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# Effect of integrated nutrient management on yield, quality and sensory evaluation of baby corn (*Zea mays* L.)

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**ABSTRACT**

*Field experiment was carried out at G B Pant University of Agriculture & Technology, Pantnagar (India) during Kharif season of 2016-17 to study the effect of integrated nutrient management on yield, quality and sensory evaluation of baby corn (Zea mays L.) in Terai region of Uttarakhand (India). The experiment consisted of 11 treatments i.e. $T_1$-control, $T_2$-seed treatment with Azotobacter (STAz),$T_3$-seed treatment with Azospirillum (STAs),$T_4$-seed treatment with Azotobacter +Azospirillum (STAzAs), $T_5$-50% NPK, $T_6$-100% NPK, $T_7$-Seed treatment with Azotobacter+50% NPK (STAz+50% NPK), $T_8$-Seed treatment with Azospirillum+50%NPK(STAs+50%NPK), $T_9$-seed treatment with Azotobacter+Azospirillum+50% NPK(STAzAs+50% NPK), $T_{10}$-Seed treatment with Azotobacter+Azospirillum+75% NPK (STAzAs+75%NPK) and $T_{11}$-Seed treatment with Azotobacter+Azospirillum+100% NPK(STAzAs+100%NPK) was laid out in Randomized Block Design (RBD) with three replications. The total baby corn yield was recorded significantly higher under STAzAs+100%NPK than STAzAs+75%NPK with 3.5% greater baby corn yield. Similarly, STAzAs+75%NPK produced 4.1per cent higher baby corn yield than 100%NPK. Total soluble solids (TSS) were found significantly higher at STAzAs+75%NPK, while average protein content was also estimated significantly higher at STAzAs+100%NPK. The baby corn produced under STAzAs+100%NPK was 'extremely liked' by 80 per cent and 'liked very much' by 20per cent of the respondents, while baby corns produced under STAzAs+75%NPK were 'extremely preferred' by 70 per cent and 'liked very much' by 30 per cent of the respondents. Seed treatment with biofertilizers improved not only baby corn yield but also quality and may help to reduce 25% NPK dose without significant reduction in baby corn yield. Therefore, it may be concluded that seed treatment with biofertilizers coupled with 75% NPK may not only increase the baby corn yield, TSS and crude protein but also improves sweetness, taste and higher acceptability by consumers.*

***Keywords***: *Azotobacter, Azospirillum,* baby corn, biofertilizer, crude protein and sensory evaluation

Specialty maize particularly baby corn is a future crop mainly because of many specific reasons like free from chemicals, early maturity, easily fit into different cropping systems, high B:C ratio, required less water and climate resilient. Besides, it has many uses like *vegetable, salad, soup, pickle, kheer, murabba, chutney, manchurian, halwa etc*., hence it is gaining popularity world over. Its demand is very high in USA, Japan, Singapore, Australia, Canada, New Zealand and Arab countries. India also has a great potential and may lead in the world mainly because of suitable weather conditions throughout the year. Among the Indian states, Meghalaya, Bihar, Western Uttar Pradesh, Haryana, Punjab, Maharashtra, Karnataka and Andhra Pradesh are the leading states in baby corn production.

In race towards high production and profit from agriculture, the farmers are adopting abnormal production technologies like heavy and injudicious use of chemical fertilizers that have reduced the factor productivity, besides, eroding biodiversity and enhancing environmental pollution (Shivran *et al.*, 2014). Therefore, it's an urgent need to optimize the integrated nutrient management in different crops including baby corn (Singh *et al.*, 2009 and Lone *et al.*, 2013)). The partial factor productivity, agronomic use efficiency of N, P and K were also reported maximum with application of 70% RDF through inorganic and 30% of N through FYM (Sharma and Banik, 2012). It has also been reported that the low cost technologies *i.e.* biofertilizers, organic manures, crop residues, sewage and sludge, industrial effluents *etc*. may not only partially replace the chemical fertilizers but also sustain the soil and crop productivity in long run (Ranjan *et al*., 2013). The free living biofertilizers like *Aztobacter* and *Azospirillum* produce growth substances that enhance crop growth and development (Tien *et al*., 2000). Harvesting (picking) of baby corn is again important aspect as it is harvested in 4-5 pickings with one or two days intervals. The baby corn yield differed with pickings as the yield increased up to 3-4 pickings and then reduced. Not only the baby corn yield but also quality parameters are also differed with advancement of picking period. Hence, it is high time to think about the high quality baby corn production. Therefore, the present study was carried out

