International Journal of Research in Agronomy

E-ISSN: 2618-0618
P-ISSN: 2618-060X

www.agronomyjournals.com
2024; SP-7(3): 358-363
Received: 22-01-2024
Accepted: 25-02-2024

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# Estimation of reserved macro-nutrient in fifty cultivars of post-harvest banana corms

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**DOI:** https://doi.org/10.33545/2618060X.2024.v7.i3Se.482

**Abstract**
Banana corm (rhizome) act as a storage material for nourishing new side shoot by providing the reserved nutrients elements present inside it. However, amounts of nutrients reserved are not known due to less interest were shown to left over corm. The experiment was conducted to evaluate the essential macronutrients elements (N, P, K, Ca, Mg and S) on fifty post-harvest banana corms of different genotypes belonging to different genomic composition. The nitrogen content in the corms of the genotypes varied between 0.10% in Lacaton (AAA) and 1.31% in Onchini (ABB), The phosphorus content in the corms of the genotypes varied between 0.03% in Jahaji Clone-I (AAA), Co-I and Madhuranga bala (ABA) and 0.34% in Onchini (ABB). The potassium content in the corms of the genotypes varied between 0.80% in Kanthali Clone-V (AAB) and 6.80% in Basrai-14 (AAA). The calcium content in the corms of the genotypes varied between 0.63% in Kanthali Clone-V (AAB) and 6.48% in Basrai-14 (AAA). The magnesium content in the corms of the genotypes varied between 0.36% in Giant Governor and 2.38% in Sindhuri Harichal both in the genomic composition AAA and finally sulphur content varies with 0.05% in Champa-II (AAB) and 1.13% in FHIA3 (ABB). Macronutrients content in the corms varies with all the genotypes. This finding may state that some banana genotypes have sufficient nutrient for promoting profuse propagules from the mother corm.

**Keywords:** Banana, genomic groups, genotypes, macronutrients, post-harvest corms

## Introduction
*Musa species* are grouped according to their "ploidy" and the relative proportion of *Musa acuminata* (A) and *Musa balbisiana* (B) in their genome. Most familiar, seedless desert type cultivars are almost entirely derived from genetic make ups of *Musa acuminata* of triploid character, indicated as AAA. Plantain (AAB) and other bananas that can be used for cooking (cooking bananas ABB) are also triploid and derived from the AA.BB hybridization. *Musa* composition of diploid (AA, AB, BB) and tetraploid (AAAA, AAAB, AABB, ABBB) versions are much rarer. There are approximately 1200 varieties of bananas all over the world (Kouassi 2001) [9]. Banana is a very popular fruit due to its low price and high nutritive value with high content of vitamins A and C but poor in vitamins B (Margard and Briav 1979) [11]. It is consumed in fresh or cooked form both as ripe and raw fruit. As a diet, banana is rich in carbohydrates (22.84 g/100 g), provides energy about 370 kJ/100 g and is also considered as the best sources of potassium (358 mg/100 g) (Muhammad *et al*. 2020) [16]. It is also a good source of phosphorus, calcium and magnesium. A small size banana can provide good amounts calories of energy (Mateljan 2007) [12]. Intake of two bananas could provide energy sufficient for 90 minutes of workout (Kumar *et al*. 2012) [10]. Consumption of two banana a day result in 10 percent drops in blood pressure within a week (Frison and Sharrock 1999) [5]. Banana peels are rich in unsaturated fatty acids, antioxidants and good quality protein (Happi *et al*. 2007) [6], starch (35.4 -39.3% DW); and act as a source of dietary fibres and pectin (40-50% DW) (Happi *et al*. 2008a) [7]. These pectin shows to have therapeutic treatment that reduce blood sugar and cholesterol levels in the blood (Happi *et al*. 2008b) [8].
Banana corm (rhizome) is the site which promote vegetative propagation to hardening of young banana plants that grow in clusters around the "mother" plant.

It acts as storage reserve material for nourishing these new young developed offshoot/sucker. However, the amount of nutrients reserved in the corm is not known as there are hardly any works done on the composition of banana corm due to less interest were shown. With the aim to estimate macronutrients reserved in these post-harvest banana corms the title Estimation of reserved macro-nutrient in fifty cultivars of post-harvest banana corms were taken into the experiment.

