

## FODDER PRODUCTION POTENTIAL OF MAIZE GROWN FOR BABY CORN AND GREEN COB IN DIFFERENT CROPPING SYSTEMS

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### SUMMARY

A field experiment was conducted during **kharif** seasons of 2007, 2008 and 2009 at Zonal Agricultural Research Station, Vishweswaraiah Canal Farm, Mandya (Karnataka) to study fodder production potential of maize grown for different purposes. The experiment was consisted of 10 treatment combinations of different maize-based cropping systems viz., T<sub>1</sub>-Napier bajra hybrid (round the year)-Lucerne, T<sub>2</sub>-Baby corn+cowpea (F)+Baby corn+cowpea (F)-Baby corn+cowpea (F), T<sub>3</sub>-Baby corn+cowpea (F)-Lucerne (F), T<sub>4</sub>-Baby corn+cowpea (F)-oats (F)-Baby corn+cowpea (F), T<sub>5</sub>-Baby corn+cowpea (F)-oats (F)-maize (F)+cowpea (F), T<sub>6</sub>-Green cob+cowpea (F)-Green cob+cowpea (F)-Green cob+cowpea (F), T<sub>7</sub>-Green cob+cowpea (F)-lucerne (F), T<sub>8</sub>-Green cob+cowpea (F)-oats (F)-Green cob+cowpea (F), T<sub>9</sub>-Green cob+cowpea (F)-oats (F)-maize (F)+cowpea (F) and T<sub>10</sub>-Sunflower cowpea (seed)+maize(F)+cowpea (F). The experiment was laid out in randomized complete block design and replicated thrice. The pooled data of three years revealed that Napier Bajra Hybrid+cowpea (**kharif**)-lucerne (**rabi**) recorded higher green forage yield (1488.30 q/ha/year), dry matter yield (330.30 q/ha/year) and crude protein yield (30.0 q/ha) and cultivation of maize for green cob+cowpea (fodder) round the year recorded higher net monetary returns (Rs. 1,58,715/ha/year).

**Key words :** Baby corn, green cob, green forage yield, dry matter yield, crude protein yield

Maize is an important crop grown for food, fodder and feed for the human and livestock in Karnataka. It has been grown on an area of 12 lakhs ha within production of 37.2 lakh tonnes with productivity of 3.1 t/ha. The majority of farmers growing maize for grain and dry straw will be preserved and utilized for fodder. During recent past, the dairy activity is gaining importance in urban and peri-urban area because of profitability of enterprises. The farming community in this area usually having small holding meeting fodder requirement of livestock either through purchase from others or they will grow annual forages like maize, pearl millet and sorghum for fodder purpose. On the other hand, there is not spare land for permanent perennial fodder because of lot of demand for vegetables, and, however, other commercial crops in and around cities. Majority of the farming community around cities having lack of knowledge on forage production potential and quality of maize grown for baby corn and green cob stage, keeping these things in view, a present study was undertaken to assess the forage production potential and quality of maize

grown for baby corn and green cob.

### MATERIALS AND METHODS

The experiment was conducted during **kharif** seasons of 2007, 2008 and 2009 at Zonal Agricultural Research Station, Vishweswaraiah Canal Farm, Mandya (Karnataka) to study fodder production potential of maize grown for baby corn and green cob. The soil of the experimental site is red sandy loam in texture having low in available nitrogen (173 kg N/ha), medium in available phosphorus (19.6 kg P/ha) and potassium (156 kg K<sub>2</sub>O/ha) with neutral in reaction. The experiment consisted of 10 treatments which comprised different maize-based cropping systems viz., T<sub>1</sub>-Napier bajra hybrid (round the year)-lucerne, T<sub>2</sub>-Baby corn+cowpea (F)+baby corn+cowpea (F)-Baby corn+cowpea (F), T<sub>3</sub>-Baby corn+cowpea (F)-lucerne (F), T<sub>4</sub>-Baby corn+cowpea (F)-oats (F)-baby corn+cowpea (F), T<sub>5</sub>-Baby corn+cowpea (F)-oats (F)-maize (F)+cowpea (F), T<sub>6</sub>-Green cob+cowpea (F)-green cob+cowpea (F)-