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to study the effect of integrated nutrient and picking management on yield, quality and sensory evaluation of baby corn (*Zea mays* L.) production in *Terai* region of Uttarakhand (India).

## MATERIALS AND METHODS

Field experiment was carried out at G B Pant University of Agriculture and Technology, Pantnagar (India) during Kharif season of 2016-17 to study the effect of integrated nutrient on yield, quality and sensory evaluation of baby corn (*Zea mays* L.) production in Terai region of Uttarakhand (India). The experimental site was slightly silty clay loam texture with neutral pH 7.2, organic carbon 0.72% and low in available nitrogen, 233.48 kg $ha^{-1}$ as well as medium in phosphorus and potassium with 27.80 and 233 kg $ha^{-1}$, respectively. The experiment consisted of 11 treatments *i.e*. $T_1$-control, $T_2$-seed treatment with *Azotobacter (STAz)*, $T_3$-seed treatment with *Azospirillum (STAs)*, $T_4$-seed treatment with *Azotobacter* + *Azospirillum (STAzAs)*, $T_5$-50% NPK, $T_6$-100% NPK, $T_7$-Seed treatment with *Azotobacter* + 50% NPK (STAz + 50% NPK), $T_8$- Seed treatment with Azospirillum+50%NPK (STAs + 50% NPK),$T_9$-seed treatment with *Azotobacter*+*Azospirillum*+50% NPK (STAzAs + 50% NPK), $T_{10}$-Seed treatment with *Azotobacter* + *Azospirillum* +75% NPK (STAzAs + 75% NPK) and $T_{11}$-Seed treatment with *Azotobacter* + *Azospirillum* + 100% NPK (STAzAs + 100%NPK) was laid out in Randomized Block Design (RBD) with three replications. Baby corn variety 'VL Baby Corn-1' was planted on 23rd July 2015 and harvested on 22 September 2015. The crop was fertilized with recommended dose of 180:60:40:: $N:P_2 0_5:K_2 0$ kg $ha^{-1}$ with 50% N and full P and K was applied at sowing time and remaining N was equally double top-dressed at 25 and 40 days after sowing. The biofertilizers @ 200g $10^{-1}$ kg seed was used for seed treatment. Atrazine was applied as pre-emergence @ 1.0 kg *a.i*. $ha^{-1}$ for weed control. The first and last picking of baby corn was taken 50 and 60 days after sowing, so total five manual pickings in 10 days were taken and later the crop was harvested for green fodder. The randomly selected 10 plants from each treatment were tagged for total soluble solids (TSS) and N content analysis at each picking, while the baby corn yield was estimated from net plot. Refractometer was used to estimate TSS, while protein content was calculated on the basis of N content multiplying with 6.25 at each pick of baby corn (AOAC, 1965). The sensory evaluation of baby corn was estimated with the help of Nine-Point Hedonic Scale (Amerine *et al.*, 1965). Sensory evaluation was based on the observations of 10 hostel inmates who gave their opinion about the likeliness of baby corn of each picking. The data obtained from various observations on growth, yield and quality were subjected to statistical analysis online by OPSTAT using Randomized Block Design (RBD).

## RESULTS AND DISCUSSION

The baby corn yield was significantly influenced by different nutrient management practices at all the pickings and the baby corn yield increased up to the 4th pick followed by declining trend at later pickings (Table 1). The baby corn yield was found significantly higher with application of STAzAs + 100% NPK at 1st and 2nd pick and remained non-significant with STAzAs + 75% NPK and 50% NPK coupled with either of *Azot*, *Azos* or combined and 100% NPK. At 3rd pick, the highest baby corn yield was noticed with STAzAs + 75%NPKthat was statistically at par with 100% NPK and STAzAs + 100%NPK. At 4th and 5th pick, STAzAs + 100% NPKproduced higher baby corn that was significantly similar to STAzAs + 75%NPK.

