essential component of the daily diet of Indians who are predominantly vegetarian.

Pulse crops have been the main stay of Indian agriculture for centuries because of their inherent capacity to fix large amount of atmospheric nitrogen and are a major source of protein but their production has remained almost stagnant during last 3-4 decades. The output lags woefully behind the increasing demand consequent to growth both in population and per capita income. The per capita availability of pulses declined from 69 g/day in 1961 to 36.5 g/day in 1990.
The need to increase oilseed production is one of the major problems in our country where physical area under cultivation can not be increased. India is not self sufficient in oilseeds and also faces an acute shortage of pulses. There is also no further scope to increase the area under pulses. The only alternative left is to knit them in intensive cropping systems in order to produce more per unit area per unit time. Additional production of these crops could thus be achieved without replacing the principal food grain crop.

Most of the Indian soils are deficient in nitrogen and therefore invariably favourable responses of this nutrient as obtained in most of the crops in general and linseed in particular. The higher cost of N often prevents the farmers to use the recommended levels in their linseed crops which consequently results in under optimum yields. It is, therefore, important to find out the alternatives to tap other cheaper sources of this nutrient. Intercropping of oilseed-legume system is one such alternative which can affect an economy in applied N without affecting the total productivity of the system. Pulses being a legume fix atmospheric N in amounts greater than their own requirement. The N left by pulses after their utilization is taken up by the associated oilseed for its use.
Intercropping or mixed cropping of linseed with winter pulses like chickpea, lentil or *Lathyrus sativum* has been in practice in India since long especially under limited water supply conditions. This practice has been adopted as an insurance against total crop failure under aberrant weather conditions, pest and disease epidemics and increasing productivity/unit area of land with equitable and judicious use of inputs (Upasani, 1994).

For better compatibility, crops need to have different growth habits and maturity duration in intercropping systems (Saxena, 1972). Most common competition that occurs among the plants are for light, water and nutrients (Donald, 1963). The intercropping system increases total production in additions to stabilization of production in the rainfed areas (Rao and Willey, 1980 and Baker, 1980). By adopting appropriate stand geometry in the intercropping systems, the total productivity can be enhanced (Umarani et al., 1984). This may be due to efficient utilization of growth resources like water (Baker and Norman, 1975) and light (Prasad and Reddy, 1975).

Evidence have shown that in oilseed legume intercropping, part of the nitrogen of the oilseed crop can be met by the legumes.
Climatically efficient and economically viable oilseed based intercropping systems have been developed in recent years which enhance productivity and profits over time and space in the dry land areas by better use of production resources (Chaudhry and Singh 1993 and Aktar et al., 1993) besides providing stability to production. However, systematic information on this subject is lacking. It was, therefore, thought worthwhile to conduct an experiment on intercropping of pulses with linseed under limited moisture conditions at A.S. College Research Farm, Lakhaut (Bulandshahr) during rabi seasons 1994-95 and 1995-96 with the following objectives:-

1. To study the effect of intercropping on growth and yield of linseed, chickpea and lentil.
2. To study the response of N in linseed and linseed intercropped with chickpea/lentil.
3. To study the nutrient uptake pattern in linseed + lentil/chickpea intercropping system.
4. To find out the most remunerative cropping system.