

# Breeding for post emergence herbicides in Cool season food legumes.

Marrakesh, 18-20- 2016

**Fouad Maalouf, Somanagouda Patil, Karthika Rajendra” Aladdin  
Hamwieh, Aakash Goyal, and Shiv Kumar**



# ICARDA Mandate crops

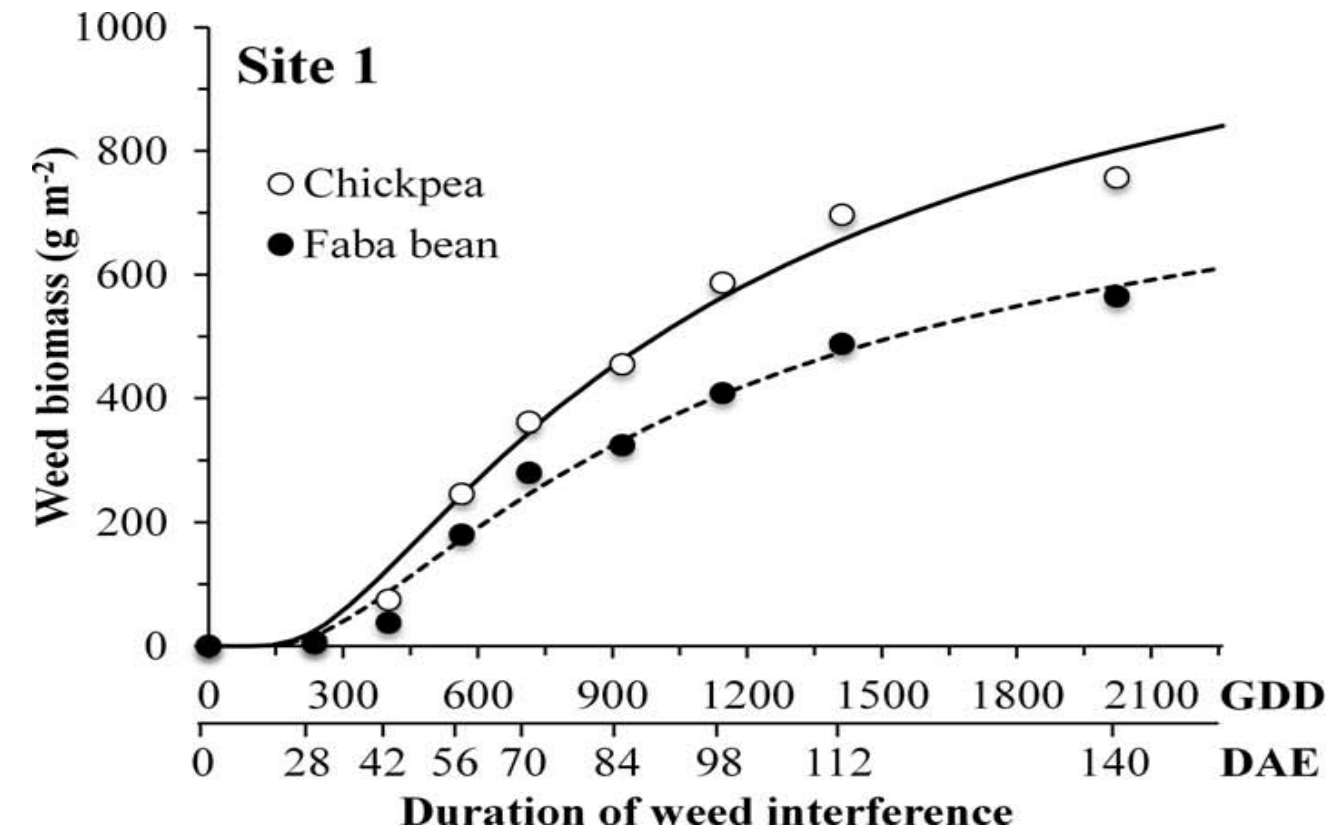
- Cool season food legumes has slow grows rate during winter



- Weeds have competitive grows with Food legumes and they reduce yield return up to 80%
- Labor-intensive smallholder farming systems in developing countries