## Materials and Methods

The experiment was conducted between June 2021 to August 2021. The corms for the experiment were collected from the banana plants raised and maintained at Banana plantation garden of AICRP – Fruit Crops, Horticulture Research Station, BCKV, Mandouri Farm, West Bengal. The estimation of nitrogen, was done in RKVY Agronomy Lab-1 in the department of Agronomy, BCKV. The estimation of phosphorus, potassium, magnesium, calcium and sulphur was done in Sasya Shyamala Krishi Vigyan Kendra, Arapanch, P.O.- Sonarpur, Dist.- South 24 Pgs, Kolkata.

A total of fifty post-harvest banana corms of different genotypes belong to different genomic groups (Table 1) were taken under studies**.** After harvesting of the bunch, banana plants left in the field were detopped just above the juncture of the corm and ariel shoot. These corms were then removed from the soil and clean properly under running tap water to discard dirt and other substances left on the corm. The roots and a layer of the corm was peeled and removed with the help of a knife to remove debris. The starchy corm left was then chopped into small pieces and kept for drying in the oven. The dried sample were used for the following estimation.

The dried sample were used for the following estimation.

| Estimation | Procedure followed |
|---|---|
| Nitrogen: | Available N was determined by the method of alkaline KMn0 4 developed by Subbiah and Asija (1956) [20] using Semi Auto Analyser, Kel PlusDistill Em, India. |
| Phosphorous: | Available P was determined by the method of the colorimetric measurement by spectrophotometer (Systronics, make Modle No 167, India). |
| Potassium, Magnesium and Calcium: | Flame photometer/ Atomic absorption spectrophotometer. (Anderson and Ingram, 1989, Novosamsky *et al*., 1983; Okalebo, 1985; Tadesse *et al*., 1991) [1, 17, 18, 22] |
| Sulphur | Turbidimetric method. (Ensminger, 1954; Olsen and Rodes, 1964; Tabatai, 1974) [4, 19, 21] |

## Results and Discussion

### Nitrogen content of the corms

The nitrogen content of the post-harvest corms of the various genotypes varied between 0.10% in Lacaton (AAA) and 1.31% in Onchini (ABB). Among the cultivars with genomic composition AAA (Table-2), the highest content of nitrogen was observed in Robusta Clone-III (0.81%) followed by Sindhuri Harichal (0.73%) and Grand Naine (0.73%). Lacaton (0.10%) were found to have low in nitrogen content and the rest are in moderate level. Similarly, among the cultivars with genomic composition AAB CT (cooking type) (Table-3) the highest nitrogen content was observed in Behula Clonel (0.80%) and lowest in Bloggue (0.18%) while the rest shows a moderate level. All the cultivars with genomic composition with general AAB (Table-4) were found to have moderate level of nitrogen content with only the highest observed in Madhuranga bale (1.22%) and lowest in Dudhsagar (0.31%), and the cultivars with the genomic composition ABB (Table-5), Onchini (1.30%) shows the highest and Baman Deshi (0.17%) shows the lowest and the rest are moderate. The cultivars with an unknown genomic composition (Table-6) record the highest nitrogen content in Becha Kala (Seeded) (1.12%) and lowest in Neypoovan (0.31%) while the rest shows a moderate level. Castillo-Gonzalez *et al*. (2011) [3] report similar nitrogen content with 1.15% in the corm of banana cultivar ‘Dominoco’. Nitrogen conten with 0.70% to 1.79% also reported in various cultivars of indigenous Taro in Nagaland (Buragohain *et al*. 2013) [2].

### Phosphorous content of the corms

The calcium content of the corms of the various genotypes varied between 0.03% in Jahaji Clone-I (AAA), Co-I and Madhuranga bala (ABA) and 0.34% in Onchini (ABB). The high, moderate and low values for this content in all the genomic group was almost equally distributed. Among the cultivars with genomic composition AAA (Table-2), Srimanti (0.19%) have higher phosphorous content followed by Poyo- A14 (0.14%), Lacaton (0.13%) and Dwarf Cavendish (0.13%), whereas lower phosphorous content was observed in Jahaji clone I (0.03%), Robusta clone- III (0.04%) and Jahaji clone II (0.05%). Similarly, among the cultivars with genomic composition AAB CT (Cooking Type) (Table-3), Kanchkel (0.24%) was recorded the highest phosphorous content followed by Cooking-I (0.22%), and the rest were shown to have moderate level of phosphorous content. The cultivars with genomic composition general AAB (Table-4), record the highest content in Matta Poovan (24%) followed by Amritpani and Kanai Banshi (0.20% each), while the lowest content was observed in Co-I, Madhurangabale (0.03% each) followed by H531 (0.04%), and the rest were found to have moderate level of phosphorous content. The cultivar with genomic composition ABB (Table-5), record the highest phosphorous content in Onchini (0.34%) followed by FHIA-3 (0.28%) while the rest are in moderate level. Similarly, cultivar with unknown genomic composition (Table-6), were also found to have moderate level of phosphorous content except in Ney Poovan (0.06%) which recorded the lowest. Castillo-Gonzalez *et al.* (2011) [3] report that phosphorus content in the corm of banana cultivar ‘Dominoco’ was found at 0.45%. Mesta *et al*. (2018) [14] also reported that different varieties of *Amorphophallus paeoniifolius* (elephant foot yam) was estimated for their phosphorus content and found that it ranged from 0.11% to 0.40%. Phosphorus content in taro generally ranged from 0.07% to 0.34% (Melese and Negussie 2015) [13] with 0.10% to 1.30% reported in various cultivars of indigenous Taro in Nagaland (Buragohain *et al*. 2013) [2].

