EVALUATION OF OAT (*AVENA SATIVA* L.) GENOTYPES FOR FODDER YIELD UNDER DIFFERENT CUTTING REGIMES

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Oat (*Avena sativa* L.) in India is normally grown for fodder purposes. Fresh fodder can be harvested at one time or at different intervals depending upon the need. Accordingly, the present investigation was formulated to assess the performance of some genotypes of oat (*Avena sativa* L.) for fodder under single cut and under two cut systems. Studies on characterization and evaluation of one and two-harvest of oats in oats have been carried out earlier by Arora and Jhorar (2007) and Arora (2013) whereas, Arora et. al. (2009) made an assessment of fodder production potential of oat varietal trials under single cut system over the seasons. Arora and Jhorar (2005) and Jhorar et. al. (2009) evaluated the fodder production potential in multi-cut oats.

Two separate trials on oats, namely; Large Scale Trial (Single Cut), Large Scale Trial (Two Cuts), were conducted at CCS Haryana Agricultural University, Hisar, India during winter season of 2012-13. Both the trials were laid out in Randomized Complete Block Design with three replications having plot size of 3x4 m^2 with the spacing of 25 cm between rows. All the recommended package of practices was followed to grow a successful crop. The Large Scale Trial (Single Cut) and the Large Scale Trial (Two Cuts) were sown on October 29, 2012 and on October 30, 2012, respectively. The Large Scale Trial (Single Cut) was harvested for green fodder at 50% heading (about 90-100 DAS) whereas, the Large Scale Trial (Two Cuts) was harvested for first cut of fresh green fodder after 55-60 DAS and the second cut was taken at 50% heading stage. The data thus collected on fodder and seed yield was statistically analyzed and the trial wise results are presented hereunder:

i) Large Scale Trial (Single cut):

In this trial, thirteen genotypes were evaluated against three check cultivars namely; OS 6, OS 7 and Kent (Table 1). Significant differences were observed among genotypes for both Green Fodder Yield (GFY) and Dry Matter Yield (DMY). The results presented in Table 1 clearly revealed that under single cut system, five genotypes namely, OS 403 (616.42 q/ha), OS

405 (610.87 q/ha), OS 377(608.89 q/ha), OS 406 (602.54q/ha) and OS 410 (594.21q/ha) were significantly higher in GFY as compared to the best check Kent (494.25 q/ha), while for DMY five genotypes namely, OS 419 (127.06 q/ha), OS 363 (123.40 q/ha), OS 403 (123.28 q/ha), OS 405 (122.17 q/ha) and OS 377 (121.62 q/ha) were significantly better than the best check Kent (98.85 q/ha). The range of variation under single cut system for GFY was 394.29 to 616.42 q/ha whereas, for DMY it was 43.04 to127.06 q/ha. These high fodder yielding genotypes can be released as cultivars or they can be used in breeding programme to develop high fodder yielding genotypes in oat.

ii) Large Scale Trial (Two Cuts):

Twelve genotypes were evaluated against three check cultivars namely; UPO 212, Kent and HJ 8 (Table 2). Significant differences among genotypes were observed for GFY at second cut and on the basis of total of two cuts; however, the differences were non-significant at first cut. At first cut, two genotypes OS 385 (166.60 q/ha) and OS 406 (163.82 q/ha) were numerically higher in GFY than the best check HJ 8 (155.49 q/ha). At second cut, seven genotypes namely OS 406 (549.78 q/ha), OS 385 (541.45 q/ha), OS 409 & HFO 424 (513.68 q/ha), OS 417 & OS 421(505.35 q/ha) and HFO 488 (497.02 q/ha) were numerically higher than the best check UPO 212 (494.25 q/ha). On the basis of total of two cuts, one genotype OS 406 (713.60 q/ha) was significantly superior whereas, five genotypes namely; OS 385 (708.05 q/ha), HFO 24 (658.07 q/ha), OS 409, OS 417 & OS 421 (649.74 q/ha) gave numerically higher GFY than the best check UPO 212 (641.41 q/ha). As far as DMY is concerned, four genotypes namely OS 421 (20.21 q/ha), OS 385 (19.99 q/ha), OS 409 (19.05 q/ha), and HFO 69 (18.66 q/ha) could numerically surpass the best check cultivar UPO 212 (17.66 q/ha) at first cut however, at second cut as well as on the basis of total of two cuts none of the genotypes could surpass the best check cultivar UPO 212 (88.96 q/ha & 106.62 q/ha). The range of variation under two cut systems for GFY was 124.95 to 166.60 q/ha (First cut), 430.38 to 549.78 q/ha (Second cut) and 585.87 to 713.60 q/ha (Total of two cuts), whereas, for DMY it was 13.88 to 20.21 q/ha (First cut), 54.98 to 88.96 q/ha (Second cut) and 71.36 to 106.62 (Total of two cuts).

