CHAPTER - VI
SUMMARY AND CONCLUSION

A field experiment was conducted during rabi season of 2016-2017 at Instructional farm, Department of Agronomy, College of Agriculture, Junagadh Agricultural University, Junagadh to study “Effect of water soluble fertilizers on growth and yield of sweet corn (Zea mays L. var. Saccharata)”. Total 10 treatments comprising of different water soluble fertilizers viz., (T₁) Control, (T₂) RDF + Water spray, (T₃) RDF + WSF (19:19:19), (T₄) RDF + WSF (13:40:13), (T₅) RDF + WSF (12:61:00), (T₆) RDF + WSF (00:52:34), (T₇) RDF + WSF (02:28:00), (T₈) RDF + WSF (00:00:50:17.5 S), (T₉) RDF + Urea and (T₁₀) RDF + KNO₃ were evaluated in randomized block design with 3 replications. Foliar spray of water soluble fertilizers (WSF), urea and KNO₃ will be done @ 2 % (20 g liter⁻¹ water) at 30, 45 and 60 DAS. RDF (120:60:60) kg ha⁻¹ the entire dose of phosphorus, potassium and 1/3rd dose of nitrogen was applied as basal. Remaining dose of nitrogen was applied in two splits 30 & 60 DAS. The broad objectives of this study were as under.

1) To study the effect of water soluble fertilizer on growth, yield and quality of sweet corn.
2) To find out the suitable water soluble fertilizer for foliar spray in sweet corn.
3) To find out economics of different treatments.

The weather conditions were favourable for crop growth and no severe attack of insect pest and diseases during the course of investigation was observed.

Apart from the biometric observations related to growth, yield attributes, yield and quality of sweet corn studies were also carried out for nutrient content and uptake by cob and fodder as well as nutrient status of soil after harvest of crop and economics.

The experimental findings in detail and their cause and effect relation description have been given in the previous IV and V chapters. The salient features of findings are summarized here.

6.1 EFFECT ON GROWTH ATTRIBUTES

- Initial and final plant populations were not affected significantly by various treatments under study.
Summary and Conclusion

- Fertilizing the crop with 120:60:60 and foliar application of WSF (19:19:19) @ 2% at 30, 45 and 60 DAS, significantly increasing growth parameters such as growth parameters viz., plant height at 45 DAS, 60 DAS and at harvest, functional leaves per plant at 45 DAS, 60 DAS and at harvest, dry matter accumulation per plant at 45 DAS, 60 DAS and at harvest, stem diameter at 60 DAS and at harvest, number of internode per plant at harvest and leaf area index at 30 DAS, 45 DAS, 60 DAS and at harvest over the control. However, plant height at 30 DAS, functional leaves per plant at 30 DAS, dry matter accumulation per plant at 30 DAS, stem diameter at 30 DAS and 45 DAS did not exhibit their significant impact on foliar spray of water soluble fertilizers treatments.

- While foliar spray of fertilizers treatments did not influence on developmental studies like days to 50 % tasseling and days to 50% silking.

6.2 EFFECT ON YIELD ATTRIBUTES

- Application of water soluble fertilizers along with recommended dose of fertilizer gave highest cob length, cob girth, number of cobs per plant, number of kernel per cob and number of kernel row per cob at harvest over the control.

- Significantly the highest fresh, dry weight of cob, grain weight of cob and 100-kernel weight was registered under treatment (T3) RDF 120:60:60 NPK kg ha\(^{-1}\) + foliar spray of WSF (19:19:19) @ 2% at 30, 45 and 60 DAS, over the control. While foliar spray of water soluble fertilizers treatments did not exerts their significant influence on per cent barren plant, harvest index and shelling percentage of cob.