### Potassium content of the corms

The potassium content of the corms of various genotypes varied between 0.80% in Kanthali Clone-V (AAB) and 6.80% in Basrai-14 (AAA). There appeared to have no pattern in potassium content among the genomic groups: The high, moderate and low values for this content were almost equally distributed. Among the cultivars with genomic composition AAA (Table-2), Basrai-14 (6.80%) recorded the highest content of potassium followed by Dwarf Cavendish (5.12%), while the lowest potassium content was observed in Grand Naine (1.49%) followed by Giant Govenor (1.60%) and Sinduri Harichal (1.99%) and the rest were observed to have a moderate level of potassium content. The cultivar with the genomic composition AAB CT (cooking type) (Table-3), were found to have moderate level of potassium content except in Cooking -1 (6.14%) which record the highest. Similarly, the cultivar with genomic composition general AAB (Table-4), also observed to have moderate level of potassium content except Kanthali Clone-V (0.80%) which recorded the lowest. The cultivars with genomic composition ABB (Table-5), were also found to have moderate level of potassium except in FHIA3 (6.79%) which record the highest. Cultivars with unknown genomic composition (Table-6), were all found to have moderate level of potassium content. Castillo-Gonzalez *et al*. (2011) [3] report similar Potassium content with 3.86% in the corm of banana cultivar 'Dominoco'. Potassium content in *Colocasia esculenta* generally ranged from 2.27% to 4.27% (Melese and Negussie 2015) [13]. Various cultivars of indigenous Taro in Nagaland were reported to contain 0.20% to 3.80% of potassium. (Buragohain *et al*. 2013) [2].

**Magnesium content of the corms**:

The magnesium content of the corms of varoius genotypes varied between 0.36% in Giant Governor and 2.38% in Sindhuri Harichal both in the genomic composition AAA. There appeared to have no pattern in magnesium content among the genomic groups: The high, moderate and low values for this content were almost equally distributed. The cultivars with genomic composition AAA (Table-2), Sindhuri Harichal (2.38%) recorded the highest content of magnisuim content followed by Poyo-A14 (2.35%) and Basrai (2.32%), while the lowest content was recorded in Giant Governor (0.36%) followed by Arunachal P colln (0.50%) and Srimanti (0.53%) and the rest were shown to have moderate level of magnisuim. The cultivar with genomic composition AAB CT (Cooking type) (Table-3), shows to have high magnesium content except in Green Bombay (1.81%) which recorded a moderate level. However, cultival with general AAB (Table-4), genomic composition recorded the highest only in Kanthali Clone- IV (2.25%) while the rest were all at moderate level except Champa- B9 (0.50%), Champa- V (0.55%) and Madhuranga bale (0.57%) which recorded the lowest. The cultivar with genomic compostion ABB (Table-5), and the unknown genomic composition (Table-6), were also recorded to have a moderate level of magenesium content. Castillo-Gonzalez *et al.* (2011) [3] report similar magnesium content with 0.76% in the corm of banana cultivar 'Dominoco'. Magnesium content in taro generally ranged from 0.12% to 0.42% (Melese and Negussie 2015) [13]