TABLE 1  
Green fodder yield (q/ha) of maize grown for baby corn and green cob

Treatment	Baby corn yield (q/ha)				Green cob yield (q/ha)				Green fodder yield (q/ha)			
	2007	2008	2009	Mean	2007	2008	2009	Mean	2007	2008	2009	Mean
T <sub>1</sub> -NB Hybrid+cowpea-lucerne	-	-	-	-	-	-	-	-	1308.7	1708.5	1447.7	1488.3
T <sub>2</sub> -Maize (baby corn)+cowpea-maize (baby corn)-maize (baby corn)+cowpea	136.1	139.6	122.1	132.6	-	-	-	-	834.0	725.8	787.2	782.3
T <sub>3</sub> -Maize (baby corn)+cowpea-lucerne	52.0	48.6	49.7	50.1	-	-	-	-	658.9	942.5	850.4	817.3
T <sub>4</sub> -Mazie (baby corn)+cowpea-oats-maize (baby corn)+cowpea	98.9	101.9	79.5	93.4	-	-	-	-	855.0	825.9	726.0	802.3
T <sub>5</sub> -Maize (baby corn)+cowpea-oats-maize (F)+cowpea	56.8	46.4	45.3	49.5	-	-	-	-	1112.2	1191.5	1112.7	1138.8
T <sub>6</sub> -Maize (green cob)+cowpea-maize (green cob)+cowpea-maize (green cob)	-	-	-	-	324.5	253.0	249.5	275.7	745.9	601.1	561.0	636.0
T <sub>7</sub> -Maize (green cob)+cowpea-lucerne	-	-	-	-	123.4	95.4	98.3	105.7	540.3	917.8	877.0	778.4
T <sub>8</sub> -Maize (green cob)+cowpea-oats-maize (green cob)+cowpea	-	-	-	-	223.0	190.2	176.8	196.7	794.1	771.2	596.0	720.4
T <sub>9</sub> -Maize (green cob)+cowpea-oats-maize (F)+cowpea	-	-	-	-	116.7	100.1	92.4	103.1	917.5	1214.2	984.5	1038.7
T <sub>10</sub> -Sunflower-cowpea-maize (F)+cowpea (F)	-	-	-	-	-	-	-	-	593.4	655.3	736.3	661.7

TABLE 2  
Dry matter yield (q/ha), crude protein yield (Rs.) of maize grown for baby corn and green cob

Treatment	Dry matter yield (q/ha)				Crude protein yield (q/ha)				Net returns (Rs.)			
	2007	2008	2009	Mean	2007	2008	2009	Mean	2007	2008	2009	Mean
T <sub>1</sub> -NB hybrid+cowpea-lucerne	302.2	387.5	301.3	330.3	26.8	37.6	26.4	30.3	67545.0	74185.0	50714.0	64148.0
T <sub>2</sub> -Maize (baby corn)+cowpea-maize (baby corn)-maize (baby corn)+cowpea	170.4	157.3	164.1	163.9	13.7	14.5	15.0	14.4	129210.0	135794.0	111091.0	125365.0
T <sub>3</sub> -Maize (baby corn)+cowpea-lucerne	128.2	226.2	191.2	181.8	17.5	28.3	30.6	25.4	58032.0	90648.0	80233.0	76304.3
T <sub>4</sub> -Mazie (baby corn)+cowpea-oats-maize (baby corn)+cowpea	164.8	176.4	149.2	163.5	13.5	15.3	12.7	13.8	101578.0	109288.0	76986.0	95950.7
T <sub>5</sub> -Maize (baby corn)+cowpea-oats-maize (F)+cowpea	231.8	244.3	255.3	243.8	18.2	19.4	22.6	20.1	75525.0	78971.0	70194.0	74896.7
T <sub>6</sub> -Maize (green cob)+cowpea-maize (green cob)+cowpea-maize (green cob)	126.5	123.6	107.6	119.2	10.7	9.0	9.2	9.6	176117.0	133891.0	166136.0	158714.7
T <sub>7</sub> -Maize (green cob)+cowpea-lucerne	96.1	176.9	194.5	155.8	12.9	21.2	35.1	23.1	72119.0	91045.0	109587.0	90917.0
T <sub>8</sub> -Maize (green cob)+cowpea-oats-maize (green cob)+cowpea	141.6	158.2	118.0	139.3	12.7	11.6	10.0	11.4	13439.0	113379.0	125601.0	84139.7
T <sub>9</sub> -Maize (green cob)+cowpea-oats-maize (F)+cowpea	175.2	259.1	202.8	212.4	13.2	18.4	21.4	17.7	86563.0	94940.0	89557.0	90353.3
T <sub>10</sub> -Sunflower-cowpea-maize (F)+cowpea (F)	112.4	146.6	164.7	141.2	8.7	10.2	23.2	14.0	63681.0	61814.0	88325.0	71273.3

