



Status and Scope for Maize in India

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Abstract

Maize (*Zea mays*) is an emerging future cereal crop due to its high genetic yield potential, wider adaptability to soil and climatic conditions. It is the only crop which can be grown in *Rabi*, *Kharif* and *Spring*. It can be used as food, feed, fodder and have industrial value making it a potential candidate crop for boosting the farmer's income. India has less standards in terms of yield as compared to the world, thus huge push is needed to close the gap between the demand and the supply. It is a demanding crop in the world due to its high demand as poultry feed, processed food, maize-based concentrates for livestock population and rising international prices due to diversion of maize grain towards biofuel production.

Introduction

Maize (*Zea mays* subsp. *mays*) is 'queen of cereals' and is one among the prime three cereal crops i.e., rice, wheat and maize due to its higher genetic yield potential. Being, C₄ plant, maize give higher productivity in shorter period of time than any other food grain crop. There are 6 major types of maize i.e., dent corn (grain corn), flint corn (Indian corn), popcorn, pod corn, flour corn and sweet corn. It is the most versatile emerging crop with wider adaptability and is the only cereal crop which can be cultivated in different seasons namely *Rabi*, *Kharif* and *Spring*. It has a potential for doubling the farmer's income as every part of maize has its own economical value. In addition to food directly consumed by humans, it serves as raw material for more than 3500 products including starch, beverages, oil, food sweeteners, cosmetics, film, gum, pharmaceuticals etc. thus provides larger opportunities for value addition. The multiple utilities of maize crop as food, feed and fodder make it more unique and demand friendly and thus less vulnerable against low demand situations.

Status of Maize in World

Global maize production reaches up to 1147.7 million MT from an area of 193.7 million ha with productivity 5.75 tonne/ha (FAO, 2020). US and China are the two largest producer and consumer countries of the world with 30 per cent and 23 per cent contribution to the global maize production respectively. Whereas, in terms of export Argentina and Brazil are leading the place (Indiastat, 2020).

Status of Maize in India

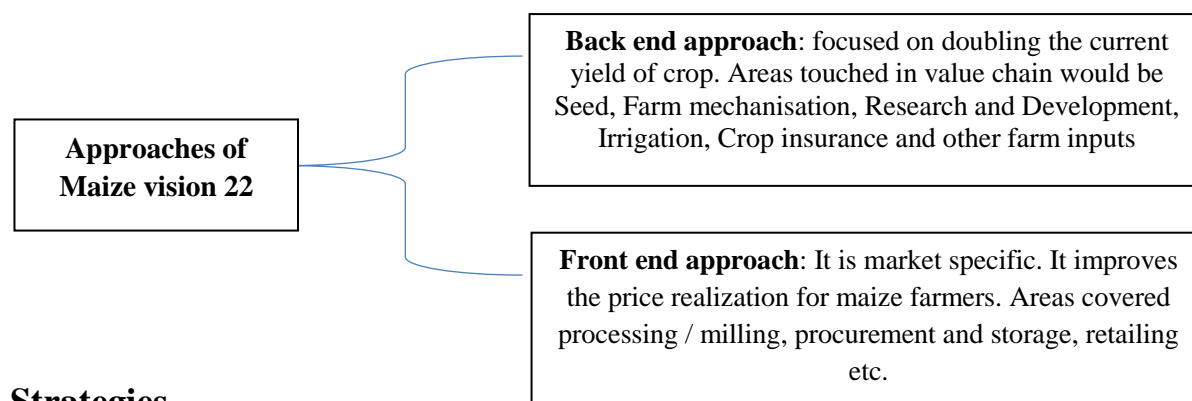
Maize is the third major cereal crop after wheat and rice. In 2020, its production was 30,250 thousand tonnes from an area of 9.2 million ha with productivity 2965 kg/ha (Koema, 2020)