**Calcium content of the corms:**

The calcium content of the corms of the genotypes varied between 0.63% in Kanthali Clone-V (AAB) and 6.48% in Basrai-14 (AAA) Among the genotypes with AAA genomic composition, it ranged between 1.86% and 6.48%. The genotypes with AAB CT genomic composition ranged between 2.88% and 5.32%, The genotypes with AAB genomic composition ranged between 0.63% and 4.98%, the genotypes with ABB genomic composition ranged between 1.92% and 4.93% and the genotype with unknown genomic composition ranged between 1.05% and 4.33%. There appeared to have no pattern in calcium among the genomic groups: The high, moderate and low values for this content were almost equally distributed. Among the cultivars with genomic composition AAA (Table-2), Basrai-14 (6.48%) recorded the highest calcium content followed by Basrai (5.25%) and Dwarf cavendish (5.01%), while the lowest were observed in Giant Governor (1.86%) and the rest were all shows to have moderate level of calcium. Similarly, the cultivar with the genomic compostion AAB CT (Cooking type) (Table-3), and ABB (Table-5), were all shows to have moderate level of calcium. The cultivar witht general AAB genomic composition (Table-4), also shows to have moderate level of calcium except in Kanthali Clone-V (0.63%) which recorded the lowest followed by Kanthali clone-IV (1.22%) and Karpooravelli (1.23%). The cultivar with unknown genoimic composition (Table-6), recorded the lowest calcium content in Becha Kala (Seeded I) (1.05%) followed by Sannachen Kadali (1.26%) and the rest were at moderate level. Castillo-Gonzalez *et al*. (2011) [3] report similar calcium content with 0.9% in the corm of banana cultivar 'Dominoco'. Calcium content of *Colocasia esculenta* were found to be at 0.78% (Million *et al*. 2017) [15].

**Sulphur contents of the corms**

The sulphur content of the corms of the genotypes varied between 0.05% in Champa-II (AAB) and 1.13% in FHIA3 (ABB) and the high, moderate and low values for this content were almost equally distributed. Among the cultivars with genomic composition AAA (Table-2), Srimani (0.33%) shows to have the highest content of sulhphur followed by Grand Naine (0.22%) while the lowest content was observed in Arunachal P colln and both clone I and II of Jahanji (0.06% each), Robusta clone-III and Basrai (0.09% each). Similarly, cultivar with genomic composition AAB CT (Cooking type) (Table-3), Purulia colln (0.31%) shows the highest sulphur conten, whereas Kanchkel and Pantharaj (0.07% each) recorded the lowest t followed by Bloggue (0.09%). Similarly, the general AAB genomic composition (Table-4), observed with only highest level of sulphur content recorded in Co-I (0.16%) and the lowest in recorded in Champa-II and Kanthali Clone-V (0.05% each) followed by Champa B9 and Alpan Manhar (0.07% each) while the rest are in moderte level. The cultivar with genomic composition ABB (Table-5), recorded the highest sulphur content in FHIA3 (1.14%, highest among all genotypes) and the lowest were observed in Baman Deshi (0.08%) followed by Cuba-03 and Manohar-I (0.09% each). The genotypes with an unknown genomic composition (Table-6) were found to have low sulphur content. Sulphur content in taro generally ranged from 0.01% to 0.31% (Buragohain *et al*. 2013) [2].

**Table 1:** Names of the 50 genotypes of the banana post-harvest corms

| Genomic Composition → | AAA | AAB CT | AAB | ABB | Unknown |
|---|---|---|---|---|---|
| Cultivar Name→ | Basrai 14 | Behula clonel | H531 | Baman Deshi | Aivanka poovan |
| | Basrai | Cooking –I | Matta Poovan | Cuba- 03 | Kechazepa (seeded) |
| | Papalou | Kanchkel | Champa- B9 | Manohar-I | Becha kala (Seeded I) |
| | Dwarf Cavendish | Purulia colln | Champa- II | Manohar-II | Sannachen Kadali |
| | Jahaji Clone-I | Pantharaj | Champa- III | Onchini | Ney Poovan |
| | Jahaji Clone-II | Green Bombay | Champa- V | Bagda | |
| | Grand Naine | Bloggue | Amritpani | FHIA-3 | |
| | Poyo –A14 | | Alpan Manhar | | |
| | Sinduri Harichal | | Dudhsagar | | |
| | Giant Governor | | Kalibhog | | |
| | Robusta Clone-III | | Hill banana | | |
| | Lacaton | | Co-I | | |
| | Srimanti | | Madhuranga bale | | |
| | Arunachal P. colln | | Kanai Banshi | | |
| | | | Kanthali Clone-IV | | |
| | | | Kanthali Clone- V | | |
| | | | Karpooravelli | | |