- Scarcity of effective post emergence herbicide molecules is one of the most serious constraints to legume production



# Weeds are a major problem in Morocco

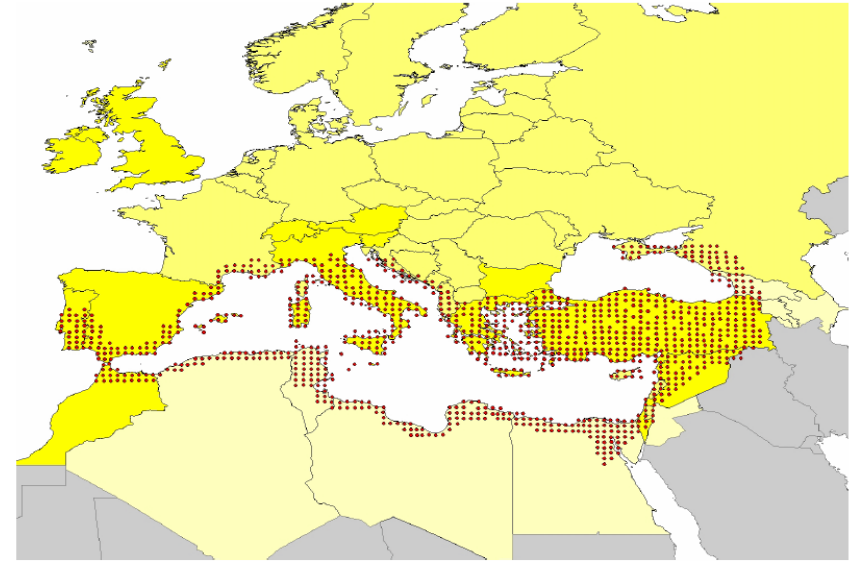


RESEARCH  
PROGRAM ON  
Grain Legumes

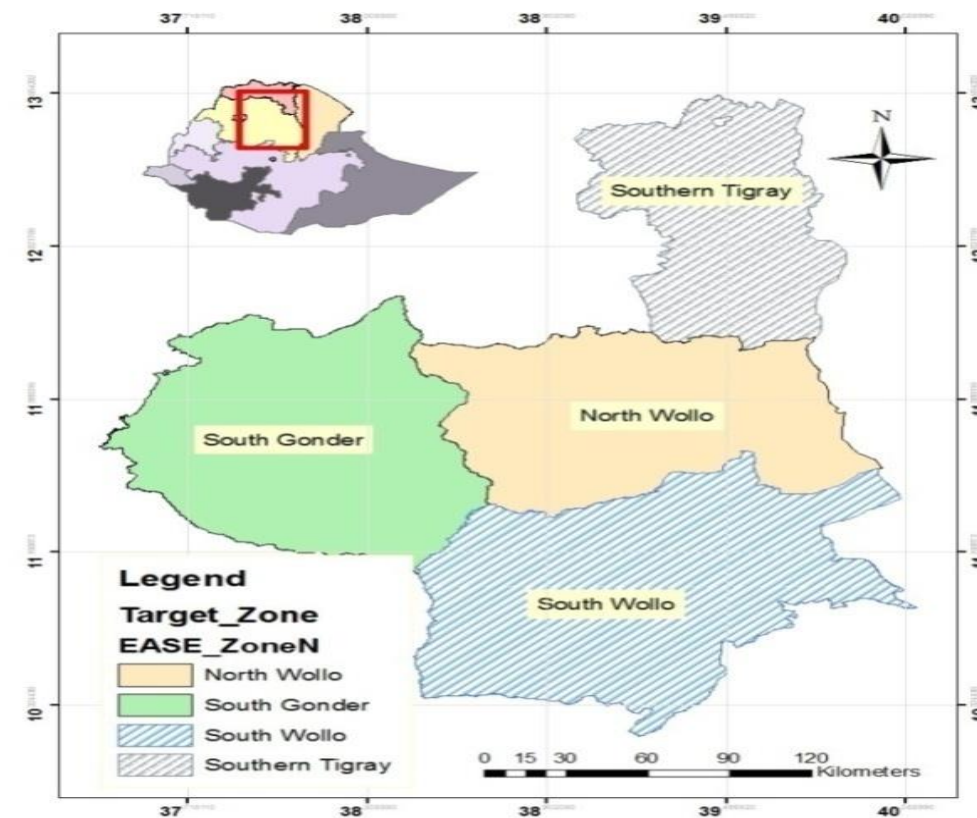
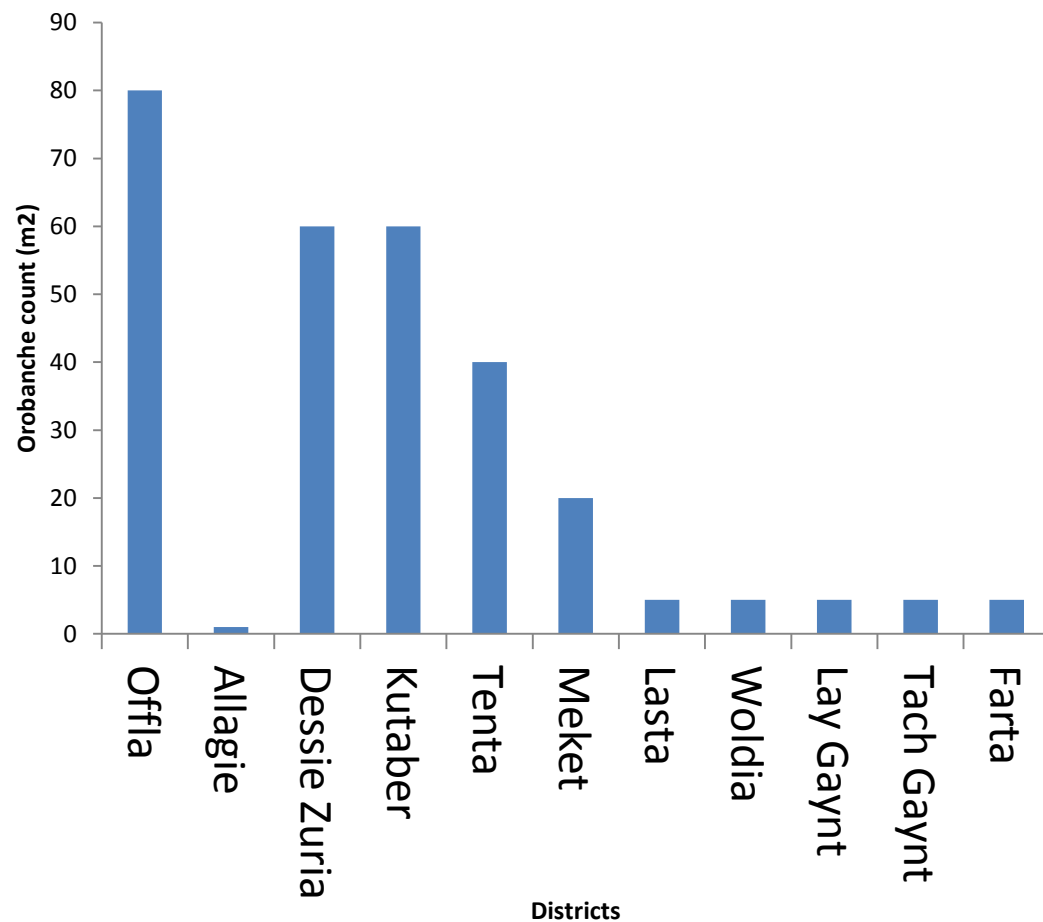


