Agrotechnol 2014, 2:4
http://dx.doi.org/10.4172/2168-9881.S1.009

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Agricultural & Horticultural Sciences
Radisson Blu Plaza Hotel, Hyderabad, India February 03-05, 2014

Morphological and pollen viability studies in interspecific hybrids between cultivated and perennial diploid wild sunflower species (*Helianthus annuus L.*)

Y Prashanth
Acharya N. G. Ranga Agricultural University, India

The present investigation was undertaken with a view to study pollen viability morphological behavior of F_1 interspecific hybrids of diploid wild perennial species *Helianthus maximilini* and *Helianthus occidentalis* with normal cultivated sunflower *Helianthus annuus* prebred line M-106. The two interspecific hybrids (M-106 × MAX 1631, M-106 × OCC 52) have annual life cycle with the diploid somatic chromosome number 2n=34. The performance of the hybrids was either superior or nearer to their cultivated parent in respect of plant height, days to 50% flowering, days to maturity, stem diameter, number of filled seed/head, number of unfilled seed/head, head diameter, seed yield/plant, test weight, oil content, oil yield. While the two hybrid combinations recorded more seed yield as compared to their cultivated parent, but percentage of seed set of the two hybrids is low compared to parent, the existence of negative correlation of pollen fertility could explain low seed set. Pollen viability of two interspecific hybrids was recorded low comparative to their parents 32.4% in M-106 × OCC 52 and 35.9% in M-106 × MAX 1631. These results showed that species *Helianthus maximiliani* and *Helianthus occidentalis* possess some important agronomic characters which were already transferred or could be transferred to sunflower in the process of hybridization between the two diploid wild with cultivated species. As due to these processes, narrow genetic base of the cultivated sunflower gets broadened with the infusion of genes from wild species. This study indicates the possibility of improving hybrid performance through further back cross breeding and selection process.

prashanthag07@gmail.com

Biolgical management of rice blast pathogen using *Bacillus subtilis* var. *Amylo liquefaciens* (FZB 24)

Nagendran Krishnan, Karthikeyan Gandhi, Mohammed Faisal Peeran, Raveendran Muthuraj, Prabakar Kuppusamy and Raguchander Tiruvengadam
Tamil Nadu Agricultural University, India

Rice is the most widely cultivated food crop in the world. Rice blast caused by *Pyricularia grisea*, occurs worldwide causing severe yield loss to an extent of 85 per cent. Each year *P. grisea* was reported to destroy rice enough to feed an estimated 60 million people. Majority of the popular rice cultivars are susceptible to the pathogen. The use of biological control agents as an alternative to fungicides is increasing rapidly in the present day agriculture. *Bacillus subtilis* var. *Amyloliquefaciens* (FZB24) was found to be effective in inhibiting the growth of *P. grisea in vitro* with a per cent inhibition of 52 over control. It was also found to have the plant growth promoting activity in rice seedling by registering a significantly higher vigour index. The biochemical studies for the induction of systemic resistance revealed that the application of *B. subtilis* var. *Amyloliquefaciens* (FZB24) was found to induce of the defense related enzymes viz., peroxidase, polyphenol oxidase, phenylalanine ammonia lyase and accumulation of total phenols when plants were challenged with *P. grisea* compared to untreated plants. The native PAGE analysis revealed that the induction of new isoforms of peroxidase and polyphenol oxidase in *B. subtilis* var. *Amyloliquefaciens* (FZB24) treated rice plants challenged with the blast pathogen. *B. subtilis* var. *Amyloliquefaciens (*FZB24) is found to be effective against blast under glasshouse conditions. The treatment with *B. subtilis* (FZB24) as seed treatment at 4 g/kg + seedling dip at 4 g/l + soil application at 500 g/ha + foliar spray at 500 g/ha was found to significantly reduce the severity of blast with a per cent reduction of 61 over control under glass house conditions. Two field trials were also conducted to evaluate the efficacy of *B. subtilis* var. *Amyloliquefaciens (*FZB24) bioformulation against blast under natural field conditions. The treatment with *B. subtilis* (FZB24) as seed treatment at 4 g/kg + seedling dip at 4 g/l + soil application at 500 g/ha + foliar spray at 500 g/ha was found to significantly reduce the severity of blast with a reduction of 87.6% over control plots. The application of *B. subtilis* var. *Amyloliquefaciens* (FZB24) recorded a higher grain and straw yield of 5025 kg/ha and 7051 kg/ha respectively.

krishnagendra@gmail.com