GL-FP1.4.6.1: Evaluation of weed and water management practices in chickpea and lentil varieties

Deliverable #5346: Number of weed and water management practices

Experiment 1: Chemical weed management in winter and spring chickpea

Title	:	Chemical weed management in winter and spring chickpea
Objectives	:	Identify the effective herbicides for weed control in winter and spring chickpea Study the weed flora in winter and spring chickpea
Outcomes	:	Effective and economic doses of herbicide for weed control identified Integrated weed management modules developed for winter and spring chickpea
Materials and methods	:	A field experiment was conducted at ICARDA experimental station, Marchouch, Morocco. Eight treatments consisted with Pendimethaline @ 1.0 kg a.i./ha (PE), Pendimethaline @ 1.0 kg a.i./ha (PE) + Fluazifop-P-butyl @ 120 g a.i./ha (PoE), Pendimethaline @ 1.0 kg a.i./ha (PE) + Imazethapyr @ 75 g a.i/ha (PoE), Imazethapyr @ 75 g a.i/ha (PE), Imazethapyr @ 75 g a.i/ha (PE) + Fluazifop-P-butyl @ 120 g a.i./ha (PoE), Imazethapyr @ 75 g a.i/ha (PE) + Imazethapyr @ 75 g a.i/ha (PoE), weed free check and weedy check were laid out in randomized block design with three replications in both winter and spring season.
Results	:	The close proximity of weeds and their number cause suboptimal absorption of growth factors resulting in reduction of crop growth and yield. Similar to previous year results, major weed flora was observed during winter than spring. Results observed that herbicide application considerably increased chickpea yields when compared to the weedy check. Of the herbicide combinations being tested, Pendimethaline @ 1.0 kg a.i./ha (PE) + Fluazifop-P-butyl @ 120 g a.i./ha (PoE) was identified as the most effective herbicide combination for weed control in chickpea. However, a phytotoxic effect of Imazethapyr was observed in both season. Further research involving higher plant densities and supplemental weed control using the herbicide, Fluazifop-P-butyl in conjunction with other pre- and post-emergence herbicides would provide valid conclusions in this current study.  Picture 1: General view of the experiment

Experiment 2: Supplementary irrigation in lentil genotypes

Title	**:**	Supplementary irrigation in lentil genotypes
Objectives	**:**	Evaluate the influence of supplementary irrigation on lentil genotypes
Outputs	**:**	Productive and water use efficient lentil genotypes identified
Materials and methods	**:**	An experiment was carried out at ICARDA experimental station, Marchouch, Morocco. 24 lentil genotypes (ILL4400; ILL5582; ILL5588; ILL5883; ILL6002; ILL6246; G7= ILL6994; G8= ILL7010; ILL7947; ILL7979; ILL8068; ILL8110; ILL8128; ILL8614; ILL8620; ILL10690; Bakria; Hamaria; Zaaria; Abda; Chakkouf; Bichette; L24; L56) were evaluated under three supplementary irrigation (SI) at three levels [I1= SI at flowering + pod filling stage, I2= SI at flowering, I3= without SI (control)].
Results	**:**	The supplementary irrigations at flowering and pod filling stage was compared with non-irrigated cultivation (ranfed). The climatic conditions during the crop growing season were characterized by a remarkable drought in Morocco with only 207 mm annual rainfall. The results indicated that lentil grain and biomass yield increased with increased supplementary irrigation. The highest seed and biological yield obtained by supplementary irrigation at flowering + pod filling stage in the lentil genotypes. All the 24 genotypes showed a higher yielding potential in two supplementary irrigation conditions reaching values from 1340 to 2711 kg/ha and in one supplementary irrigation (1060 to 2022 kg/ha) as compared to no irrigation i.e. rainfed (834 to 1676 kg/ha). Supplementary irrigation increased the yield of these genotypes and this result can be explained with the limited moisture during reproductive stage of the lentil.