Breeding for Salt Tolerance in Tomato (Solanum lycopersicum L.)
S. M. Ahsan Wz Zaman. Ph.D Student.
Department of Genetics and Plant Breeding
Sher-e-Bangla Agricultural University, Bangladesh.

Introduction

- Salinity is a major abiotic stress affecting plant growth and productivity during all developmental stages.
- About 400 million ha land have damaged by salt for crop cultivation and 30% land will be lost within the next 25 years and up to 50% by 2050.
- In Bangladesh over 30% of net cultivable area lies in coastal region. Crop production is rapidly declining due to lack of salt tolerant varieties.
- In 1973 the salt affected area in the coastal region was 7,50,780 ha, which is increased 9,50,780 ha in 2009.

Materials and Methods

Genes are required for design of stress resistant crop cultivar depends on ideotype. Selection of parental material
Selection of superior genotype from segregating generation
Almost all the conventional breeding methods have been followed for the development of the salt tolerant genotypes i.e introduction, selection, hybridization, mutation.
Worldwide, the research to overcome salt related problems is based on two approaches:
- Change the growing environment (make it normal) suitable for the normal growth of plants.
- Select the crop and/or change genetic architecture of the plant so that it could be grown in such salt affected areas.

Summary Discussion

Major Causes of Soil salinity:
- Low precipitation
- High surface evaporation
- Weathering of native rocks
- Irrigation with saline water
- Poor cultural practices

- Fig.: Mechanism for salt tolerance in Plant,
- Fig: Salt affected area in Bangladesh.

Characteristics of Ideal High Yielding Salinity Tolerant Variety
Highly tissue tolerance
Minimum per day uptake of Na+
Worldwide, the research to overcome salt related problems is based on two approaches:
- Change the growing environment (make it normal) suitable for the normal growth of plants.
- Select the crop and/or change genetic architecture of the plant so that it could be grown in such salt affected areas.

High uptake of K+ per day, and Low Cl- uptake

Fig: Salt tolerance of wild-type tomato plants and trans-genic plants over expressing

Future Directions

The present demand for tomato will be 25% higher than that of the present production level. To meet-up this demand should take the following strategies:
- Development of varieties for salt affected area
- Replacement of the present varieties by superior inbred, hybrid and super high yielding varieties.
- Collaboration between the national and international research organization should be developed.
- Government program should be taken.
- More breeding program should be taken incorporating with genetic engineering.

Acknowledgments

Thanks to all who helped to my research work specially thanks to my supervisors and finally sincere thanks to authorities of Sher-e-Bangla Agricultural university.