The total baby corn yield was recorded significantly higher with application of STAzAs+100%NPK that was significantly similar to STAzAs+75%NPK. STAzAs + 100% NPK also gave 7.9 and 3.5% greater baby corn yield than treatments 100%NPK and STAzAs + 75% NPK, respectively. Similarly, STAzAs + 75% NPK, being non significant with 100% NPK, produced 4.1% higher baby corn yield than 100% NPK. The higher baby corn yield with application of STAzAs + 100% NPKwas the result of more baby cob yield including length and width of baby corn. Dhoke *et al.* (2007) also reported significantly equal maize yield at both 100% RDF and 75% RDF + *Azotobacter*. The treatments where seed was treated with either of *Azotobacter, Azospirillum* or combined, produced non-significant baby corn yield at 4th and 5th picking as well as the total baby corn yield but at 1st, 2nd and 3rd pick, the baby corn yield was statistically equal to seed treatment with either of *Azotobacter* or *Azospirillum*, however the seed treatment with *Azotobacter* gave higher baby corn yield. Similarly, seed treatment with *Azotobacter* and Azot + Azos were non-significant at 1st, 2nd and 3rd pickings but combined seed treatments produced greater baby corn yield. It is evident from the results that STAzAs produced 11 and 28.5per cent greater baby corn yield than STAz and STAs, respectively. Similarly, STAz gave 15.8 per cent greater baby corn yield than STAs. The seed treatment with *Azotobacter* or *Azospirillum* produced 30.9 and 13 per cent higher corn yield, respectively than control but combined application of *Azot* + *Azos* gave 45.3 per cent more corn yield than control.

The treatments where 50%NPK coupled with seed treatment with biofertilizers either of *Azotobacter*, *Azospirillum* or combined produced significantly equal baby corn yield at all the pickings. However, total baby corn yield was the highest with application of

**Table 1: Effect of integrated nutrient and picking management on baby corn yield**

| Treatments | Baby corn yield (kg ha$^{-1}$) | | | | | |
|---|---|---|---|---|---|---|
| | 1st Pick | 2nd Pick | 3rd Pick | 4th Pick | 5th Pick | Total |
| Control | 60<br>(7.1) | 114<br>(13.3) | 254<br>(29.7) | 324<br>(37.8) | 104<br>(12.1) | 856 |
| Seed treatment with *Azotobacter* (STAz) | 71<br>(6.3) | 202<br>(18.0) | 337<br>(30.0) | 387<br>(34.6) | 125<br>(11.1) | 1122 |
| Seed treatment with *Azospirillum* (STAs) | 59<br>(6.1) | 161<br>(16.6) | 279<br>(28.8) | 362<br>(37.4) | 108<br>(11.1) | 96 |
| Seed treatment with *Azot+Azos* (STAzAs) | 126<br>(10.1) | 212<br>(17.1) | 364<br>(29.2) | 404<br>(32.4) | 139<br>(11.2) | 1245 |
| 50% NPK | 151<br>(10.5) | 322<br>(22.2) | 389<br>(26.9) | 434<br>(30.0) | 150<br>(10.4) | 1446 |
| 100%NPK | 274<br>(14.3) | 388<br>(20.2) | 479<br>(25.0) | 544<br>(28.4) | 233<br>(12.1) | 1918 |
| STAz+50%NPK | 254<br>(14.8) | 374<br>(21.7) | 429<br>(25.0) | 490<br>(28.5) | 172<br>(10.0) | 1719 |
| STAs+50%NPK | 247<br>(14.8) | 373<br>(22.4) | 428<br>(25.7) | 449<br>(27.0) | 168<br>(10.1) | 1665 |
| STAzAS+50%NPK | 264<br>(14.7) | 383<br>(21.4) | 457<br>(25.5) | 500<br>(27.8) | 191<br>(10.6) | 1795 |
| STAzAs+75%NPK | 257<br>(12.8) | 404<br>(20.2) | 529<br>(26.5) | 585<br>(29.3) | 223<br>(11.2) | 1997 |
| STAzAs+100%NPK | 283<br>(13.7) | 410<br>(19.8) | 517<br>(25.0) | 603<br>(29.1) | 256<br>(12.1) | 2069 |
| **SEm (±)** | **12.4** | **15.7** | **18.1** | **17.8** | **14.9** | **35** |
| **LSD (0.05)** | **37** | **46** | **54** | **53** | **44** | **104** |

