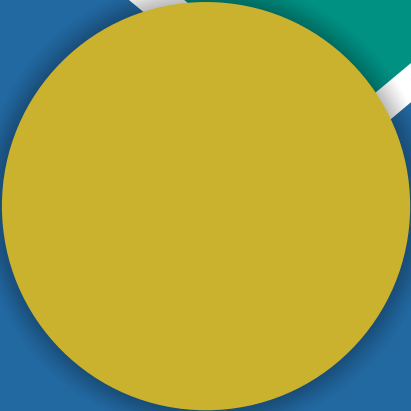


Herbicide Tolerant Transgenic Sugarcane



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Pakistan is the 11th largest producer of sugarcane in the world. Most of the varieties approved and being cultivated in Pakistan are developed through superior-line selection-based method from imported fuzz, sugarcane seed from different sugarcane growing countries including; Australia, Brazil, Sri Lanka and USA. Irrigation system in Pakistan particularly in Punjab is canal based and canal water is a major source of weeds in farmer fields that lowers yield up to 40%.

A recent trend of rural-urban migration has put sugarcane growers in a very difficult position as far as labor availability is concerned. An alternative to labor is the use of chemical sprays to control weeds. Selective herbicides have been used to control crop-competing weeds. Weed control is becoming more difficult due to resistance development in weeds against selective herbicides.

Non-selective herbicides are always desirable for the control of weeds because of their diversified mode of action. Developing transgenic plants against non-selective herbicides is one of the most successful practice.

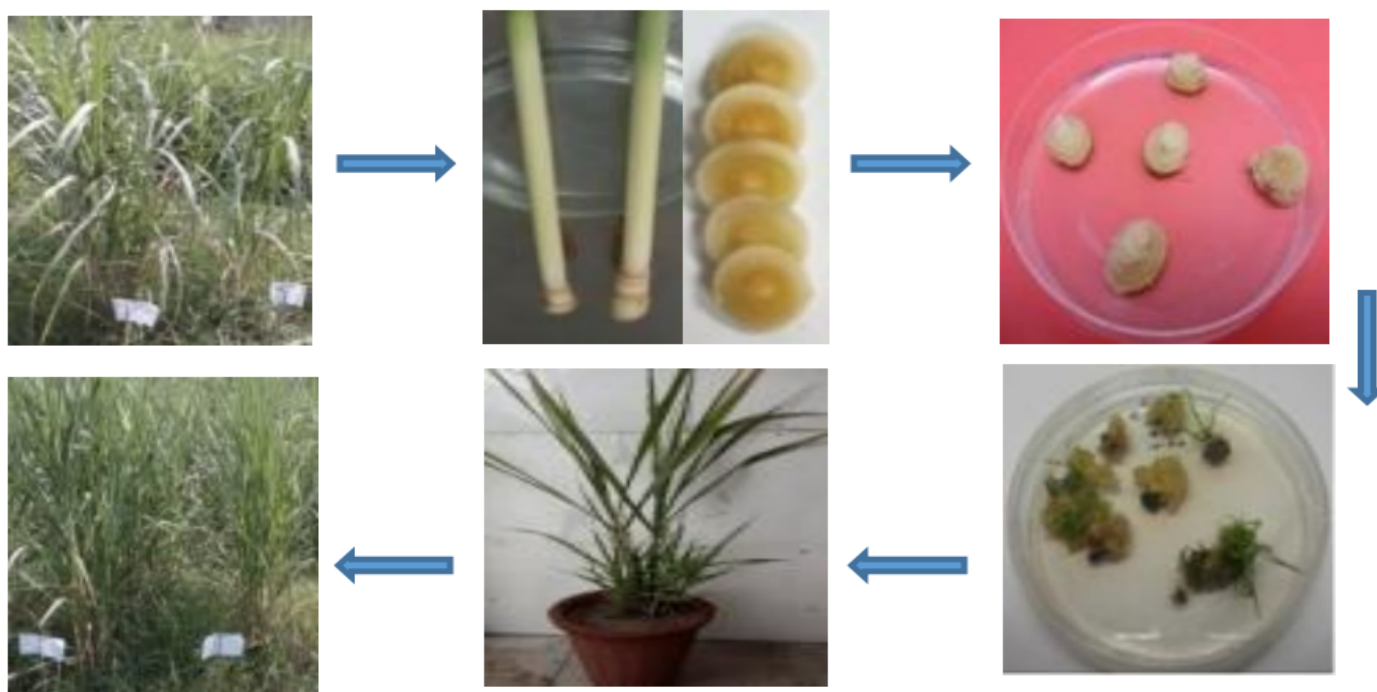
More than 61% transgenic crops are herbicide tolerant. Glufosinate is a non-selective herbicide to control weeds. It is applied to young plants during early development for full effectiveness. It is sold in formulations under brands including Basta, Rely, Finale, Challenge and Liberty to control weeds and for crop desiccation to facilitate harvesting.

Objectives

Development of herbicide tolerant transgenic sugarcane plants

Achievements

Considering the validity of this trait, herbicide tolerant sugarcane plants have been developed to confer resistance to glufosinate. The developed transgenic plants are tolerant to field dose sprays of Basta; weeds are killed effectively without any damage to transgenic sugarcane crop. Further, this trait is being developed in elite sugarcane lines as well.



Biotechnological interventions to develop transgenic sugarcane



Before Herbicide Application



After Herbicide Application