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Popular Article

Hybrid Seed Production of horticultural crops in Koppal district of Karnataka

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Introduction

Seed is the first and foremost vital resource for successful crop cultivation, which is also a crucial input for the creation of sustainable crop production. The quality of the seeds is thought to account for 20-25% of productivity. Mankind has long understood the significance of high-quality seed. In the Rigveda of ancient India, the requirement for a good viable seed for the prosperity of the human race is mentioned. Seed production sector has a favourable impact on the Indian economy in terms of generating income and employment, as well as in earning foreign exchange on the global market. Seed production in India has enormous potential due to factors such as expanding horticultural area, diverse agro-climatic conditions and the availability of abundant and affordable human resource. The Indian seed industry is constrained by a variety of problems, such as high manufacturing costs, technical issues and stringent legal restrictions.

Current status:

Over the past fifty years, the Indian seed sector has seen tremendous growth both in quality and value. High-quality seed production is being actively pursued by both public and private sector corporations. The Indian seed industry is currently the fifth-largest seed market in the world, contributing about 4.4% of the worldwide seed market after US, China, France and Brazil. Both private and public sector companies are involved with the production of seed. The National Seed Corporation (NSC), State Farm Corporation of India (SFCI), and 13 State Seed Corporations constitute the public sector component. Recognising the significance of seeds, currently production of seed surplus its requirement (Table 1). Indian seed market projected to grow at a CAGR of 6.8% during 2022-2027. India's share in world's vegetables production is 14 per cent. Today Indian seed industry has a turnover of ₹ 16,000 to ₹ 18,000 crores. It is globally sixth largest seed industry in terms of size (Indian seed congress, 2017).



The commercial seed production in vegetables not only meets domestic demand but also earns foreign exchange for the country, and thus adds substantially to improve the economic status of the farm families (Sudha et al. 2006). Indian seed industry is strong, vibrant and is showing rapid growth. Current turnover of Indian seed industry is around ₹ 900 crores and it is growing at a rate of 12-15 per cent annually (<https://www.indiastatagri.com/>(link is external))

(Quantity in Lakh Quintals)			
Year	Requirement	Production/Availability	Surplus
2014-2015	343.56	351.77	-
2015-2016	337.09	343.52	-
2016-2017	353.49	380.30	-
2017-2018	371.38	419.41	-
2018-2019	353.54	398.88	-
2019-2020	387.31	431.01	43.70
2020-2021	443.16	483.66	40.50
2021-2022	465.36	498.83	33.47

Which season is suitable for seed production?

- For quality seed production there should not be heavy rains during the flowering stage of the seed crop
- Maturity of the seed should coincide with the summer season
- Seeds harvested during dry season are always better in quality



How climate affects the seed production?

- High temperature is likely to shorten the growing cycle of many crop species
- During some developmental stages such as the reproductive phase most of the crops are only able to tolerate narrow temperature changes which if exceeded can reduce the seed set and thus yield
- Uncertainty of weather was a major problem in hybrid seed production

