

Activity 2.5.1.4-Improvement of dual purpose barley for forage and straw for livestock

A total of 660 barley accessions representing land races, advanced genotypes and cultivars from different regions of the world were screened for straw traits like dry matter, Ash content, organic matter, nitrogen, crude protein, NDF, ADF and ADL contents in percent. The accessions were part of two association mapping panels constituted at ICARDA and also being phenotyped for several other traits. The straw samples were collected from Marchouch, Morocco and supplied to ICARDA Ethiopia office for NIR analysis in ILRI laboratory. The range and mean value for each trait are given below, which indicates that variability is present for several traits and these lines can be utilized for further dual purpose barley improvement in barley program at ICARDA and NARS.

Table 2.12: Barley lines with better straw quality traits selected for forage trial from 660 genotypes evaluated for straw quality traits.

ILRI lab ID	Project Sample No.	DM(%)	Ash(%)	OM(%)	N(%)	CP(%)	NDF(%)	ADF%	ADL(%)
72000	Fonago244	90.00	7.50	92.50	0.67	4.22	70.02	44.61	5.61
71847	Fonago90	90.30	7.18	92.82	1.17	7.29	72.15	45.77	6.19
72078	Furat-2	89.94	10.47	89.53	0.84	5.24	72.49	49.49	7.19
71803	Fonago46	90.50	7.46	92.54	0.89	5.54	73.52	46.92	6.17
71791	Fonago34	90.26	8.27	91.73	0.75	4.66	73.82	48.53	6.47
72001	Fonago245	90.34	7.92	92.08	0.63	3.93	73.95	48.58	6.62
71866	Fonago109	90.25	8.13	91.87	0.97	6.04	74.20	47.49	6.85
71759	Fonago2	90.21	8.16	91.84	0.61	3.81	74.20	48.23	6.65
71834	Fonago77	90.39	7.82	92.18	0.86	5.40	74.97	48.93	6.76
71849	Fonago92	89.94	8.34	91.66	1.02	6.37	75.18	51.36	8.09
72079	Fourat-03	89.85	12.09	87.91	0.90	5.64	75.20	52.98	8.57
72066	Fonago310	91.13	6.93	93.07	1.15	7.18	75.51	48.25	7.02
71863	Fonago106	89.16	6.93	93.07	0.90	5.63	75.62	49.27	7.78
72081	V Morales	89.94	11.85	88.15	0.84	5.24	75.81	55.21	8.65
71772	Fonago15	89.64	6.97	93.03	0.84	5.28	76.36	49.47	6.85
71832	Fonago75	90.44	7.51	92.49	0.89	5.54	76.51	50.13	6.60
71845	Fonago88	90.12	7.43	92.57	0.85	5.34	77.86	49.77	7.65
71836	Fonago79	90.52	6.31	93.69	0.72	4.47	77.97	51.88	7.26
	Mean	90.46	8.76	91.24	0.50	3.10	78.96	54.38	8.41
	Max	91.32	12.73	93.92	1.17	7.29	84.35	60.60	10.34
	Min	89.16	6.08	87.27	0.23	1.43	70.02	44.61	5.41

The results indicate that there is much variability present for all traits in germplasm except dry matter and % organic matter, which may be exploited in barley breeding.

There is a need to further verify these findings for another year/ more locations for selected genotypes identified in the study.

Publications:

2. J. Singh, C. Lal, D. Kumar, A. Khittal, L. Kumar, V. Kumar, R. Malik, S. Kumar, A. S. Kharub, R.P.S. Verma and Indu Sharma. 2016. Widening the Genetic Base of Indian Barley Through the Use of Exotics. *International Journal of Tropical Agriculture*, 34 (1), 1-10.