# Parasitic weeds threatened food legumes

- **>16 million ha cultivated land serious affected in Mediterranean region**



# Orobanche crenata in Ethiopia



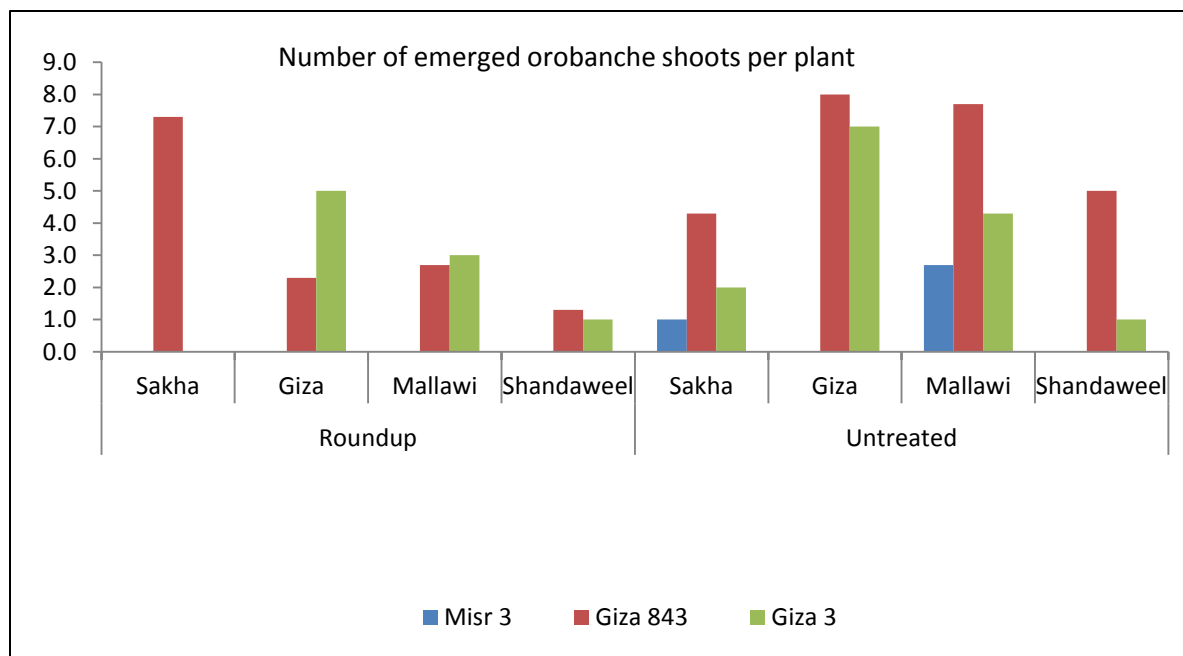
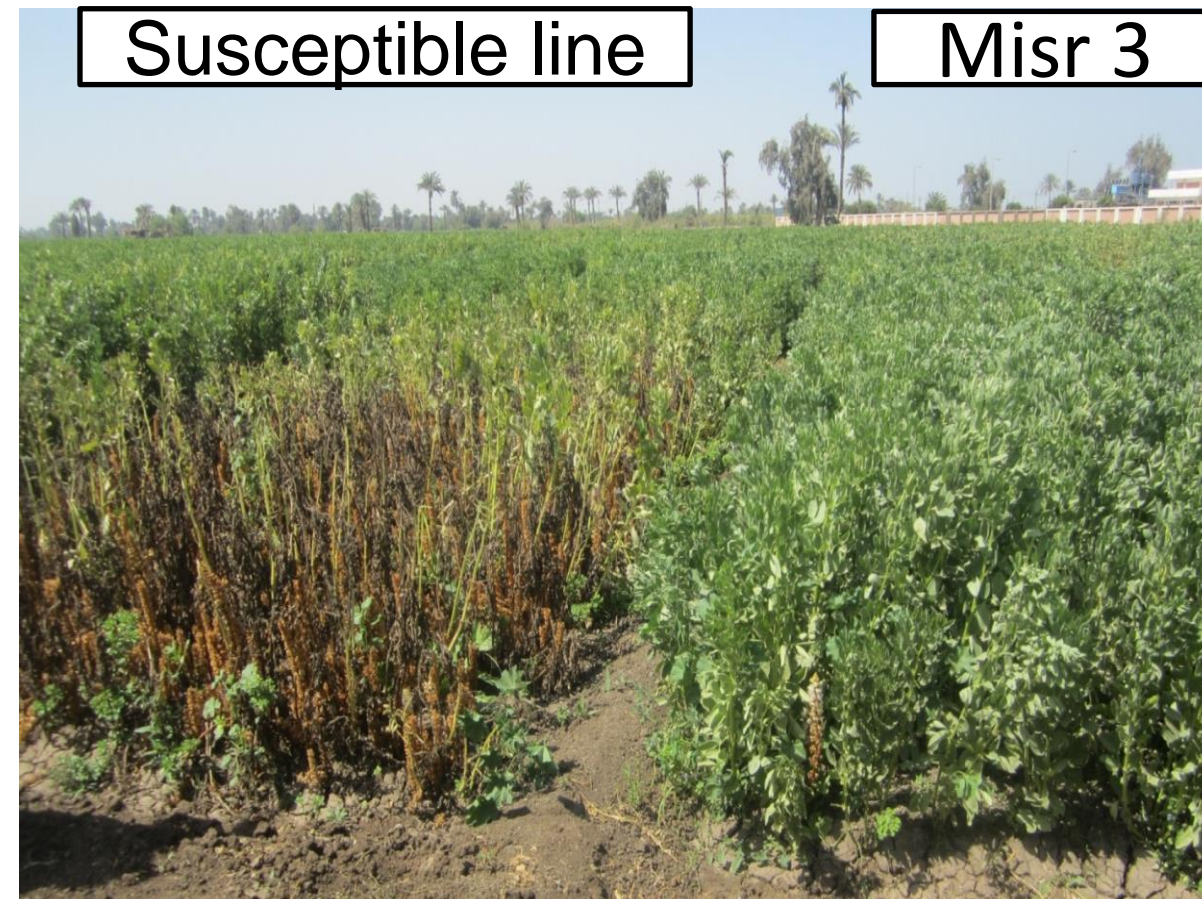