*Note: Figures in parentheses indicate percent values of baby corn production*

**Table 2: Effect of integrated nutrient and picking management on total soluble solids (%) at harvest**

| Treatments | TSS (%) | | | | | |
|---|---|---|---|---|---|---|
| | 1st pick | 2nd pick | 3rd pick | 4th pick | 5th pick | Average |
| Control | 7.7 | 7.7 | 8.0 | 9.0 | 7.7 | 8.1 |
| Seed treatment with *Azotobacter* (STAz) | 7.7 | 7.7 | 8.3 | 9.0 | 9.0 | 8.3 |
| Seed treatment with *Azospirillum* (STAs) | 7.7 | 7.7 | 8.3 | 9.0 | 8.3 | 8.2 |
| Seed treatment with *Azot+Azos* (STAzAs) | 7.7 | 8.0 | 8.7 | 9.3 | 9.0 | 8.5 |
| 50%NPK | 8.0 | 8.0 | 8.7 | 10.0 | 9.7 | 8.9 |
| 100%NPK | 8.3 | 8.7 | 9.3 | 10.7 | 10.0 | 9.4 |
| STAz+50%NPK | 8.0 | 8.3 | 9.0 | 10.0 | 9.7 | 9.0 |
| STAs+50%NPK | 8.0 | 8.0 | 9.0 | 10.0 | 9.7 | 8.9 |
| STAzAs+50%NPK | 8.0 | 8.3 | 9.0 | 10.7 | 10.0 | 9.2 |
| STAzAs+75%NPK | 8.7 | 8.7 | 9.7 | 11.0 | 10.0 | 9.6 |
| STAzAs+100%NPK | 8.3 | 8.7 | 10.0 | 10.7 | 10.0 | 9.5 |
| **SEm (±)** | **0.4** | **0.4** | **0.5** | **0.4** | **0.6** | **0.2** |
| **LSD (0.05)** | **NS** | **NS** | **NS** | **1.0** | **NS** | **0.6** |

**Table 3: Effect of integrated nutrient management on nitrogen and protein content at different picking stages of baby corn**

