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SHORT CUMMUNICATION

INTRODUCTION OF DIFFERENT GRASSES MIXED WITH LEGUME ON WASTELANDS

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SUMMARY

A trial was conducted under National Watershed Development Project for Rainfed Agriculture at village Maruwas, district Udaipur, Rajasthan, India to evaluate the effect of over-seeding of different grasses sown in pure as well as mix stand with *Stylosanthes hamata* in 3 : 1 ratio on wastelands. The results revealed that sowing of *Cenchrus ciliaris, Cenchrus setigerus, Sehima nervosum* and *Dichanthium annulatum. Chrysopogon fulvus* and *Pennisetum pedicellatum* pure as well as in mixture with *Stylosanthes hamata* in 3 : 1 ratio gave maximum dry forage yield which was significantly higher over control (no introduction). On mean basis, the extent of increase in dry forage yield was to the tune of 109 to 134 per cent. Among grass species, *C. setigerus, C. ciliaris* and *C. fulvus* grown in mixture with *S. hamata* recorded higher grass productivity on wastelands.

Key words : Sustainable, forage grasses, legumes, wasteland improvement

Improvement of wastelands for sustainable forage production is a necessity to meet the ever increasing demand for quality forage to feed growing livestock population of India. In such a situation, introduction of suitable grass+legume mixture would be helpful in improving the production, quality and distribution of the forage (Basak *et al*., 2003). The use of legume in pasture may also result in increased N content and digestibility and a well balanced mineral content of herbage, all of which are of great importance in animal nutrition. *Cenchrus ciliaris, C. setigerus, Chrysopogon fulvus, Dichanthium annulatum, Pennisetum pedicellatum, Sehima nervosum* and *Stylosanthes hamata* are higher yielder, palatable and nutritious grasses commonly employed for over-seeding the degraded lands. The potentialities of these grasses have already been worked out in arid and semi-arid regions. Hence, an effort was made to study the influence of over-seeding of different grasses in pure as well as in mixture with legume on grass productivity of wastelands.

A field experiment was conducted in 1996 and the same was continued up to 1999 on village common lands (charnot) which are degraded and devoid off any grass cover except small patches of *Aristida* spp. at National Watershed Development Project on Rainfed Agriculture site losing village Maruwas 35 kilometers from district Udaipur of Rajasthan. It falls under Sub Humid Southern Plain and Aravalli hills zone IVa. The soil was sandy clay loam with pH 7.9 having organic carbon 0.36 per cent, electric conductivity of 0.22 dS/m, available phosphorus 21.5 kg/ha and potassium 355.4 kg/ha. The experiment was laid out in RBD with three replications. The treatment consisted of pure stand of *C. ciliaris, C. setigerus, S. nervosum, D. annulatm, C. fulvus* and *P. pedicellatum* as well as in mixture with *S. hamata* in 3 : 1 ratio. These were tried along with absolute control (no introduction) thereby making 13 treatments. Seeds of above grasses were sown at the onset of monsoon in lines 50 cm apart after opening small furrows during first year of experimentation i. e. June 1996. The grasses were fertilized with 40 kg N+20 kg P_2O_5/ha. Half nitrogen and full phosphorus were applied at sowing as basal dose and remaining half nitrogen was top dressed one month after sowing with rainfall. During 1997, 1998 and 1999, the whole quantity of N was top dressed after one month of onset of monsoon. Vegetative fencing of thorns was provided to protect the area from stray cattle. The grasses were harvested in each year at maturity, sun-dried and weighed. The area received 633,

TABLE 1
Effect of over-seeding of different grasses mixed with legume on grass productivity

Treatment	Grass yield (t/ha)			
	1997	1998	1999	Mean
No introduction	0.90	1.05	0.98	0.98
C. ciliaris sole	2.12	2.32	1.92	2.12
C. ciliaris+S. hamata (3 : 1)	2.25	2.45	2.05	2.25
C. setigerus	2.28	2.42	2.02	2.24
C. setigerus+S. hamata (3 : 1)	2.30	2.48	2.08	2.29
Sehima nervosum	2.20	2.30	1.90	2.13
S. nervosum+S. hamata (3 : 1)	2.22	2.34	1.98	2.18
Dichanthium annulatum	2.15	2.22	1.85	2.07
D. annulatum+S. hamata (3 : 1)	2.18	2.26	1.88	2.11
Chrysopogon fulvus	2.23	2.36	1.96	2.18
C. *fulvus+S. hamata* (3 : 1)	2.26	2.40	2.03	2.23
Pennisetum pedicellatum	2.16	2.20	1.80	2.05
P. pedicellatum+S. hamata (3 : 1)	2.20	2.24	1.87	2.10
S. Em±	0.15	0.16	0.12	-
C. D. (P=0.05)	0.42	0.45	0.34	-

594 and 324 mm rainfall during 1997, 1998 and 1999, respectively.

The introduction of *C. ciliaris, C. setigerus, C. fulvus, S. nervosum, D. annulatum* and *P. pedicellatum* in pure as well as mixture with *S. hamata* produced significantly higher dry forage yield over no introduction during all the years. On mean basis, sole stand of *C. ciliaris, C. setigerus, S. nervosum, D. annulatum, C. fulvus* and *P. pedicellatum* improved dry grass yield by 116.3, 128.6, 117.3, 111.2, 122.4 and 109.2 per cent, respectively over no introduction. Further mixed stand of aforesaid grasses with legume *S. hamata* resulted in higher dry grass yield by 129.6, 133.7, 122.4, 115.3, 127.6 and 114.3 per cent, respectively, over no introduction. Amongst different grasses, *C. setigerus, C. ciliaris* and C. *fulvus* proved significantly superior for over-seeding on degraded land either in pure as well as in mixed stand with legume (Table 1). The above results are in close conformity with the findings of Patidar *et al*. (2008) and Chaplot (2014).

REFERENCES

Basak, N. S., M. K. Nanda, and A. K. Mukherjee. 2003 : Performance of *Stylosanthes* cultivars in the new alluvial zone of West Bengal. *Forage Res.,* **28** : 223-227.

Chaplot, P. C. 2014 : Productivity of grass legume mixture in different proportions as influenced by seeding method on wastelands. *Ann. Biol.,* **30** : 197-198.

Patidar, M., M. P. Rajora, and R. Singh. 2008 : Forage production potential of different silvipastoral systems under arid conditions of Rajasthan. *Indian J. Agron.,* **53** : 235-239.