## Screening for orobanche resistance in

- Douyat : Lentil and Faba bean
- Sids : Faba bean

# OROBANCHE RESISTANCE

Vareities	Country
Giza843, Misr3	Egypt
Najah Chourouk	Tunisia
Hachenge (ILB 4358)	Ethiopia
Giza843 (in pipeline)	Sudan



	Mu-38		Mu-418	
	PTHT	NGP	PTHT	NGP
T1	1.26	0.19	1.59	1.09
T2	1.61	1.00	1.79	1.58
T3	1.86	1.58	2.9**	1.58

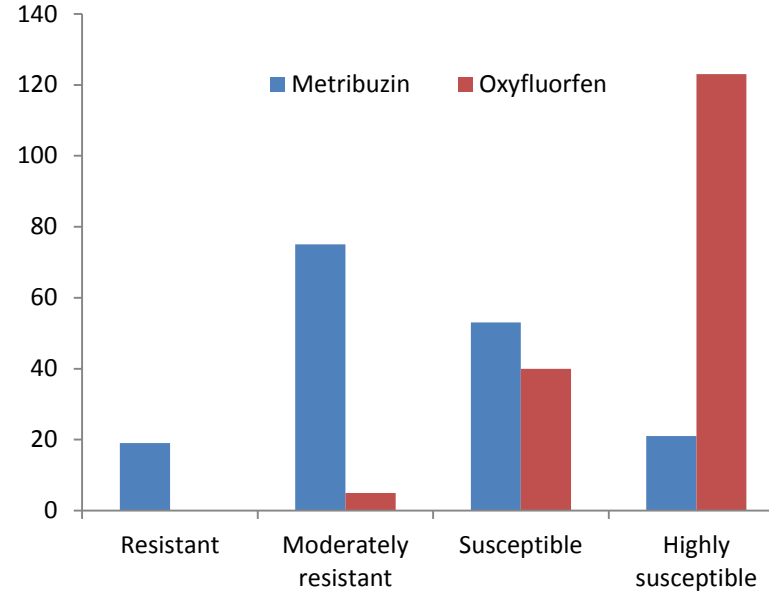
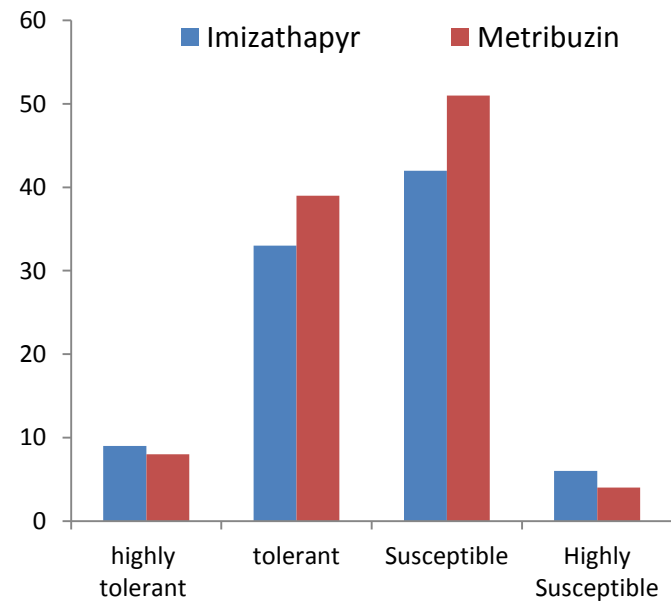
**Observed t student values** treatment of difference of the means of plant height and pod number between treatment T3 and the control