**Table 2:** Macro-nutrients contents in the banana corms of the genomic composition AAA:

| Genomic group | Cultivar Name | N (%) | P (%) | K (%) | Ca (%) | Mg (%) | S (%) |
|---|---|---|---|---|---|---|---|
| AAA | Basrai 14 | 0.25 | 0.09 | 6.80 | 6.48 | 1.83 | 0.10 |
| | Basrai | 0.57 | 0.11 | 4.15 | 5.25 | 2.32 | 0.09 |
| | Papalou | 0.29 | 0.06 | 3.69 | 3.99 | 0.67 | 0.11 |
| | Dwarf Cavendish | 0.71 | 0.13 | 5.12 | 5.01 | 2.03 | 0.21 |
| | Jahaji Clone-I | 0.56 | 0.03 | 3.47 | 3.30 | 0.72 | 0.06 |
| | Jahaji Clone-II | 0.42 | 0.05 | 2.12 | 2.56 | 0.61 | 0.06 |
| | Grand Naine | 0.73 | 0.09 | 1.49 | 2.00 | 0.97 | 0.22 |
| | Poyo –A14 | 0.36 | 0.14 | 4.49 | 4.78 | 2.35 | 0.12 |
| | Sinduri Harichal | 0.73 | 0.12 | 1.99 | 2.24 | 2.38 | 0.09 |
| | Giant Governor | 0.32 | 0.10 | 1.60 | 1.86 | 0.36 | 0.15 |
| | Robusta Clone-III | 0.81 | 0.04 | 2.02 | 2.43 | 0.85 | 0.09 |
| | Lacaton | 0.10 | 0.13 | 3.03 | 3.98 | 1.03 | 0.21 |
| | Srimanti | 0.36 | 0.19 | 2.79 | 2.77 | 0.53 | 0.33 |
| | Arunachal P. colln | 0.34 | 0.07 | 2.41 | 3.01 | 0.50 | 0.06 |
| | Mean | 0.47 | 0.10 | 3.22 | 3.55 | 1.23 | 0.14 |
| | Range | 0.10-0.81 | 0.03-0.19 | 1.49-6.80 | 1.86-6.48 | 0.36-2.38 | 0.06-1.33 |

**Table 3:** Macro-nutrients contents in the banana corms of the genomic composition AAB CT

| Genomic group | Cultivar Name | N (%) | P (%) | K (%) | Ca (%) | Mg (%) | S (%) |
|---|---|---|---|---|---|---|---|
| AAB CT | Behula clonel | 0.80 | 0.12 | 3.58 | 3.92 | 2.17 | 0.13 |
| | Cooking –I | 0.50 | 0.22 | 6.14 | 5.32 | 2.22 | 0.15 |
| | Kanchkel | 0.66 | 0.24 | 4.89 | 4.90 | 2.26 | 0.07 |
| | Purulia colln | 0.32 | 0.10 | 4.14 | 5.09 | 2.23 | 0.31 |
| | Pantharaj | 0.38 | 0.09 | 3.54 | 3.85 | 2.25 | 0.07 |
| | Green Bombay | 0.36 | 0.08 | 2.57 | 2.88 | 1.18 | 0.18 |
| | Bloggue | 0.18 | 0.09 | 3.48 | 4.63 | 2.19 | 0.09 |
| | Mean | 0.46 | 0.13 | 4.05 | 4.37 | 2.07 | 0.14 |
| | Range | 0.18-0.80 | 0.08-0.24 | 2.57-6.14 | 2.88-5.32 | 1.18-2.26 | 0.07-0.31 |

