

EFFECT OF TIME OF SOWING, SEED RATE AND PLANTING GEOMETRY ON GREEN FORAGE YIELD AND QUALITY OF FODDER OAT

B. G. SHEKARA* AND H. C. LOHITHASWA

AICRP on Forage crops
Zonal Agricultural Research Station,
V. C. Farm, Mandya, Karnataka-571405 (India)
(*e-mail : shekara_gundanaik@rediffmail.com)
(Received: 29 August, 2012, Accepted: 15 April, 2013)

SUMMARY

Present study was carried out during **rabi** seasons, 2009-10 and 2010-11 at at Zonal Agricultural Research Station, Vishweswaraiah Canal Farm, Mandya (Karnataka) to find out optimum time of sowing, seed rate and planting geometry for higher green forage yield and quality. The results revealed that sowing oat during 2nd fortnight of October recorded significantly higher green forage, dry matter and crude protein yield. The seed rate of 120 kg/ha at 25cm x 10 cm spacing exhibited significantly higher green forage, dry matter and crude protein, and also recorded higher net monetary and benefit : cost ratio.

Key words : Oat, sowing, time seed rate, planting geometry, green forage yield and quality

Oats (*Avena sativa* L) is an important winter season forage crop. Extensively grown for dairy industry in India. Its excellent quick growth habit, high palatability, short duration, better nutritive value with high green fodder yield offer an opportunity to cultivate this crop. Even in better adaptability of Oats in southern parts of the country the spread of this crop is limited because of lack of knowledge on production package apart from limitation of weather. Keeping these things in view the present investigation was carried out to find out optimum time of sowing seed rate and planting geometry for higher green forage yield and quality.

The two experiments were conducted at Zonal Agricultural Research Station, Vishweswaraiah Canal Farm, Mandya (Karnataka) during **rabi** seasons of 2009-10 and 2010 – 2011 under protective irrigation. The soil of the experimental site was red sandy with pH 7.2, organic carbon 0.42%. The available nitrogen (220 kg ha⁻¹), phosphorus (23.25 kg ha⁻¹) and potassium (168.98 kg ha⁻¹) was present in soil. The first experiment was laid out in factorial randomized design with three replications. The experiment consisted of 15 treatments, including three planting geometry (20cm x 10cm, 25cm x 10cm and 30cm x 10 between rows and between seeds within the rows respectively), five seed rate (70, 80,

90, 100 and 120kg ha⁻¹). The crop was sown during 2nd fort night of October in both the years. The second experiment was laid out with randomized complete block design consisted of seven time of sowings viz., D₁-1st fort night of September D₂-2nd fort night of September, D₃-1st fort night of October D₄-2nd fort night of October, D₅-1st fort night of November and D₆-2nd fort night of November and D₇-1st fort night of December and the recommended dose of nitrogen (100 kg/ha), Phosphorus (40 kg/ha) and potassium (40 kg/ha) was applied in the form of urea, single super phosphate and murate of potash, respectively for both the experiments. The entire quantity of phosphorus and potassium and 50 per cent of nitrogen was applied at the time of sowing. The remaining 50 per cent of N was top dressed at 30 days after sowing. The cultural operations and other production practices were followed as per recommendations. The crop was harvested at 50 percent flowering stage. The green forage yield recorded per plot converted in to hectare basis and expressed in quintals. The known quantity of green fodder was dried under sun and estimated dry matter production and same samples were utilized for estimation of crude protein yield. The data of two years were pooled and analysed statistically for the interpretations of results.

yield. This is in accordance with the findings of Kumar *et al.*, (1997) and Singh *et al.*, (1989).

Effect of Planting Geometry

Planting geometry had significant influence on green forage, dry matter and crude protein yield. In pooled analysis planting geometry of 25cm x 10cm recorded higher green forage (308.94 q ha⁻¹), dry matter (61.81 q ha⁻¹) and crude protein yield (4.91 q ha⁻¹) which was on par with planting geometry of 20 cm x 10 cm (303.04 q, 59.11 q and 4.61 q ha⁻¹ respectively). The trend was similar during both the years (Table-2). This

TABLE 3

Economics as influenced by Agro techniques in fodder oat (mean of 2 years)

Treatments	Gross returns (Rs/ha)	Net returns (Rs/ha)	B : C ratio
Time of sowing			
1 st fortnight of September	22015	15791	3.54
2 nd fortnight of September	24429	18705	4.00
1 st fortnight of October	26860	20636	4.32
2 nd fortnight of October	28923	22699	4.65
1 st fortnight of November	26589	20365	4.28
2 nd fortnight of November	22954	16679	3.68
1 st fortnight of December	20230	14006	3.25
Seed rate (Kg/ha)			
70	19088	13165	3.22
80	20704	14681	3.43
90	22399	16276	3.67
100	23108	16885	3.71
120	24269	17846	3.78
Planting geometry			
20 cm x 10 cm	22725	15980	3.36
25 cm x 10 cm	23175	16925	3.71
30 cm x 10 cm	19575	13775	3.38

Data was not analysed statistically.

is also due to more plant population per unit area with closer spacing. The interaction was found non significant. These results are in conformity with the findings of pathan *et al.*, (2005) and Singh *et al.*, (1998).

Economics

Mean of two years data indicated that sowing oats during second fortnight of October recorded higher net monetary and benefit : cost ratio (22698 Rs/ha and 4.65 respectively). Among seed rate 120 kg ha⁻¹ recorded higher net monetary and benefit :cost ratio (17846 Rs/ha and 3.78 respectively). Planting geometry of 25cm x 10cm recorded higher net returns (16925 Rs/ha) and B:C ratio (3.71) (Table-3). The higher net monetary returns may be due to higher green forage yield. This is in conformity with the findings of Shrivastava (2000), Sushila and Giri (2000). Hence, based on the results it could be inferred that sowing fodder Oat during second fortnight of October with planting geometry of 25cm x 10cm and seed rate of 120 kg ha⁻¹ found to be optimum and economical.

REFERENCES

- Ghosh, D.C.1985 : *Indian J. Agron.*, **30** : 172-176.
 Kumar,Y., B.L. Sharma, G.L. Yadav and P.K.Sharma. 1997 : *Indian J. Agron.*, **44**: 313-315.
 Pathan, S.H., R.M. Gethe, M.R., Manjare and A.D. Kadlag,2005: *Forage Res.*, **31**:150-151.
 Shrivastava, Atul 2000 : *M.Sc.(Ag) Thesis*, JNKVV, Jabalpur
 Singh,R., B.R.Sood, V.K.Sharma and N.S.Rama, 1998 : *Indian J. Agron.* **43** : 362-366
 Singh V., J. S. Khokar, Y. P. Joshi, and S.S.Verma.1989 : *Forage Res.* **15** : 29-32.
 Sushila,R. and Giri, Gajendra, 2000 : *Biofertilizer News letter* **8** : 22-26.