| Treatments | N content (%) | | | | | | Protein content (%) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st pick | 2nd pick | 3rd pick | 4th pick | 5th pick | Average | 1st pick | 2nd pick | 3rd pick | 4th pick | 5th pick | Average |
| Control | 1.31 | 1.63 | 1.70 | 1.70 | 1.64 | 1.60 | 8.2 | 10.2 | 10.6 | 10.6 | 10.3 | 10.0 |
| Seed treatment with *Azotobacter* (STAz) | 1.32 | 1.63 | 1.71 | 1.75 | 1.68 | 1.62 | 8.3 | 10.2 | 10.7 | 11.0 | 10.5 | 10.1 |
| Seed treatment with *Azospirillum* (STAs) | 1.31 | 1.63 | 1.74 | 1.73 | 1.67 | 1.62 | 8.2 | 10.2 | 10.9 | 10.8 | 10.4 | 10.1 |
| Seet treatment with *Azot*+*Azos* (STAzAs) | 1.32 | 1.65 | 1.74 | 1.76 | 1.71 | 1.64 | 8.3 | 10.3 | 10.9 | 11.0 | 10.7 | 10.2 |
| 50% NPK | 1.32 | 1.66 | 1.75 | 1.79 | 1.73 | 1.65 | 8.3 | 10.4 | 10.9 | 11.2 | 10.8 | 10.3 |
| 100% NPK | 1.53 | 1.92 | 1.88 | 1.93 | 1.90 | 1.83 | 9.5 | 12.0 | 11.8 | 12.1 | 11.9 | 11.4 |
| STAz+50%NPK | 1.53 | 1.69 | 1.87 | 1.91 | 1.87 | 1.77 | 9.6 | 10.5 | 11.7 | 11.9 | 11.7 | 11.1 |
| STAs+50%NPK | 1.52 | 1.67 | 1.86 | 1.94 | 1.85 | 1.77 | 9.5 | 10.5 | 11.6 | 12.1 | 11.6 | 11.1 |
| STAzAs+50%NPK | 1.53 | 1.78 | 1.87 | 1.91 | 1.87 | 1.79 | 9.6 | 11.1 | 11.7 | 11.9 | 11.7 | 11.2 |
| STAzAs+75%NPK | 1.53 | 1.89 | 1.90 | 1.92 | 1.91 | 1.83 | 9.6 | 11.8 | 11.9 | 12.0 | 11.9 | 11.4 |
| STAzAs+100%NPK | 1.54 | 1.90 | 1.89 | 1.93 | 1.92 | 1.84 | 9.6 | 11.9 | 11.8 | 12.1 | 12.0 | 11.5 |
| **SEm (±)** | **0.01** | **0.01** | **0.01** | **0.01** | **0.01** | **0.01** | **0.07** | **0.08** | **0.10** | **0.08** | **0.05** | **0.03** |
| **LSD (0.05)** | **0.03** | **0.04** | **0.05** | **0.03** | **0.02** | **0.01** | **0.20** | **0.20** | **0.30** | **0.23** | **0.15** | **0.11** |

STAzAs+50%NPK that remained significantly at par with STAz+50%NPK. The baby corn yield was lower with alone application of 50% NPK than combined application of biofertilizers+50%NPK at all the stages but remained significantly at par with STAz + 50%NPK and STAs+50%NPKat 3rd pick and STAs + 50%NPK at 4th pick as well as STAz + 50% NPK, STAs + 50% NPK at 5th pick. The treatments STAs + 50%NPK, STAz + 50%NPK and STAzAs + 50% NPK produced 19, 15.2 and 24.2 per cent higher baby corn yield, respectively than alone application of 50% NPK. Similarly, STAz + 50% NPK and STAzAs + 50% NPK produced 3.3 and 4.4 per cent more baby corn yield than STAs + 50% NPK and STAz + 50% NPK, respectively.

In general, the baby corn yield was recorded higher under seed treatment with biofertilizers than control (Table 1). The lowest baby corn yield was recorded under STAs at 1st pick but was non-significant with control and STAz. At 2nd and 3rd pick as well as total baby corn yield, was found the lowest under control, while at 4th and 5th pick, it remained lowest under control but it was significantly at par with STAz at 4th pick and all biofertilizer treatments i.e. STAz, STAs and STAzAs at 5th pick. The percent baby corn production under different picking indicated that the baby corn production was comparatively lower at first two pickings under control as well as seed treatment with biofertilizers, while the chemical fertilizer provided better early plant growth and therefore, the production under different pickings was almost uniformly distributed among different pickings but the highest production was recorded in 4th picking in all the treatments. Soil microorganisms, viz. *Azotobacter* and *Azospirillum* as $N_2$ -fixing bacteria could be beneficial source to enhance plant growth and produce considerable amounts of biologically active substances i.e., auxin, gibberellin etc. that promote growth of reproductive organs and increase plants' productivity (Yasari *et al*., 2009).

The TSS was recorded with the help of hand refractometer at all the pickings. The TSS value increased up to 4th pick and was influenced by different nutrient management practices (Table 2). The highest TSS was recorded at STAzAs + 75% NPK at all the picking except at 3rd picking where STAzAs + 100% NPK gave the highest values. TSS value at 4th pick as well as an average value was found significantly higher at STAzAs + 75% NPK that was statistically at par with STAzAs + 100% NPK, 100% NPK, STAz + 50% NPK, STAzAs + 50% NPK. The results revealed that chemical as well as biofertilizer application improved the TSS values due to synergistic effect of nitrogen due to *Azotobacter* and *Azospirillum*. These findings were also supported by Abou-El-Hamid *et al.* (2006).