PTHT: Plant height of treated plot compared with the control (none treated plot)

NGP: number of grain per plant of treated plots compared with the control (none treated plot)



# Screening faba bean for multiple herbicide

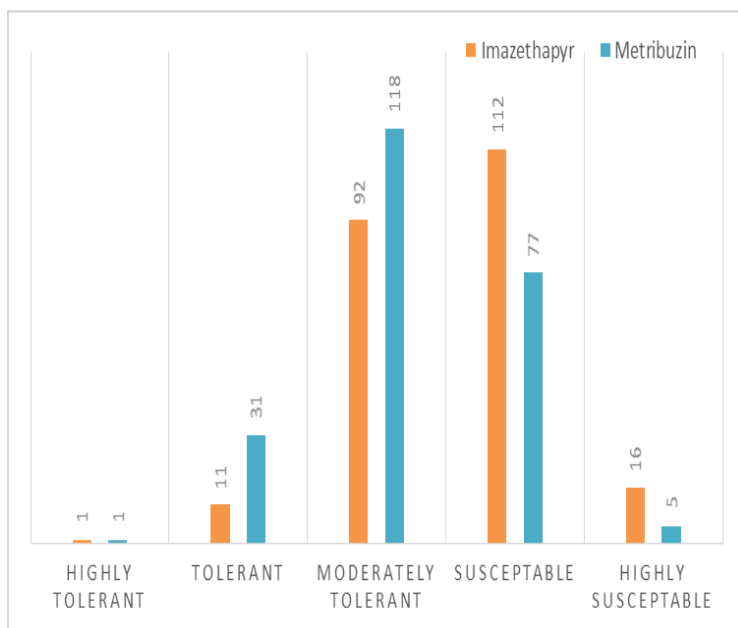


300 faba bean lines were screened against various post-emergence herbicides

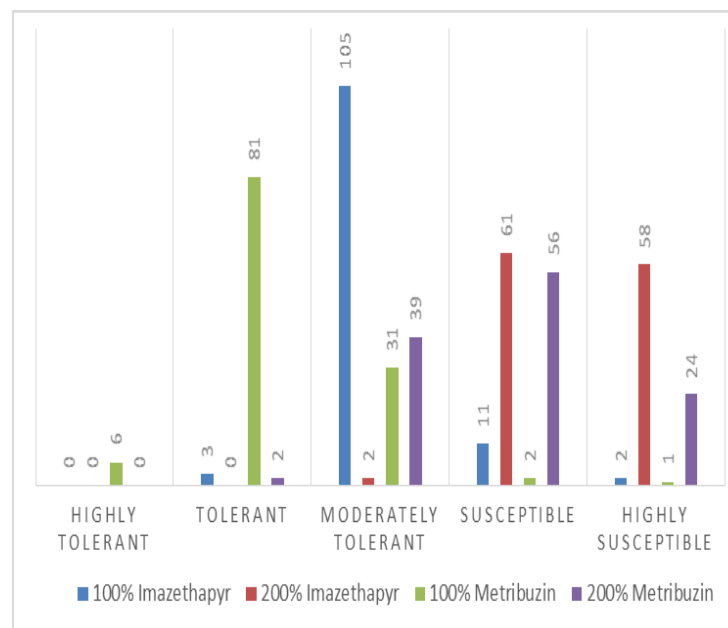
10 lines were found highly tolerant to Imazethapyr, and 8 to Metribuzin



