

### CA 5.5: Barley for Africa and Asia - Multi-purpose barley production technologies for food, feed and fodder in the dry regions of Africa & Asia (Barley for Africa & Asia)

**Activity 5.5.1:** Establishment and standardization of micro-malting facility at ICARDA, Morocco, for evaluation of malting-quality traits

The decentralization budget to ICARDA provided under Dryland Cereals has been effectively utilized for establishing the State of Art malting quality laboratory at ICARDA Rabat, Morocco. This will provide an opportunity to in house analyze the grain samples at ICARDA and will generate extremely useful information on parental lines, fixed germplasm as well as small samples from early generations in breeding program. The malting now can be done from a sample range of 100 g (micro malting) to 12 Kg (pilot scale) providing the option to the breeding program. The other instruments for analysis of the malting traits like NIR grain analyzer, San++ for malt diastatic power, wort viscosity and beta glucan content etc. have been acquired and being utilized at ICARDA Rabat, Morocco to analyse the samples and generate useful information about the marketing potential as malt type barley with industry.



**Table 5.5.1: Facilities installed in barley quality laboratory at ICARDA Rabat with support from CRP Dryland Cereals.**

Instrument	Make	Purpose	Amount*
Automatic Micro malting System	Phoenix Australia	To make malt from barley grain under controlled temperature and humidity	AUD\$137,573
Malt Mashing bath	Phoenix Australia	To analyse the malt extract	Inclusive in MM system
San++ Analyser	Scalar, Netherlands	To analyse the malt diastatic power, beta glucan, wort viscosity, and soluble nitrogen	1,100,000 MAD
Chemicals for San ++ analysis	Sigma	As above	52630 MAD
Malt friability meter	Pfeuffer Germany	To analyse the malt friability	43000 MAD
Sortimat	Pfeuffer Germany	To analyse the grain uniformity	35000 MAD
Buhler disc mill	Buhler	EBC specified thin and coarse malt grinding mill	7803 Euro
NIR System for barley grain and malt traits	Foss	To have non-destructive analysis of malt and grain traits	470800 MAD
Granomat	Pfeuffer Germany	Hectoliter weight instrument for small samples	59800 MAD
Beta glucan Kit	Megazyme	Beta glucan estimation kits	1845 Euro
Cold water bath	Nuve Turkey	Wort extract measurement	43000 MAD
Seed counter	Contador	Laboratory Seed counting	5048 Euro

\*handling cost may be extra and not included in the amount

**Publications:**

12. V. Kumar, R.P.S. Verma, A.S. Kharub, D. Kumar, and I. Sharma. 2016. Malt barley research in India and future prospects. Abst. In: 12<sup>th</sup> International Barley Genetics Symposium. 26-30 June 2016. Minneapolis, MN. USA. Pp. 102.