**Table 4: Effect of integrated nutrient management on sensory evaluation of baby corns using Nine-point Hedonic Scale**

| Treatments | Nine-point Hedonic Rating | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Liked extremely** | **Liked very much** | **Liked moderately** | **Liked slightly** | **Neither like nor dislike** | **Disliked slightly** | **Disliked moderately** | **Disliked very much** | **Disliked extremely** |
| Control | - | 30% (3) | 40% (4) | 10% (1) | 10% (1) | 10% (1) | - | - | - |
| *Azotobacter* | - | 40% (4) | 30% (3) | 30% (3) | - | - | - | - | - |
| *Azospirillum* | - | 30% (3) | 50% (5) | 20% (2) | - | - | - | - | - |
| *Azot+Azos* | 20% (2) | 50% (5) | 30% (3) | - | - | - | - | - | - |
| 50% NPK | 10% (1) | 40% (4) | 50% (5) | - | - | - | - | - | - |
| 100% NPK | 30% (3) | 60% (6) | 10% (1) | - | - | - | - | - | - |
| 50% NPK +*Azotobacter* | 60% (3) | 40% (4) | - | - | - | - | - | - | - |
| 50% NPK+*Azospirillum* | 40% (4) | 30% (3) | 30% (3) | - | - | - | - | - | - |
| 50% NPK +*Azot+Azos* | 30% (3) | 60% (6) | 10% (1) | - | - | - | - | - | - |
| 75% NPK +*Azot+Azos* | 70% (7) | 30% (3) | - | - | - | - | - | - | - |
| 100% NPK +*Azot+Azos* | 80% (8) | 20% (2) | - | - | - | - | - | - | - |

*Note: Figures in parentheses indicate number of people*

Nitrogen content increased with an advancement of picking stages up to 4th pick, however it varied significantly among different integrated nutrient management practices (Table.3). At 1st pick, significantly highest nitrogen content was recorded with application of STAzAs+100%NPK that did not differ significantly with STAzAs + 75% NPK, 100% NPK, STAz + 500% NPK, STAs + 75% NPK and STAzAs + 50% NPK. The lowest nitrogen content was recorded at control and seed treatment with *Azospirillum* that remained non-significant with seed treatment with *Azotobacter* as well as *Azot+Azos* and 50% NPK. At 2nd pick, the highest nitrogen content was noticed with 100% NPK that was statistically at par with STAzAs + 75% NPK and STAzAs + 75% NPK. Significantly higher N content at 3rd pick was found with application of STAzAs+75%NPK that remained statistically at par with 100% NPK, 50% NPK + biofertilizers and STAzAs + 100% NPK. At 4th pick, the highest N content was recorded with application of STAzAs + 50%NPK that was significantly equal to 100% NPK, STAz + 50% NPK, STAzAs + 50% NPK, and STAzAs + 75% NPK. Similarly, at 5th pick as well as the average value, the highest N content was recorded with application of STAzAs+100%NPK that was non-significant with 100% NPK and STAzAs+75%NPK. On an average value, seed treatment with *Azot+Azos* had the highest N content than seed treatment with *Azotobacter* and *Azospirillum* solely though both values were non-significant to each other. The 50% NPK had significantly lower N content than both STAz + 50% NPK and STAs + 50% NPK, while STAzAs + 50% NPK had the higher N content than both STAz + 50% NPK and STAs + 50% NPK but these treatments were significantly at par. Higher content of nitrogen at higher dose was because of better nitrogen availability to crop plants. These findings were in agreement of findings reported by Hassan *et al.* (2010).