and DACNET, 2020). Globally, India ranks at 4th with 4 per cent contribution to the total area and 7th with 2 per cent contribution to the total maize production. In India, there are mainly 8 states contributing $\frac{3}{4}$ area to the maize production namely, Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and Tamil Nadu. Among them, Madhya Pradesh (15.13 lakh ha) and Karnataka (13.82 lakh ha) are the two states with maximum area under maize cultivation. Maize is mainly consumed under three categories viz: food, feed and fodder, 63 per cent maize is consumed under the poultry and cattle feed whereas only 8 per cent is consumed by humans. Under All India Coordinated Maize Improvement Project more than 417 maize cultivars for *Rabi*, *Kharif* and *Spring* have been released in India till now (IIMR, 2021). Immense scope of improvement is present in the strategically important crop as India stands almost half of the global standards. Thus, it is necessary to have a merger of strategies and interventions around technological innovations, promoting producer aggregation and linkages, forgoing public-private partnership relations and enabling supporting infrastructure. The country has exported 2.879 Mn MT of rupees 4,675.78 crores in 2020-21 (Apeda, 2021).

Importance in Agribusiness Ecosystem

- Maize cultivation generates employment to 15 million farmers for 650 million person-days
- There is quite striking difference between the yield of India and the World i.e., 130 per cent. Thus, huge efforts are needed for improving the yield and total production
- NITI Aayog has identified 7 sources of growth, which could help in doubling farmers' income by 2022: 1) Increase in productivity of crops, 2) Increase in production of livestock, 3) Improvement in efficiency of input use, 4) Increase in crop intensity, 5) Diversification towards high value crops, 6) Improved price realization by farmers, 7) Shift of cultivators to non-farm jobs. On all these 7 identified growth parameters, Maize has visible potential to qualify
- Maize is rich source of starch (71-72 %), protein (9-10 %), fibre (4-45 %), sugar (2-3 %) and minerals (1.4 %) of dry matter.
- It is only food cereal crop that can be cultivate under varied soil condition, have wider adaptability and can be sown in different seasons as well. Being a C4 plant it uses 3-fold less water, can grown under stress condition for water, temperature and carbon-dioxide limitations.
- By cultivating maize, farmers can protect the decreasing quality of soil, save 90 per cent of water and 70 per cent of power as compared to paddy
- It is a multi-utility crop when compared with rice and wheat, maize can be use as food (7Mn MT), feed (14 Mn MT), Fuel (1.2 Mn MT) and for industrial purpose (1.8 Mn MT) where wheat and paddy has no usage for fuel and industrial purpose they are mainly consumed as food.
- India is always a feed starved country with largest livestock population. Besides Indian poultry industry specifically eggs and poultry meat is growing at a CAGR of around 6 per cent and 9 percent. Poultry feed accounts 47 %, livestock feed accounts 13 %, food accounts 20 % and processed food accounts 7 % to the total maize consumption (NCML report, 2016).

Maize vision 22 developed by FICCI strategies: Production of maize need to grow at 15 % CAGR to suffice the domestic demands. It should reach up to 45 Mn MT by 2022.



Strategies

- To bridge the yield gap, rapid relinquishment of new technologies interms of hybridization, molecular breeding, next generation mutation techniques adoption of RNAi technology are priorities.
- Seed cold storage, maize silos, maize value adding unit should be created.
- With high impetus on promotion of FPOs / FPCs in Budget 2018, seed production clusters in select pockets of countries, especially in Telangana, could arise as formal institution like Seed Producers' Companies (SPCs) / Seed Producers' organizations (SPOs). Once a formal institution is created, it would be facilitated by both public and private players in effective manner
- Framing innovative public-private partnership models for ensuring the availability of quality seeds.
- Enabling policies intervention can provide considerable push to this sector eg. Setting up maize dryers by govt, of Punjab in all mandis, 50 per cent subsidy to maize growers on its purchase, Rashtriya Krishi Vikas yojna, National food security mission etc.

Conclusion

Maize is a potential future cereal crop. It not only increases the farmer's income but also is a source of raw material for various agricultural products. Changing climate which is negatively affecting the yield of numerous crops, in that case maize can perform better as it is a C4 plant. In India farmers growing more wheat and paddy in non-traditional areas leading to depletion of ground water table and soil declination whereas, maize can be a solution to similar situations as it saves 90 per cent of water and 70 per cent of the power. This crop needs further impetus and support from all stakeholders for better economic growth.

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