6.3 EFFECT ON YIELD

- Foliar application of water soluble fertilizers treatments influenced the cob, fodder yield and biological yield of sweet corn. Among the different treatment significantly highest and lowest were recorded with T_3 (RDF 120:60:60 NPK kg ha\(^{-1}\) + foliar spray of WSF 19:19:19) @ 2% at 30, 45 and 60 DAS and T_{10} (control), respectively.
6.4 EFFECT ON QUALITY PARAMETERS

- Significantly the highest crude protein in cob and fodder was recorded under treatment $T_9$ (RDF 120:60:60 NPK kg ha$^{-1}$ + foliar spray of Urea), which was followed by $T_7$ (RDF + WSF (28:28:00)) @ 2% at 30, 45 and 60 DAS.
- Whereas significantly the highest protein yield was noted in treatment $T_3$ (RDF 120:60:60 NPK kg ha$^{-1}$ + WSF (19:19:19)), which was statistically at par with treatments $T_9$ (RDF + Urea), $T_7$ (RDF + WSF (28:28:00)) $T_4$ (RDF + WSF (13:40:13)) and $T_{10}$ (RDF + KNO$_3$) @ 2% at 30, 45 and 60 DAS over the control ($T_1$).
- However, reducing sugar, non-reducing sugar and total sugar content of kernel were not affected by different foliar spray of water soluble fertilizers treatments.

6.5 EFFECT ON NUTRIENT CONTENT AND UPTAKE

- Application of RDF 120:60:60 NPK kg ha$^{-1}$ + foliar spray of Urea @ 2% at 30, 45 and 60 DAS gave significantly the highest nitrogen content in cob and fodder, while lowest recorded under the control ($T_1$).
- Higher phosphorus content in cob and fodder was recorded with the application of ($T_3$) RDF 120:60:60 NPK kg ha$^{-1}$ with foliar spray of WSF 12:61:00 @ 2% at 30, 45 and 60 DAS, against ($T_1$) control.
- Significantly higher content of potassium in cob and fodder was recorded with foliar application was recorded under treatment ($T_{10}$) soil application of RDF120:60:60 NPK kg ha$^{-1}$ + foliar spray of KNO$_3$ @ 2% at 30, 45 and 60 DAS, over the control ($T_1$).
- Significantly the highest N, P and K uptake by cob was recorded under treatment ($T_3$) RDF120:60:60 NPK kg ha$^{-1}$ + WSF (19:19:19) @ 2% at 30, 45 and 60 DAS, over the control ($T_1$).
- Soil application of NPK 120:60:60 kg ha$^{-1}$ with foliar spray of WSF 19:19:19 @ 2% at 30, 45 and 60 DAS recorded the higher N, P and K uptake by fodder against the control ($T_1$).
6.6 **EFFECT ON AVAILABLE NUTRIENT IN SOIL AFTER HARVEST**

- Foliar application of water soluble fertilizers did not significantly influenced the available nitrogen, phosphorus and potassium status in soils of different treatments after harvesting of sweet corn crop.

6.7 **EFFECT ON ECONOMICS**

- The significantly maximum gross returns, net returns and B: C ratio was obtained with the application of 120:60:60 kg NPK ha$^{-1}$ + foliar WSF 19:19:19 @ 2 per cent applied at 30, 45 and 60 DAS of ₹ 109137 ha$^{-1}$, ₹ 65714 ha$^{-1}$ and 2.51 respectively, over control (T$_1$).

6.8 **CONCLUSION**

- On the basis of one year experimental data, it may be concluded that foliar application of WSF (19:19:19) @ 2 per cent at 30, 45 and 60 DAS along with soil application of recommended dose of fertilizer (120:60:60 kg NPK ha$^{-1}$) were found effective in improving the yield and profitability of sweet corn under irrigated conditions of South Saurashtra Agro-climatic zone.

6.9 **FUTURE LINE OF WORK**

- Further research is needed for confirmation and recommendation of optimum fertilizer levels applied to soil with different foliar application of water soluble fertilizers at higher concentration for higher yield and quality of sweet corn.
- The present experiment should be repeated for two or three year to know the consistency of treatment effect.
- The study should be conducted under different agro ecological situation of the zone to make valid recommendation for farmers.
- Studies should be carried out to know the effect of different water soluble fertilizers on succeeding crop.