HOST PLANT RESISTANCE AGAINST INSECT PESTS: ONE APPROACH ACROSS MULTIPLE LEGUME CROPS

INTRODUCTION

Insect pests are among the important factors affecting grain legume production in the dry areas. The control strategy adopted by the CGIAR Centers has been the use of integrated pest management (IPM) where host plant resistance is the foundation of this strategy. The CGIAR centers hold thousands of legume accessions in their genebanks, which are routinely screened for pests resistance in hotspots and under artificial infestation in greenhouses. The work on leaf miner, an important pest of chickpea in North Africa and West Asia (El Bouhssini et al., 2018), will be used in this poster to illustrate the HPR work on grain legumes.

MATERIALS AND METHODS

- The focused Identification of germplasm strategy (FIGS) I is used to develop sub-sets from the genebanks to screen for resistance to Leaf miner.
- The identified sources of resistance are shared with breeders to make crosses for the development of resistance germplasm and also mapping populations to identify chromosomal region(s) and molecular markers linked to the resistance.
- The FIGS sub-sets, breeding lines and mapping populations are screened in hotspots using spring planting to allow for high infestation by the Leaf miner.
- Through HPLC analysis, we determined the oxalic acid concentrations in susceptible and resistance material to see if there is correlation with resistance to Leaf miner.

RESULTS

- Several sources of resistance to Leaf miner identified in the ICARDA gene bank using FIGS approach.
- Seven chickpea breeding lines resistant to chickpea leaf miner developed and registered in the Journal of Plant Registrations (2007).
- Oxalic acid concentration in leaves was found correlated with resistance to Leaf miner.
- Couple markers identified and are being validated.

REFERENCES