Conclusions

This study is the first attempt in China to omit N, P, or K in banana based on prescribed OPT fertilizer treatment. Compared to the OPT, omission of P or K significantly decreased fruit yield in the mother plants while omission of N, P, or K all resulted in less yield from the following crop of daughter plants. Omission of K produced the largest reduction of yield and profit in both years.

In terms of storage traits, the content of chlorophyll in fruit peels decreased, while cyanin and flavonoid contents increased during storage. Ethylene release rates from banana fruits grown under -N, -P, or -K treatments increased over the time in storage compared with plants receiving the OPT treatment. Balanced fertilization with NPK could markedly improve fruit storage quality and extend storage life. Despite these yield and quality gains, large discrepancies in AE values were apparent between mother and daughter plants. More field experimentation is required regarding the balanced use of fertilizer application within these two successive crops. Results from this study suggest the need to address the nutrition of mother and daughter crops in a more distinct manner in order to address the differences in yield potential that are in part caused by differences in crop growth and development and environmental conditions.

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