It was quite obvious that two cut systems were much better in terms of harnessing more green fodder as compared to single cut. Moreover, one can get green fodder first at 55-60DAS and second cut at heading stage, thus extending the availability of green fodder under two cut systems.

References

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Table 1: Mean performance of oat genotypes in Large Scale Trial (Single Cut) for fodder yield

Sr. No.	Genotypes	GFY (q/ha)	Rank	DMY (q/ha)	Rank
1	OS 346	555.33	7	99.96	7
2	OS 363	560.89	6	**123.40***	**2**
3	OS 377	**608.09***	**3**	**121.62***	**5**
4	OS 403	**616.42***	**1**	**123.28***	**3**
5	OS 405	**610.87***	**2**	**122.17***	**4**
6	OS 406	**602.54***	**4**	96.41	9
7	OS 410	**594.21***	**5**	106.96	6
8	OS 418	472.03	13	94.41	12
9	OS 419	488.69	10	**127.06***	**1**
10	OS 421	474.81	11	94.96	11
11	HFO 24	394.29	16	70.97	15
12	HFO 69	416.50	15	87.47	14
13	HFO 371	430.38	14	43.04	16
14	OS 6 (Check)	491.47	9	88.46	13
15	OS 7(Check)	477.59	12	95.52	10
16	Kent(Check)	**494.25√**	**8**	**98.85√**	**8**
	Mean	**518.02**		**99.66**	
	SEm±	**25.39**		**4.86**	
	CD at 5%	**73.69**		**14.12**	
	CV (%)	**8.49**		**8.45**	
	Range	**394.29 to 616.42**		**43.04 to127.06**	

√–Best Check

***Significantly better than the best check.**

Table 2: Mean performance of oat genotypes in Large Scale Trial (Two Cuts) for Green Fodder Yield and Dry Matter Yield

Sr. No.	Genotypes	GFY (q/ha)						DMY (q/ha)					
		I cut	Rank	II cut	Rank	Total	Rank	I cut	Rank	II cut	Rank	Total	Rank
1.	OS 346	152.72		469.26		621.98		15.27		65.70		80.97	
2.	OS 385	**166.60**	**1**	**541.45**	**2**	708.05	**2**	**19.99**	**2**	64.97		84.96	
3.	OS 406	**163.82**	**2**	**549.78**	**1**	**713.60***	**1**	16.38		54.98		71.36	
4.	OS 409	136.06		**513.68**	**3**	649.74	**4**	**19.05**	**3**	82.19		101.24	
5.	OS 414	138.83		502.58	5	641.41	5	13.88		60.31		74.19	
6.	OS 417	144.39		505.35	4	649.74	4	17.33		60.64		77.97	
7.	OS 419	144.39		477.59		621.98		17.33		57.31		74.64	
8.	OS 421	144.39		505.35	4	649.74	**4**	**20.21**	**1**	70.75		90.96	
9.	HFO 24	144.39		**513.68**	**3**	658.07	3	17.33		71.92		89.25	
10.	HFO 69	**155.49**	**3**	430.38		585.87		**18.66**	**4**	60.25		78.91	
11.	HFO 371	138.83		458.15		596.98		16.66		54.98		71.64	
12	HFO 488	124.95		497.02	6	621.97		14.99		69.58		83.57	
13	UPO 212 (Check)	147.16		**494.25√**	**7**	**641.41√**	**5**	**17.66√**	**5**	**88.96√**	**1**	**106.62√**	**1**
14	Kent (Check)	147.16		460.93		608.09		14.72		64.53		79.25	
15	HJ 8 (Check)	**155.49√**	3	472.03		627.52		15.55		75.53		91.08	
	Mean	**146.98**		**492.77**		**639.74**		**17.00**		**66.84**		**82.42**	
	SEm±	**8.93**		**22.05**				**0.96**		**3.21**		**3.29**	
	CD at 5%	**NS**		**64.22**				**2.80**		**9.34**		**9.59**	
	CV (%)	**10.52**		**7.75**				**9.78**		**8.31**		**6.80**	
	Range	**124.95 to 166.60**		**430.38 to 549.78**		**585.87 to 713.60**		**13.88 to 20.21**		**54.98 to 88.96**		**71.36 to 106.62**	

√–Best Check; *Significantly different from the best check.