Green cob+cowpea (F), T<sub>7</sub>-Green cob+cowpea (F)-lucerne (F), T<sub>8</sub>-Green cob+cowpea (F)-oats (F)-green cob+cowpea (F) and T<sub>9</sub>-Green cob+cowpea (F)-oats (F)-maize (F)+cowpea (F) were compared with most remunerative cropping system of zone T<sub>10</sub>-Sunflower cowpea (seed)+maize (F)+cowpea (F). The crops were established with recommended package of practices and uniformity was maintained in all the three years with respect to establishment and management. The maize grown for baby corn was harvested three days after silking and green cob at dough stage. The maize composite NAC-6004 was used in all the three years for both the purposes. Immediately after harvest of the crop green fodder yield was recorded and known quantity sample was taken and oven-dried for the estimation of dry matter as well as quality parameters. Crops grown for fodder purposes were harvested at 50 per cent blooming stage and prevailing market price was taken for calculation of economics. The data of three years were pooled for the interpretation of the results.

## RESULTS AND DISCUSSION

### Green Fodder Yield

Pooled data of three years (Table 1) indicated that Napier bajra hybrid+cowpea (**kharif**)-lucerne (**rabi**) recorded higher green forage yield (1488.30 q/ha/year), among maize-based cropping systems, maize grown for baby corn during **kharif** season followed by oats (**rabi**) Maize+cowpea for fodder purpose (summer) recorded higher green fodder yield (1138.8 q/ha/year) followed by maize grown for green cob during **kharif** followed by oats-maize+cowpea (fodder) recorded higher green fodder yield (1038.7 q/ha/year). The increase in green fodder yield in Napier bajra hybrid-lucerne was due to this cropping system purely grown for fodder purpose. These results are in accordance with the findings of Abu-Awwad (1994).

### Dry Matter Yield

Pooled data of three years indicated that Napier bajra hybrid+cowpea (**kharif**)-lucerne (**rabi**) recorded higher dry matter yield (330.30 q/ha/year). Among maize-based cropping systems, maize grown for baby corn during **kharif** season followed by oats (**rabi**). Maize+cowpea for fodder purpose (summer) recorded higher dry matter yield (243.8 q/ha/year) followed by maize grown for green cob during **kharif** followed by oats-maize+cowpea (fodder), which recorded dry matter

yield 212.4 q/ha/year (Table 2). The increase in dry matter yield in Napier bajra hybrid-lucerne was due to higher green fodder yield. These results are in accordance with the findings of Abu-Awwad (1994).

### Crude Protein Yield

Pooled data of three years indicated that Napier bajra hybrid+cowpea (**kharif**)-lucerne (**rabi**) recorded higher crude protein yield (30.0 q/ha). Among maize-based cropping systems, crude protein yield was higher with maize grown for baby corn in **kharif** followed by lucerne **rabi**-summer. This increase in crude protein was due to higher green fodder yield (25.4 q/ha/year) (Table 2). These results are in accordance with the findings of Abu-Awwad (1994).

### Economics

Cultivation of maize for green cob+cowpea for fodder round the year recorded higher net monetary returns (Rs. 1,58,715/ha/year) followed by maize grown for baby corn+cowpea (F) round the year (Rs. 1,25,365/ha/year) as compared to perennial fodder source of NB hybrid+cowpea-lucerne (Rs. 64,148/ha/year) and existing cropping system of sunflower (seed)-cowpea (seed)-maize+cowpea (fodder) (Rs. 71,273/ha/year). This was mainly due to higher green cob yield and lower cost of cultivation of maize grown for green cob as compared to baby corn (Table 2). This is in conformity with the findings of Channakeshava *et al.* (2000) and Viswanatha *et al.* (2002).

Based on the results it can be concluded that maize grown for either green cob or baby corn intercropped with cowpea (fodder) round the year is more remunerative than cultivation of perennial Napier bajra intercropping with cowpea/lucerne to meet the fodder requirement in peri-urban area of Karnataka.

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