# Herbicide tolerance in Lentils



Terbol



Marchouch-

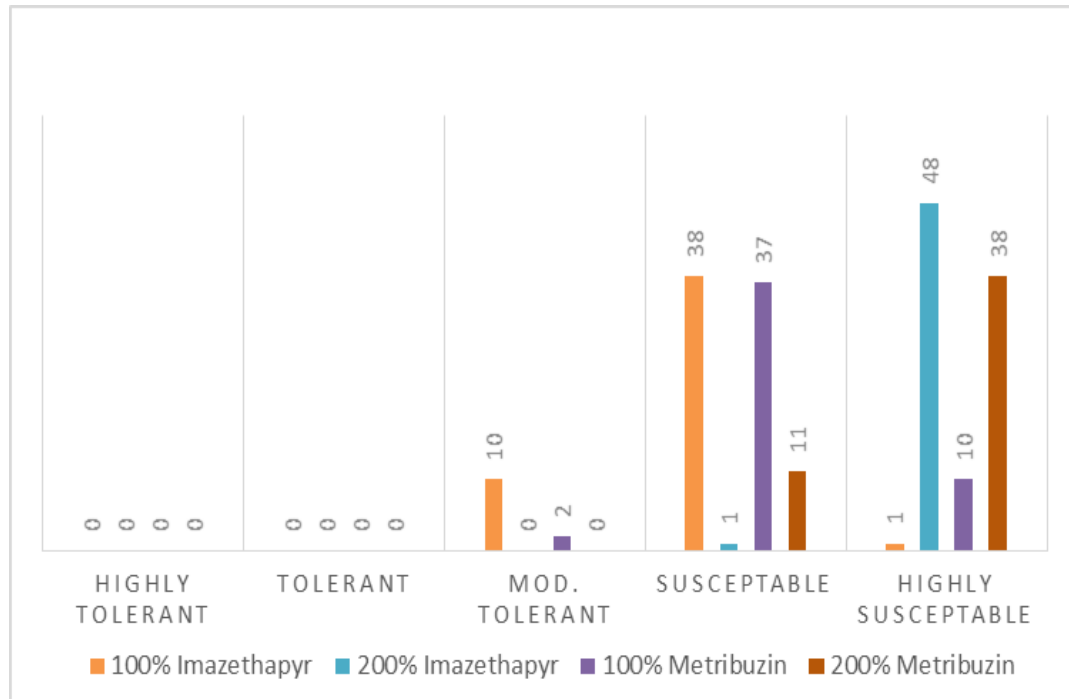


Highly tolerant genotypes identified included  
ILL8112, ILL5988, ILL8009 and ILL4994 for Imazethapyr

