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V- SUMMARY AND CONCLUSION

This study was initiated during two consecutive seasons of 2001/ 2002 and 2002/ 2003 on second and third ratoons of Williams banana plants. Plants are grown in a private orchard situated at Kafr Gomaa village, Beni Suef Governorate. The soil texture is silty clay. Planting distance was 3.5 x 3.5 m.

The experiment included the following two factors.

1-The first factor consisted from the three organic N sources namely Compost El-Neel , F.Y.M. and Filter mud .

2-The second factor contained the four ratios from organic: inorganic N forms at fixed N rate namely 450 g N / plant namely 0.0 % organic : 100 % inorganic, 25 % :organic 75 % inorganic , 33.3% organic : 66.7 % inorganic and 50 % organic : 50 %inorganic.

The three organic N fertilizers were added once at the last week of December while inorganic N fertilizer was added at 14 equal doses applied at two weeks intervals starting from early April to the last week of October.

The experiment was set in completely randomized block design in split- plot arrangement which the three organic N sources ranked the main plots and the four ratios of organic and inorganic N forms occupied the sub-plots.

For evaluating the effect of organic N fertilizers on growth and fruiting behaviour of Williams banana, the following parameters were recorded:

1-Pseudostem height (m.) and girth (cm.)

2-Leaf area (m^2).

3-Number of green leaves / plant.

4-Assimilation area (m^2) / plant.

5-Percentages of N , P and K in the leaves.

6-Weight of bunch (kg.)

7-length of bunch (cm.)

8-Number of hands/ bunch.

9-Average hand weight (kg.)

10-Weight (g) and dimensions of finger (cm, length and width).

11-Percentages of pulp and peel weight.

12-Pulp/ peel.

13-Percentages of total soluble solids, total and reducing sugars and total acidity.

The nearly same obtained data in both the two experimental seasons could be summarized as follows:

1-Some growth characters:

Pseudostem height and girth, leaf area, number of green leaves per plant and assimilation area were greatly varied according to organic N sources. In ascending order the great values were recorded on Williams banana plants received the organic N sources namely F.Y.M., Filter mud and Compost El-Neel.

Differing organic to inorganic source of N ratio had an outstanding effect on growth characters of Williams banana. Growth characters were positively affected with using organic along with inorganic N source compared to using N completely via organic N source. The stimulation on growth characters was associated with increasing the proportion of organic N source from 25% to 50% from the recommended N rate. Raising the organic N source

percentages from 33.3 to 50 % had a slight promotion on growth aspects. The maximum values were detected on plants received the recommended N rate as 50 % via organic and 50 % via inorganic N source. Completely application of N via inorganic source (0.0 % organic +100 % inorganic) was followed by producing the minimum values.

The maximum growth characters were recorded on Williams banana plants received 450 N / plant as 50 % Compost El-Neel plus 50 % via inorganic source.

The minimum values were detected on plant received 450g N / plant completely via inorganic N source.

2-Percentages of N, P and K in the leaves.

A remarkable variation was observed on percentages of N , P and K in the leaves among the three organic N sources. They were maximized in Williams banana plants fertilized with Compost El-Neel , Filter mud and F.Y.M. , in descending order.

Increasing the proportion of organic N fertilizers applied with inorganic N source was followed by a gradual stimulation on the percentages of N, P and K in the leaves. Complete application of the recommended N rate via inorganic N source resulted in the lowest values. Fertilizing Williams banana with 450 g N / plant as 50 % via organic plus 50 % via inorganic gave the best results with regard to N, P and K contents.

Dividing the recommended rate of N (450 g / plant) among organic and inorganic N sources as 50 % Compost El-Neel to 50 % mineral N source effectively maximized the percentages of N, P and

K in the leaves. Supplying the plants with inorganic N source alone without organic N source) gave the minimum values.

3-Yield and its components:

Fertilizing Williams banana plants with Compost El-Neel, Filter mud and F.Y.M., in descending order was favourable for improving weight and length of bunch and hand weight. Varying organic N sources had a slight effect on number of hands/ bunch.

There was a gradual promotion on weight and length of bunch and hand weight with increasing the percentages of organic N fertilizers aside from the inorganic N form under the recommended N rate. The maximum values were detected on the plants fertilized with 50 % organic + 50 % inorganic source of N of the recommended N rate, since no material promotion on such characters was observed with raising organic N levels from 33.3 to 50 %, it is possible to use the organic N fertilizers at 33.3 % of recommended N rate. Plants received N in the mineral source only had the lowest values. The studied interaction had no effect on number of hands / bunch in both seasons.

An economical yield of Williams banana plants was observed due to supplying the plants with 450 g N /plant as 50 % via Compost El-Neel and 50 % via inorganic N source.

4-Some physical characters of the fruits:

Supplying Williams banana plants with Compost El-Neel, Filter mud and F.Y.M., in descending order was favourable for improving physical characters of the fingers in terms of increasing weight and dimensions of finger, percentage of pulp and pulp / peel and in decreasing percentage of peel.

The promotion on physical characters of finger was associated with increasing the percentages of organic N sources from 25 to 50 % of the recommended N rate. Application of N in both sources was preferable than using mineral N alone in improving physical quality of the fingers.

The best results on physical quality of fingers were recorded when the plants received the recommended rate of N at 50 % organic + 50 % inorganic. Neglecting the application of organic N gave unfavourable effects on physical quality of fingers.

A remarkable promotion on physical quality of Williams banana fingers was observed due to supplying the plants with 450 g N / plant as half via Compost El-Neel and the other half via any mineral N source.

5-Some chemical characters of the fruits:

Varying organic N sources had an announced effect on chemical quality of the fingers. Amending Williams banana plants with Compost El-Neel, Filter mud and F.Y.M., in descending order was preferable for improving chemical quality in terms of inereasing total soluble solids as well as, total and reducing sugars and in decreasing the total acidity.

Chemical quality of the fingers were gradually improved by increasing the percentages of organic N fertilizers from 25 to 50.0 % aside from the mineral N source. A slight promotion on chemical quality was observed as a result of raising the percentage of organic fertilizers from 33.3 to 50 %.

Combined application of both organic plus inorganic forms of N was superior the application of mineral source alone in this respect.

Fertilizing Williams banana plants with 450 g N / plant as 50 % Compost El-Neel plus 50 % in any mineral N source was proved to be very effective in producing the best results on chemical quality of the fingers.

CONCLUSION

According to the obtained data, it is suggested to fertilize Williams banana plants with N at 450 g / plant as 50 % via Compost El-Neel plus 50 % via any mineral N source for obtaining an economical yield and improving physical and chemical characters of fingers. This study emphasized the necessary for using organic N fertilizers along with mineral N source at ratio did not exceed 50 % of the recommended N rate (450 g N / plant) in Williams banana orchards.