

## FORM – A : RESULT OF ONGOING EXPERIMENT

01.	*Experiment number and title (As per CJA)	:	15.4.3.51 and Nutritional Evaluation of edible shoots of different bamboo species
02.	Budget Head		352/12029
03.	Collaborative department, if any		NA
04.	Location and Agro-climatic sub region	:	VCVS&AH, Kamdhenu University, Navsari Campus – 396 450 and AES-III (Heavy Raifall Zone), South Gujarat
05.	Background Information	:	Bamboo is a rapid growing fibrous plant available in abundance on the earth. It is a perennial, giant, woody grass and the fastest growing plants in the world. It belongs to the group angiosperms and the order monocotyledon and is classified under the grass family Poaceae (or Gramineae) under the tribe (subfamily) Bambusoideae (Chapman, 1996). Bamboo shoots are the emerging shoots which are just 12cm above the ground. This part of the bamboo is edible for human beings. Bamboo is one kind of vegetable for its being pollution free, low in fat, high in edible fibre and rich in mineral elements and considerable proportion of poly-unsaturated fatty acids. Thus, indicating a potential use as a source of therapeutic values. Bamboos play an important role in daily life of rural people especially tribals in numerous ways. The edible part of Bamboo i.e. shoot has an immense medicinal values. Presence of high quality vitamins, carbohydrates, proteins and minerals in Bamboo shoot and their easy availability to common man may help in solving nutritional deficiency of rural poor (Tripathi 1998). Bamboos are low in calories and high in fibre which aids in prevention of colon cancer and in controlling cholesterol level in blood. It is also a good source of potassium which is a heart healthy mineral. Shoots also contain various flavonoids, phenols and phenolic acids (phytochemicals) which are potent anti-oxidants and may have anti-cancer, antibacterial and anti-fungal properties (Pandey et al., 2011; Gupta et al., 2010).Hence, keeping in view above mentioned nutritional quality/ values this experiment will be conducted including below listed objective.
06.	Objectives		1. To evaluate the physical characteristics shoots of different bamboo species 2. To evaluate the chemical and nutritional composition & mineral contents shoots of different bamboo species
07.	Investigators	:	<b>PI:</b> Dr. Jayesh Pathak (Asst. Prof.) Agroforestry <b>Co-PIs:</b> Dr. J. M. Mayani (Asst. Prof.) PHT Dr. V. B. Patel (Asst. Prof.) Biotechnology, <b>Associated Scientist:</b> Dr. Sushil Singh (Asst. Prof.) Residue Chemistry
08.	Year of commencement	:	2019-20
09.	Season	:	NA
10.	Crop and variety	:	Different Bamboo Species
11	Experimental details	:	
	(a) Treatments	:	18
	(b) Design	:	Completely Randomized Design (CRD)
	(c) Replications	:	3
	(d) Plot size	:	Gross - ____ m x ____ m
			Net - ____ m x ____ m
12	Cultural details		

	(a) Previous crops and fertilizers	:	NA
	(b) Sowing date	:	NA
	(c) Seed rate		NA
	(d) Spacing		NA
	(e) manures and fertilizers		NA
	(f) No. of irrigation with date		NA
	(g) Cultural operations with date		NA
	(h) Plant protection measures		NA
	(i) Harvesting date		NA
13.	Soil analysis		NA
14.	Input analysis		NA
15.	Results (Table/s with statistical analysis and Interpretation)	:	Nutritional value of shoots was analyzed and means observations are depicted in following table. However, there were only 16 bamboo species analyzed out of 18 due to unavailability of shoots for two species namely T <sub>4</sub> - <i>Bambusa balcooa</i> and T <sub>6</sub> - <i>Bambusa tulda</i> during analysis. Nutritional analysis of HCN, mineral parameters and 2 <sup>nd</sup> year shoot nutritive analysis will be initiated from July onwards because, of less availability of young bamboo shoots of all species in other months.

