CHAPTER - VI
SUMMARY AND CONCLUSION

An investigation was carried out during winter season of 2016-17 at Instructional Farm, Department of Agronomy, College of Agriculture, Junagadh Agricultural University, Junagadh to study the “Effect of potassium and sulphur on growth, yield and quality of Indian mustard (Brassica juncea L.)” in respect of plant growth, yield attributes, yield, quality, nutrient content and uptake and economics. The experiment was laid out in Randomized Block Design having four levels of potassium (0, 25, 50 and 75 kg K₂O/ha), and four levels of sulphur (0, 10, 20 and 30 kg S/ha) with three replications. The crop was sown keeping 45 cm × 15 cm spacing. 50 kg P₂O₅/ha (basal) and 50 kg N/ha (in two equal splits at sowing and 45 DAS) was applied uniformly to all the plots. Entire dose of potassium and sulphur as per treatments was applied at sowing.

The salient features of the findings are summarized here under.

6.1 EFFECT OF POTASSIUM

- Various levels of potassium did not manifest their significant effect on plant population at initial stage and harvest.
- Fertilizing the crop with 50 kg K₂O/ha (K₂) significantly increased the growth parameters such as plant height at 60, 90 DAS and harvest; number of primary and secondary branches per plant and plant spread, though it was statistically at par with 75 kg K₂O/ha (K₃).
- Different levels of potassium did not show any significant variation in days to 50% flowering and days to maturity.
- Length of siliqua, number of silique per plant and number of seeds per siliqua were significantly increased under application of 50 kg K₂O/ha (K₂) and remained statistically analogous with application of 75 kg K₂O/ha (K₃).
- Application of 50 kg K₂O/ha (K₂) significantly increased 1000-seed weight, which was found statistically coequal with the application of 75 kg K₂O/ha (K₃).
- Mustard crop fertilized with 50 kg K₂O/ha (K₂) produced significantly the highest seed yield (2459 kg/ha) and stover yield (4820 kg/ha), which exhibited statistical equality with 75 kg K₂O/ha (K₃).
Harvest index and seed : stover ratio remained materially unchanged under different levels of potassium.

Significantly higher oil content and protein content were registered with application of 50 kg K₂O/ha (K₂) and 75 kg K₂O/ha (K₃) over the control (K₀).

The crop under application of 50 kg K₂O/ha (K₂) significantly increased content of N and K in seed and stover. Both N and K content in seed and stover were found statistically equivalent to application of 75 kg K₂O/ha (K₃).

However, P and S content in seed and stover were not significantly influenced by different levels of potassium.

Significantly increased uptake of N, P, K and S by seed as well as stover were observed with application of 50 kg K₂O/ha (K₂) and remained statistically equivalent to the application of 75 kg K₂O/ha (K₃).

Application of 50 kg K₂O/ha (K₂) significantly increased N, P, K and S uptake by the crop over rest of the treatments.

Significantly higher status of available nitrogen and potassium in soil after harvest of the crop was noted under application of 75 kg K₂O/ha (K₃) and remained statistically alike to the application of 25 kg K₂O/ha (K₁).

Different levels of potassium failed to influence available phosphorus and sulphur in soil after harvest of the crop.

### 6.2 EFFECT OF SULPHUR

Initial and final plant population remained almost equal under different levels of sulphur.

Application of 20 kg S/ha (S₂) significantly increased growth parameters like plant height at 60, 90 DAS and harvest; number of primary and secondary branches per plant and plant spread, though it remained on the same bar with 30 kg S/ha (S₃).

Different levels of sulphur did not show any significant variation in days to 50% flowering and days to maturity.

Yield attributes viz., length of silique, number of silique per plant, number of seeds per silique and 1000-seed weight were significantly enhanced with application of 20 kg S/ha (S₂) and 30 kg S/ha (S₃) over the control (S₀).
Summery and Conclusion

- Seed and stover yields were significantly influenced by varying levels of sulphur. Significantly higher seed (2492 kg/ha) and stover yield (4800 kg/ha) were achieved under the treatment S2 (20 kg S/ha), which maintained statistical equality with the treatment S3 (30 kg S/ha).
- Different levels of sulphur imparted non-significant effect on harvest index and seed : stover ratio.
- Significantly the highest oil content and protein content were observed with application of 20 kg S/ha (S2) and remained at par with application of 30 kg S/ha (S3).
- Application of sulphur did not show any significant variation in P and K content in seed and stover and N content in stover.
- Various levels of sulphur significantly improved N content in seed and S content in seed as well as stover. Highest value was observed under treatment S2 (20 kg S/ha), which was found coequal with the treatment S3 (30 kg S/ha).
- Application of 20 kg S/ha (S2) significantly increased the uptake of nitrogen, phosphorus, potassium and sulphur by seed and stover over the control (S0).
- Available phosphorus and potassium status in soil after harvest of mustard crop found non-significant under different levels of sulphur, while phosphorus and sulphur status after harvest of the crop were found significantly higher under S3 (30 kg S/ha), which were at par with S1 (10 kg S/ha).

6.3 INTERACTION EFFECT

- Application of 50 kg K2O/ha + 20 kg S/ha (K2S2) recorded highest number of siliquae per plant and 1000-seed weight. Significantly lowest number of siliquae per plant and 1000-seed weight were observed under the control (K0S0).
- Highest seed yield (2983 kg/ha) was observed under K2S2 treatment (50 kg K2O/ha + 20 kg S/ha) but it remained statistically at par with K2S3 (75 kg K2O/ha + 30 kg S/ha), K3S3 (50 kg K2O/ha + 30 kg S/ha) and K3S2 (75 kg K2O/ha + 20 kg S/ha) combinations.
- Maximum gross returns (₹ 109304/ha), net realization (₹ 68142/ha) and B : C ratio (2.66) was obtained with the application of 50 kg K2O/ha + 20 kg S/ha (K2S2).
6.4 CONCLUSION

On the basis of one year field experimentation, it can be concluded that higher production and net returns from irrigated mustard (GDM-4) can be secured by application of 50 kg K₂O/ha and 20 kg S/ha at the time of sowing besides with recommended dose of N-P₂O₅ on medium black calcareous clayey soil having medium status of available N, P, K and S under South Saurashtra Agro-climatic Zone.