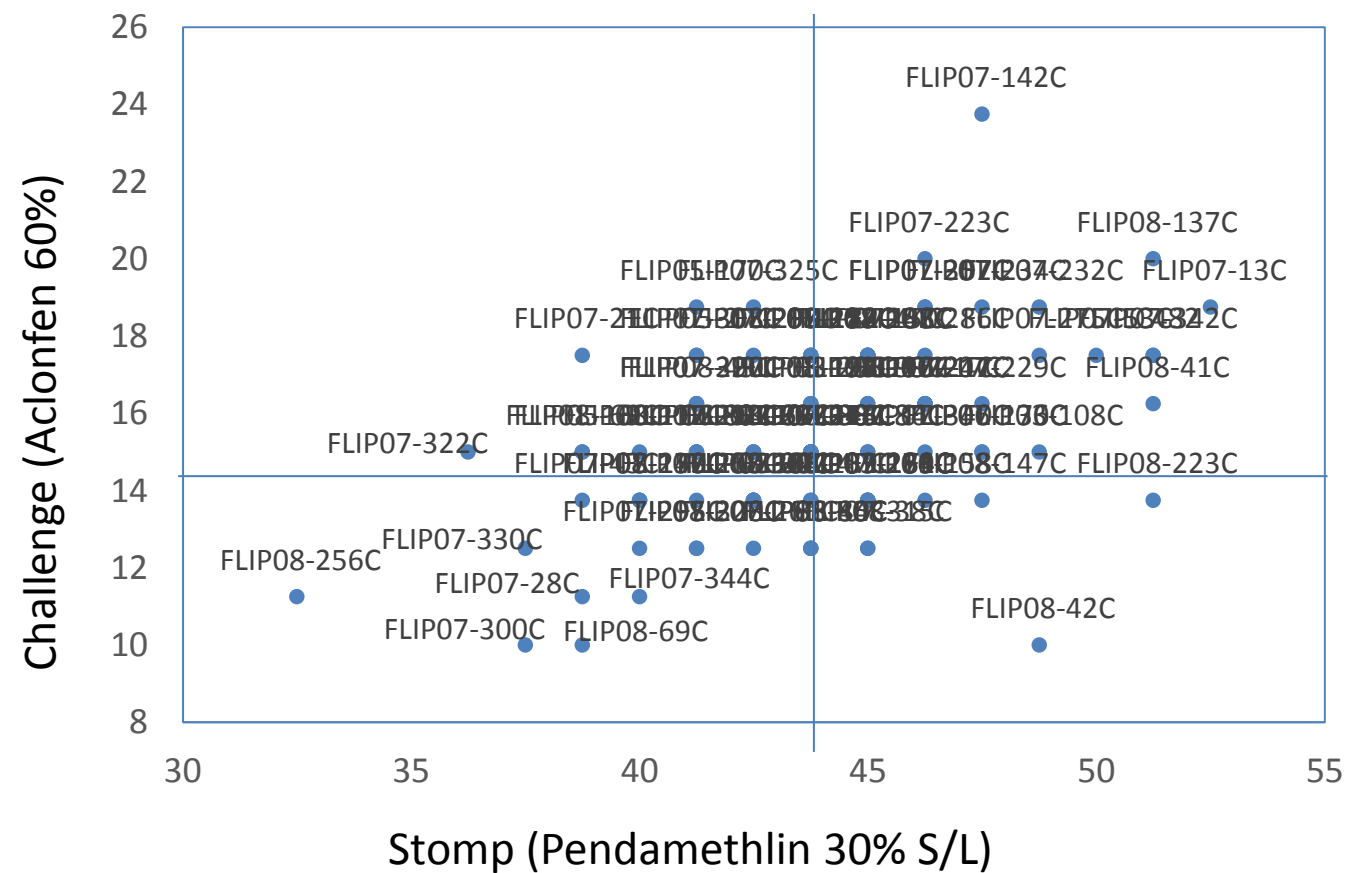
ILL1005, ILL0462, ILL5531, ILL6434, ILL0195, GCP10 and 06S  
53110-02

# Herbicide tolerance in chickpea

- 10 genotypes were found moderately tolerant to Imazethapyr and
- 2 genotypes moderately tolerant to Metribuzin.



# Herbicide-tolerance in chickpea (Cont'd)



Six genotypes FLIP07-33C, FLIP08-256C, FLIP07-28C, FLIP07-344C, FLIP08-69C and FLIP08-69C showed least percentage of plant damage when using herbicide Stomp and challenge.



Iran 2013



Morocco 2013



Lebanon 2013

Genotype	Ave.
FLIP08-115C	2.5
FLIP07-247C	7.5
FLIP08-75C	10

# Chickpea tolerance to Metribuzin

**Variation for herbicide tolerance in chickpea. Left to right Line #1 (score 3.0), Line #2 (score 5.0), Line #3 (score 4.0), Line #4 (score 2.0) and Line #5 (score 2.0).**



**Gaur et al. 2013 (Agronomy)**

Thank you for your attention.