**Table 1.** Nutritional evaluation of edible shoots of different bamboo species

Treatments	Physical Parameters				
	Shoot length (cm)	Shoot width (cm)	Shoot weight (Kg)	Peel (%)	Edible portion (%)
T <sub>1</sub> - <i>Bambusa bamboos</i>	29.00	63.65	0.86	38.01	61.76
T <sub>2</sub> - <i>Bambusa vulgaris</i> (Green)	35.67	42.68	0.39	45.00	55.00
T <sub>3</sub> - <i>Bambusa vulgaris</i> (yellow)	30.33	49.65	0.52	31.11	69.15
T <sub>5</sub> - <i>Bambusa nutans</i>	54.00	36.40	0.45	32.11	67.89
T <sub>7</sub> - <i>Bambusa polymorpha</i>	49.00	44.81	0.60	54.86	45.14
T <sub>8</sub> - <i>Dendrocalamus strictus</i>	50.00	58.22	1.09	31.99	67.56
T <sub>9</sub> - <i>Dendrocalamus asper</i>	43.00	73.39	1.50	45.04	54.90
T <sub>10</sub> - <i>Dendrocalamus hamiltonii</i>	49.00	52.72	0.85	21.13	82.75
T <sub>11</sub> - <i>Gigantochloa atroviolacea</i>	56.33	40.91	0.63	49.12	50.88
T <sub>12</sub> - <i>Dendrocalamus stocksii</i>	48.00	29.85	0.31	34.72	65.28
T <sub>13</sub> - <i>Dendrocalamus sikkimensis</i>	36.17	68.07	1.26	36.60	63.15
T <sub>14</sub> - <i>Dendrocalamus brandisii</i>	34.00	54.05	0.77	45.88	53.40
T <sub>15</sub> - <i>Dendrocalamus giganteus</i>	41.50	41.35	0.54	51.88	48.12
T <sub>16</sub> - <i>Dendrocalamus longispathus</i>	56.00	25.93	0.25	76.21	24.60
T <sub>17</sub> - <i>Schizostachyum dullooa</i>	46.33	20.46	0.10	46.03	52.09
T <sub>18</sub> - <i>Schizostachyum pergracile</i>	37.33	32.92	0.27	41.48	58.52

**Table 2.** Chemical, nutritional and mineral parameters of edible shoots of different bamboo species

Treatments	Chemical and Nutritional Parameters									Mineral Parameters		
	MC (%)	Total Ash (%)	AIA (%)	CP (%)	CF (%)	EE/Fat (%)	NDF (%)	ADF (%)	Lignin (%)	Ca (%)	P (%)	
T <sub>1</sub> - <i>Bambusa bamboos</i>	91.553	7.51	0.15	18.68	7.12	4.77	29.563	18.452	10.417	1.890	0.281	
T <sub>2</sub> - <i>Bambusa vulgaris</i> (Green)	92.188	8.11	0.20	18.06	7.33	1.59	37.986	10.468	8.774	1.593	0.279	
T <sub>3</sub> - <i>Bambusa vulgaris</i> (yellow)	91.043	7.69	0.29	11.55	6.89	3.68	33.134	18.109	12.935	0.999	0.252	
T <sub>5</sub> - <i>Bambusa nutans</i>	92.499	8.87	0.15	22.17	6.54	2.18	34.462	18.227	18.426	1.793	0.290	
T <sub>7</sub> - <i>Bambusa polymorpha</i>	92.044	9.51	0.29	17.98	11.62	1.60	33.100	12.463	10.568	1.991	0.281	
T <sub>8</sub> - <i>Dendrocalamus strictus</i>	91.760	9.38	0.20	20.25	6.08	3.17	39.302	14.065	13.131	1.985	0.292	
T <sub>9</sub> - <i>Dendrocalamus asper</i>	91.642	7.80	0.15	9.86	6.08	2.68	40.439	11.033	10.185	1.886	0.274	
T <sub>10</sub> - <i>Dendrocalamus hamiltonii</i>	91.711	8.50	0.29	15.18	6.98	4.09	36.559	17.606	14.613	1.491	0.282	
T <sub>11</sub> - <i>Gigantochloa atroviolacea</i>	91.691	9.97	0.39	20.21	7.09	2.79	34.925	20.099	18.706	1.795	0.315	
T <sub>12</sub> - <i>Dendrocalamus stocksii</i>	90.443	8.66	0.20	6.95	6.69	3.49	34.897	17.097	15.805	1.592	0.284	
T <sub>13</sub> - <i>Dendrocalamus sikkimensis</i>	92.002	8.65	0.25	22.27	6.64	2.79	29.353	19.204	17.910	2.087	0.315	
T <sub>14</sub> - <i>Dendrocalamus brandisii</i>	90.986	9.04	0.19	19.56	5.99	4.00	61.496	10.024	8.329	0.988	0.299	
T <sub>15</sub> - <i>Dendrocalamus giganteus</i>	92.002	8.41	0.20	18.79	7.08	4.97	33.367	20.120	18.924	1.892	0.319	
T <sub>16</sub> - <i>Dendrocalamus longispathus</i>	95.719	8.28	0.55	14.00	9.21	3.96	30.804	11.483	10.734	1.795	0.286	
T <sub>17</sub> - <i>Schizostachyum dullooa</i>	89.641	7.32	0.20	9.76	17.76	2.58	49.255	27.607	16.981	1.693	0.216	
T <sub>18</sub> - <i>Schizostachyum pergracile</i>	91.608	8.92	0.20	15.31	10.58	2.28	38.270	17.396	15.109	1.486	0.278	
15.	Remarks (for abnormal experimental results only)			:	NA							
16.	Reasons for abnormal conditions affecting experimental results and low yield if any be given in brief. e.g. uneven plant stand, pest and disease incidence, weather conditions, etc.			:	NA							
17.	Any other information			:	NA							