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P AND K NUTRITION OF GUINEA AND CONGOSIGNAL GRASSES GROWN IN COCONUT GARDENS

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Abstract: Two separate experiments on P and K nutrition of guinea and congosignal grass were conducted in the Instructional Farm, College of Agriculture, Trivandrum to find out the P and K requirements of these two grasses when grown in coconut gardens. It was found that 30 kg P_2O_5/ha and 90 kg K_2O/ha as basal dose are sufficient to produce economic fodder yield.

INTRODUCTION

The farmers raise fodder crops mostly as intercrops in coconut gardens in areas where coconut is the main crop in the uplands. Several varieties of fodder grasses have been identified during the last decade for growing under coconut gardens among which guinea grass (*Panicum maximum* L.) and congosignal grass (*Brachiaria ruziziensis*) are the two very popular fodder crops. Deficiency of P and K in soil not only affects production but also the quality of the roughage. As such two separate experiments were conducted to find out the P_2O_5 and K_2O requirements of these two grasses grown as intercrop in coconut garden.

MATERIALS AND METHODS

Two field experiments were conducted in the red loam soils of the Instructional Farm, Vellayani during the period 1984-'85 and 1985-'86 under a 60 year old coconut plantation. Both the trials were laid out in 2 x 5 factorial randomised block design with three replications. The intercrops received 60 per cent of the sunlight that received in the open area. The average sunlight measured was 6000 foot candles in open area.

In the first experiment on P nutrition, the treatments consisted of two grasses (guinea grass var. Makuenii and congosignal grass) and five levels of P (0, 30, 60, 90 and 120 kg P_2O_5 /ha). A uniform dose of N @ 150 kg/ha and K_2O @ 50 kg/ha was applied as basal. The plot size was 4 m x 4 m and the spacing 40 cm x 20 cm for both the grasses. In the second experiment on K nutrition, the treatments consisted of two grasses (guinea grass var. Makuenii and congosignal grass) and five levels of K (0, 30, 60, 90 and 120 kg K_2O/ha). A uniform dose of N @ 150 kg/ha and P_2O_5 @ 50 kg/ha was applied as basal to all the plots. The grasses in both the experiments were harvested at 45 days interval. Green fodder yield (t/ha) and dry fodder yield (t/ha) were worked out at all harvests and the total yield for both the years 1984-'85 and 1985-'86 and their combined yield for 2 years are presented in Tables 1 and 2.

RESULTS AND DISCUSSION

1. P nutrition trial

Results revealed that there was significant difference between the two grasses in green fodder and dry fodder yield during both the years. Guinea grass was found to be significantly superior to congosignal grass.

Table 1. Green fodder and dry fodder yield of guinea and congosignal grass due to different P levels

Treatments	Green fodder yield (t/ha)			Dry fodder yield (t/ha)		
	1984-85	1985-86	Total	1984-85	1985-86	Total
Grass						
Guinea	76.81	65.87	142.68	19.44	15.22	34.66
Congosignal	70.28	53.44	123.73	17.29	12.58	29.86
CD (0.05)	3.44	5.04	7.11	1.03	1.09	1.50
P_2O_5 levels, kg/ha						
0	64.39	58.04	122.43	16.25	13.26	29.50
30	75.06	59.17	134.24	18.67	14.04	32.71
60	75.54	62.40	137.94	19.38	14.79	34.17
90	75.74	59.27	135.02	18.48	13.61	32.09
120	76.99	59.89	136.39	19.04	13.81	32.85
CD (0.05)	5.44	-	-	1.63	-	2.38

Table 2. Green fodder yield and dry fodder yield bf guinea and congosignal grass due to different K levels

Treatments	Green fodder yield (t/ha)			Dry fodder yield (t/ha)		
	1984-85	1985-86	Total	1984-85	1985-86	Total
Grass						
Guinea	62.78	45.68	108.47	17.04	11.01	28.05
Congosignal	59.59	40.97	100.57	16.74	9.72	26.46
CD (0.05)	-	-	-	-	-	-
K_2O levels, kg/ha						
0	30.48	26.38	56.86	8.50	6.57	15.08
30	58.20	44.60	102.79	16.38	10.51	26.89
60	62.72	41.73	104.45	18.15	10.14	28.29
90	76.00	51.75	127.75	20.36	11.77	32.13
120	78.55	52.18	130.73	21.05	12.83	33.88
CD (0.05)	9.55	10.69	16.98	2.69	2.80	4.43

P levels had significant influence in increasing the green fodder and dry fodder yield during the first year but the levels 30, 60, 90 and 120 kg P_2O_5/ha were on par. Similar response to P application was reported by Monteiro and Werner (1977); Holubek *et al.* (1976) and Crouchley (1979). During the second year of this study, P levels had no significant influence in increasing the green and dry fodder yield. This result is in agreement with the finding of Monsalve and Martinez (1978). From this, it can be concluded that for guinea and congosignal grass, 30 kg P_2O_5/ha as basal application is sufficient for economic fodder yield.

2. K nutrition trial

In this experiment, K levels were found to be significant in green and dry fodder yield. But yield difference between the two grasses was not significant.

Among the five levels, though highest fodder yield was recorded by the highest level of 120 kg K_2O/ha, it was on par with that at 90 kg K_2O/ha and significantly superior to the lower three levels for green fodder and dry fodder yield. Similar response to K fertilizers was reported by Lorenzo and Labayen (1976). During the second year of this study, for both green and dry fodder yield, the higher K levels viz., 30, 60, 90 and 120 kg K_2O/ha were on par (Table 2). With regard to the combined yield for two years, the levels 90 kg and 120 kg K_2O/ha were on par and were significantly superior to the lower two levels. Thus, though the highest level 120 kg K_2O/ha produced the highest yield, 90 kg K_2O/ha was sufficient to produce economic fodder yield.

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