The integrated nutrient management practices had significant effect on protein content of baby corn and it increased up to 4th pick in all treatments (Table 2). At 1st pick, STAz + 50% NPK STAs + 50% NPK, STAzAs + 50%NPK, STAzAs + 75%NPK, STAzAs + 100%NPK and 100% NPK had significantly equal protein content. Similarly, seed treatment with *Azotobacter*, *Azot+Azos* and 50% NPK had equal protein content and remained non-significant with seed treatment with *Azospirillum*. At 2nd picking, 100% NPK gave the highest protein content that was statistically equal to STAzAs + 75% NPK and STAzAs + 100% NPK. At 3rd and 4th pick, the highest protein content was recorded under STAzAs + 75% NPK and 100 % NPK, respectively and remained significantly at par with all other treatments including 100% NPK and seed treatments with biofertilizers coupled with either 50, 75 or 100%NPK. The lowest value was recorded under control at 3rd and 4th pick but remained significantly at par with STAs treatment. It was also found that the seed treatment with *Azot + Azos* had significantly equal protein content to 50% NPK. At 5th pick again, STAzAs + 100% NPK gave the highest protein content and it was significantly equal to STAzAs+75%NPK and 100% NPK. Average protein content was also estimated higher at STAzAs + 100% NPK that was significantly equal to STAzAs + 75% NPK. It was also clear from the results that the treatments *Azot+Azos*, STAz + 50% NPK and STAs + 50% NPK had significantly equal protein content. The increase in protein content due to inoculation of seeds with biofertilizers and higher dose of nitrogen leads to release of plant growth promoting bacteria which caused higher availability of nutrients and increased the biochemical reactions which in turn increased the protein content. Similar findings were also reported by Kizilog *et al.* (2001).

The sensory evaluation of baby corn was made using Nine-Point Hedonic Scale particularly on likeliness of baby corn and results are presented in the table 3.The baby corn produced under STAzAs+100NPK were ‘extremely liked’ by 80 per cent and ‘liked very much’ by 20 per cent of the respondents, while baby corns produced under STAzAs+75%NPK were ‘extremely preferred’ by 70 per cent and ‘liked very much’ by 30 per cent of the respondents. The baby corns harvested from seed treatment with *Azotobacter* were ‘liked very much’ by 40 per cent, ‘moderately liked’ by 30 per cent and ‘slightly liked’ by 30 per cent of the respondents, while *Azospirillum* treated baby corns were ‘liked very much’ by 30 per cent, ‘moderately liked’ by 50 per cent and ‘slightly liked’ by 20 per cent of the respondents. The results were very encouraging when the baby corns were received from the plot where both biofertilizers were treated because 20 per cent of the respondents ‘extremely liked, 50 per cent ‘liked very much’ and 30 per cent’ liked moderately’. In contrast, the baby corn produced at 50% NPKcoupled with biofertilizers improved the likeliness of the baby corn as 60 per cent respondents ‘liked extremely’ and 40 per cent ‘liked very much’ under STAz+50%NPK, 40 per cent ‘liked extremely’, 30 per cent ‘very much’ and 30 per cent ‘moderately’ under STAs+50%NPK as well as 30 per cent ‘extremely liked’, 60 per cent’ very much’ and 10 per cent ‘moderately’ liked under STAzAs+50%NPK. The likeliness of the baby corn was also improved with application of 100% NPK compared to 50% NPK as 30, 60 and 10 per cent at 100% NPK whereas 10, 40 and 50 per cent) of the respondents at 50% NPK were ‘extremely liked’, ‘very much liked’ and ‘moderately liked’, respectively. It was observed that baby corn was more tender, sweet, juicy and larger size at both application of higher dose of NPK or coupled with biofertilizers.

In general, the above results revealed that both nitrogen and biofertilizers played a significant role in improving the taste and likeliness by the respondents. The preference and likeliness of the baby corn might be based on the taste, sweetness and juiciness. Hence, higher dose of nitrogen and biofertilizer improved the availability of nutrients resulting into higher uptake of nitrogen and other nutrients that might have improved the taste and sweetness of the baby corn.

On the basis of above findings, it may be concluded that seed treatment with biofertilizers coupled with 75% NPK may not only increase the baby corn yield, TSS and crude protein but also save 25% NPK nutrients with better sweetness, taste and acceptability by consumers.

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