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## Analyses on seed yield components of *Setaria sphacelata* cv . Narok

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**Key words :** *Setaria sphacelata* cv . Narok ,seed yield ,component factors ,seed quality

**Introduction** *Setaria sphacelata* cv . Narok is a key species for improved pasture development and seed production not only in different climatic zones in Yunnan but in warm temperate and subtropics in southern China because of its high productive performance since it was introduced from Australia in 1983 . In Yunnan , heading and flowering of Narok occurred almost simultaneously , which makes seed more easily harvested . However , seed yield and germination rate of Narok were relatively lower , with only 45-60 kg/hm<sup>2</sup> of seed yield and 10% of seed germination rate , restricting seriously the large-scale commercial production of the species . Therefore , in the experiment , it was aimed to find out what would be the limiting factors by analyzing components related to seed yield and seed weight per thousand seed and seed yield of a single plant to provide practical technical solutions for improving the seed yield of the species .

**Materials and methods** The study was conducted on the Beef Model Farm of Yunnan Beef Cattle and Pasture Research Center (25°13' N , 103° E , average annual precipitation = 990 mm , frost free day = 301d , elevation = 1960 m , soil = latosol , pH = 6 . 5 , organic matter = 0 . 84% , total N , P , K = 0 . 16% , 0 . 03% , 0 . 12% ) . Seeds were hand-sown in 2007 for single plant test in two steps . First , the seed yield component test was done with 7 plants randomly sampled for plant height , tillers (X2) and seed-bearing branches (X3) measuring . 10 spikes were randomly selected out of all the samples to measure the flower numbers (X5) and seeds per spike (X6) for seed rate calculation . 100-seed weight of each sample was recorded with 4 replications when dried 30 days later . Second , other 4 plants were randomly sampled from the trial field to measure the seed weight per thousand seeds (X8) on different parts of a spike which was divided into 10 parts and the fallen seeds during the testing period were marked as 11 with 4 replications . Data of the test was analyzed with SAS9 . 0 and Excel .

**Results** Result showed that seed yield per plant (W) of *Setaria sphacelata* cv . Narok was positively correlated with reproductive branch number (X3) (P<0 . 01) significantly and with a significant correlation with tiller number (X2) (P<0 . 05) as illustrated in Table 2 . Multiple stepwise regression analysis on the seed yield per plant (W) was carried out , and the equation was W = -16 . 59156 + 0 . 42479X3 - 0 . 03082X5 + 0 . 04923X6 . Seed Quality analysis on seeds of different parts of a spike showed that falling seeds had the best quality , and the second was No . 7 , and seed yield of No . 1 , No . 3 and No . 8 were higher than others . (Table 1) .

**Table 1** Weight of 1000 *Setaria sphacelata* seeds of different parts of a spike analyzed

number	weight
1	0 . 42bc
2	0 . 40c
3	0 . 42bc
4	0 . 43bc
5	0 . 42bc
6	0 . 41bc
7	0 . 45b
8	0 . 44bc
9	0 . 40c
10	0 . 40c
11	0 . 51a

**Table 2** Correlative analysis on seed yield components per plant of cv . Narok

	X2	X3	X4	X5	X6	X7	X8	W
X1	0 . 3143	0 . 2060	0 . 2615	0 . 5089	0 . 4009	-0 . 4229	-0 . 2087	0 . 3936
X2		0 . 9408A	-0 . 5976	-0 . 2406	-0 . 4488	-0 . 9195A	-0 . 0878	0 . 8452a
X3			-0 . 4098	-0 . 4305	-0 . 5930	-0 . 7612a	0 . 0640	0 . 8952A
X4				0 . 2995	0 . 4526	0 . 6198	0 . 0015	-0 . 1525
X5					0 . 9726A	-0 . 0603	-0 . 8033a	-0 . 0598
X6						0 . 1702	-0 . 7220	-0 . 2128
X7							0 . 3517	-0 . 7285
X8								-0 . 2653

\*\* Means capital letter with less difference ( P < 0 . 01 ) , small letter with different ( P > 0 . 05 ) in Table 1 & 2 . (comments : this is not the standard way to say , which needs correction ! !)

**Conclusion** It was crucial to improve the numbers of flower and hardness of seed per spike by using fertilizer as base and top dressing at heading stage and the optimum seed harvesting time was when the seed on the middle part of spike matured of Narok . (Comments : no data to support this , which needs change or re-writing !)

### References

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