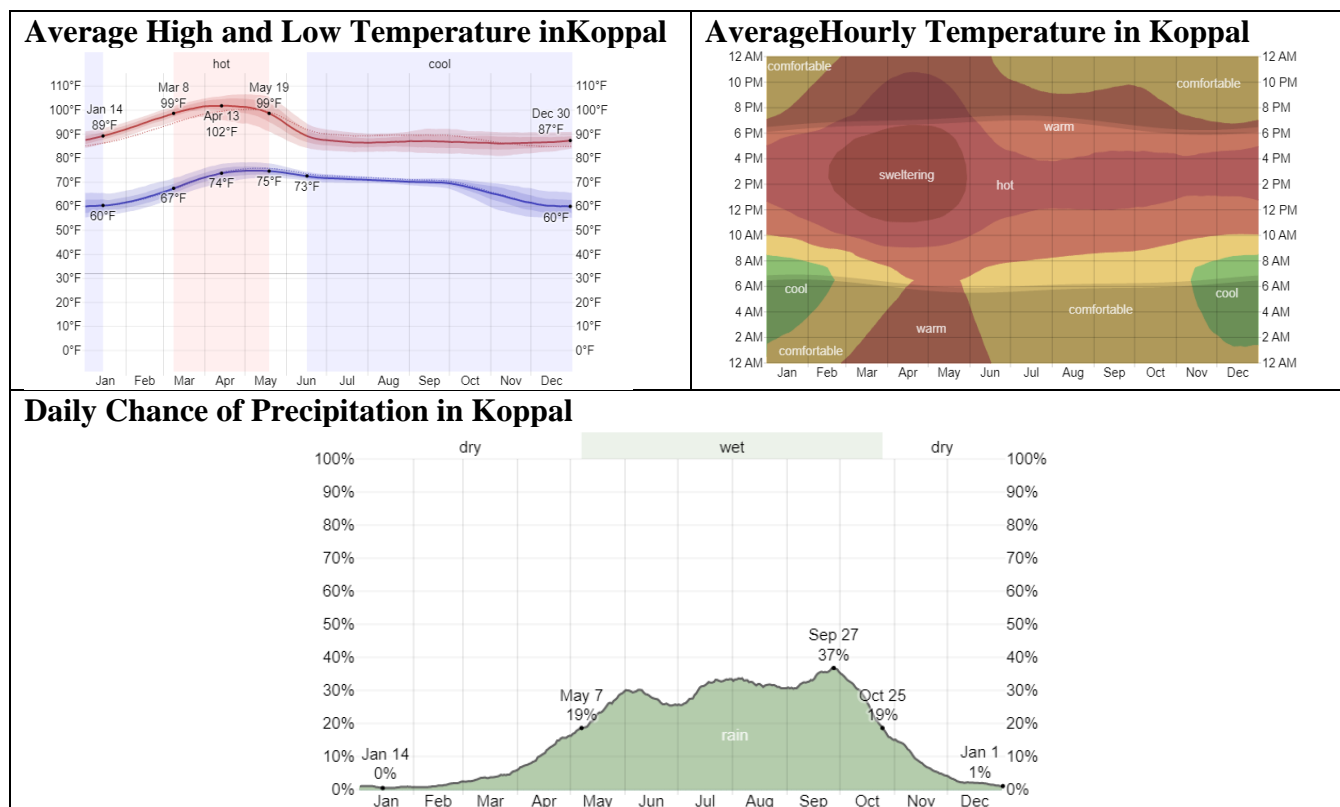
Why Koppal region is suitable for Seed Production?

Considering the above-mentioned condition, Koppal District of Karnataka are prevalent for seed production as, it have

- ✓ Rainfall :- 500-550mm
- ✓ Temperature :- 29-37
- ✓ Soil :- Red Sandy loam
- ✓ Altitude :- 500-600m

In Koppal the summers are short, sweltering, dry and partly cloudy and the winters are long, warm muggy, windy and mostly cloudy.





Methods followed in hybrid seed production?

Commercial hybrid seed production is gaining popularity with the farmers and private seed companies due to its higher profitability. To produce hybrid seeds, a pollination control system is required to prevent unwanted self-pollination.

During hybrid seed production, many methods can be used to prevent self-pollination of the female line: mechanical removal of anthers or male flowers, application of male-specific gametocides, or use of genetic cytoplasmic or nuclear-encoded male sterility. Cytoplasmic male-sterile (CMS) lines have a mutation in their mitochondrial genome.

Crops which are growing for hybrid seed production in Koppal District

Watermelon, Chilli, Tomato, Cucumber, Bitter gourd, Bottle gourd, Okra, Marigold

Conclusion

The commercial seed production is not only meets domestic demand but also earns a sizeable foreign exchange, and thus substantially improves the economic status of the farmers. There is a need to create awareness by imparting training among the seed producing farmers about proper method for quality seed production as per scientific recommendation which in turn helps them to reduction in the cost of cultivation, good quality seeds and augment in output levels.

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