**Table 4:** Macro-nutrients contents in the banana corms of the genomic composition AAB:

| Genomic group | Cultivar Name | N (%) | P (%) | K (%) | Ca (%) | Mg (%) | S (%) |
|---|---|---|---|---|---|---|---|
| AAB | H531 | 0.80 | 0.04 | 4.15 | 4.43 | 0.59 | 0.12 |
| | Matta Poovan | 1.08 | 0.24 | 3.08 | 3.42 | 1.09 | 0.11 |
| | Champa- B9 | 1.01 | 0.07 | 3.60 | 3.90 | 0.50 | 0.07 |
| | Champa- II | 0.60 | 0.09 | 3.54 | 3.88 | 0.96 | 0.05 |
| | Champa- III | 0.71 | 0.08 | 3.01 | 3.32 | 0.87 | 0.12 |
| | Champa- V | 0.87 | 0.06 | 3.73 | 4.02 | 0.55 | 0.09 |
| | Amritpani | 0.98 | 0.20 | 2.94 | 2.42 | 0.82 | 0.13 |
| | Alpan Manhar | 0.88 | 0.05 | 4.82 | 4.59 | 0.71 | 0.07 |
| | Dudhsagar | 0.31 | 0.08 | 4.91 | 4.11 | 2.18 | 0.08 |
| | Kalibhog | 0.95 | 0.08 | 2.14 | 2.75 | 0.59 | 0.11 |
| | Hill banana | 0.95 | 0.16 | 2.12 | 3.32 | 1.69 | 0.10 |
| | Co-I | 0.87 | 0.03 | 4.68 | 4.98 | 0.80 | 0.16 |
| | Madhuranga bale | 1.22 | 0.03 | 3.82 | 4.02 | 0.57 | 0.08 |
| | Kanai Banshi | 0.80 | 0.20 | 1.36 | 1.87 | 1.70 | 0.12 |
| | Kanthali Clone-IV | 0.66 | 0.14 | 1.59 | 1.22 | 2.25 | 0.11 |
| | Kanthali Clone- V | 0.84 | 0.09 | 0.80 | 0.63 | 2.00 | 0.05 |
| | Karpooravelli | 0.85 | 0.16 | 1.72 | 1.23 | 1.44 | 0.11 |
| | Mean | 0.85 | 0.11 | 3.06 | 3.18 | 1.14 | 0.10 |
| | Range | 0.31-1.22 | 0.03-0.24 | 0.80-4.91 | 0.63-4.98 | 0.50-2.25 | 0.05-0.16 |

**Table 5:** Macro-nutrients contents in the banana corms of the genomic composition ABB

| Genomic group | Cultivar Name | N (%) | P (%) | K (%) | Ca (%) | Mg (%) | S (%) |
|---|---|---|---|---|---|---|---|
| | Baman Deshi | 0.17 | 0.22 | 2.25 | 1.92 | 1.38 | 0.08 |
| | Cuba- 03 | 0.69 | 0.21 | 4.26 | 3.71 | 1.14 | 0.09 |
| ABB | Manohar-I | 0.57 | 0.13 | 1.66 | 2.59 | 0.77 | 0.09 |
| | Manohar-II | 0.66 | 0.20 | 1.89 | 2.93 | 1.39 | 0.10 |
| | Onchini | 1.30 | 0.34 | 2.87 | 2.75 | 1.72 | 0.17 |
| | Bagda | 1.09 | 0.18 | 2.35 | 1.99 | 1.05 | 0.15 |
| | FHIA-3 | 0.56 | 0.28 | 6.79 | 4.93 | 1.03 | 1.13 |
| | Mean | 0.72 | 0.22 | 3.15 | 2.97 | 1.21 | 0.26 |
| | Range | 0.17-1.30 | 0.13-0.34 | 1.66-6.79 | 1.92-4.93 | 0.77-1.72 | 0.08-1.13 |

**Table 6:** Macro-nutrients contents in the banana corms of the unknown genomic composition:

| Genomic group | Cultivar Name | N (%) | P (%) | K (%) | Ca (%) | Mg (%) | S (%) |
|---|---|---|---|---|---|---|---|
| | Aivanka poovan | 0.55 | 0.14 | 2.07 | 1.96 | 1.70 | 0.12 |
| Unknown | Kechazepa (seeded) | 0.94 | 0.18 | 3.18 | 4.33 | 0.80 | 0.07 |
| | Becha kala (Seeded I) | 1.12 | 0.11 | 1.53 | 1.05 | 1.83 | 0.08 |
| | Sannachen Kadali | 0.38 | 0.12 | 1.49 | 1.26 | 2.29 | 0.06 |
| | Ney Poovan | 0.31 | 0.06 | 1.33 | 2.39 | 2.37 | 0.07 |
| | Mean | 0.66 | 0.12 | 1.92 | 2.20 | 1.80 | 0.08 |
| | Range | 0.31-1.12 | 0.06-0.18 | 1.33-3.18 | 1.05-4.33 | 0.80-2.37 | 0.06-0.12 |

## Conclusion
The essential macronutrients content of corms of different banana genotypes were found to be highly variable. This may state that some banana genotypes have sufficient macronutrients reserved in their corms for nurturing new developed suckers from the mother corm. Banana corm was mostly studied for their conventional vegetative propagation through various application. Therefore, this macronutrient estimation experiment can be a potential service to scholars and scientist for utilizing left over Banana corm and for its further advance research on many aspects.

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