

INTRODUCTION

Oilseed crops occupy an important place and role in Indian agricultural economy as well as in human life. They are not only rich sources of energy and carriers of fat soluble vitamins A, D, E and K but are major sources of raw materials for a wide range of industrial products also. More than 80 per cent of our country's requirements of vegetable oils and fats are derived from seven annual edible oilseed crops viz. groundnut, rapeseed mustard, sesamum, safflower, sunflower, niger, soybean and two non-edible oilseeds; linseed and castor.

Oilseed crops occupying sizeable share (15 per cent) of the country's gross cropped area and contribute about 11 per cent value of agricultural products. Amongst different oilseed crops rapeseed-mustard having prominence in Northern India, rank second after groundnut and contribute nearly 31 percent of the total oilseed's production in the country. In India, rapeseed mustard occupied 6.28 mha area with a production of 6.5 m tonnes (Economic survey, 1997-98). To meet the edible oil requirement of the burgeoning population, the present level of oilseeds production will have to be boosted up to 26.0 m tonnes to meet the edible oil requirement by the end present decade.

Therefore, it becomes imperative to increase the productivity of rapeseed mustard per unit area per unit time in this country which still has a great scope to exploit the potential yield of existing cultivars along with

bringing more area under irrigation, use of balanced fertilizers and introducing newly developed promising varieties.

Amongst the agronomic factors known to augment the crop production, fertilizer stands first and is considered one of the most productive inputs in agriculture. Of the major nutrient elements nitrogen and sulphur have important role in seed protein and oil synthesis. Work so far done indicated positive role of both of these nutrients in promoting yield and quality of seed of mustard. Differential trends in seed yield of mustard under a particular agro-climatic conditions have been noticed due to varying nutrient levels particularly nitrogen and sulphur fertilization. Application of fertilizers containing these two nutrient elements have been recognised to be the most important constraints and often inadequate application of N and S at farmer's fields reduce the yield levels of mustard.

Of the major nutrient elements, nitrogen which is insufficient in most of the Indian soils, plays appreciably an important role in *Brassica* crops and have shown higher response to nitrogen upto 80-100 kg ha⁻¹.

In view of the increasing incidence of sulphur deficiencies in soil and crops mainly because of low level of fertilizer input in high sulphur requiring crops, particularly oilseeds, application of sulphur assumes added importance. Oleiferous brassicae in general have high sulphur requirement owing to high sulphur containing amino acids in them. Based on the impact of sulphur application on the yield and oil content of oilseeds, it has been reported that

each unit of sulphur added to sulphur deficient soils can augment the supply of edible oil by 3-3.5 units (Tandon, 1995). Mustard crop responds remarkably to sulphur application. Adequate supply of sulphur to rapeseed-mustard promotes the synthesis of sulphur containing aminoacids, protein and oil. The average yield responses to sulphur for rapeseed mustard grown in sulphur deficient soils were observed to be 30 per cent and the impact of sulphur application on oil content was upto 9.6 per cent in mustard (Tandon, 1995).

Recently, a number of varieties have been developed by different centres but their performance varies from place to place depending on soil and climate. These varieties also react to various inputs including nitrogen and sulphur applications. Much information is not available on these aspects especially under western parts of Uttar Pradesh. Keeping these facts in view, a field experiment entitled, "Effect of nitrogen and sulphur fertilization on growth, yield and quality of mustard [*Brassica juncea* (L) Czern and Coss] varieties" was conducted at A.S. (P.G.) College, Lakhaoti (Bulandshar) with the following objectives :

1. To study the comparative performance of mustard varieties under semi-arid climatic conditions of Western Uttar Pradesh.
2. To study the effect of nitrogen, sulphur and their interaction on the growth, yield and quality of mustard varieties.
3. To work out the economic optimum doses of nitrogen and sulphur for mustard.