INFLUENCE OF NITROGEN FERTILISER ON YIELD AND NUTRITIONAL QUALITY OF 15 RELEASED OFSP VARIETIES IN MOZAMBIQUE

By

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1.0 Introduction

A huge yield gap exists between farmer's fields **(<7 t/ha)** and researcher managed on-farm trials **(9 - 11 t/ha)**

Major reason is poor soil fertility management. Nitrogen depletion is widespread

Research on nitrogen management on sweetpotato has not been done in Mozambique

General response of the 15 released varieties to N fertiliser have not been studied

1.1 Objective

To assess the effect of three N levels (0, 100, 200 kg/ha) on yield and nutritional quality of 15 released OFSP varieties in Mozambique.

2.0 Materials and methods

Table 1 shows the 15 released varieties used in the experiments and their yield and nutritional characteristics

Trials were established *Umbeluzi research station* ($26^0$03'S & 32^O15 'E); 12 masl.

Soils are sandy loam at the top and become sandy below 1.75m depth level

Soils were analysed before planting

Trials were established during the wet season

2.1 Experimental design: 15x3 factorial experiment in a randomised complete block design with three replicates was used. Varieties and N levels were the factors

2.2 Layout of the experiments

Six row plots, 6 m long were planted

Inter- and intra – row spacings of 90 cm and 30 cm were maintained respectively.

Yield data and other traits were taken from the four inner rows

N treatments (0, 100, 200 kg/ha) were basally applied at planting. Other macronutrients, P and K were also uniformly applied at a rate of 80 and 150 kg ha^{-1} respectively.

At harvest (150 DAP), 3 root samples were sent to the laboratory of NIRS analysis at CIP Maputo office.

Table 1: Characteristics of the 15 released varieties used in the trial

Variety name	Root yield (t/há)	Vine yield (t/há)	BC (mg/100g/DW	DM (%)	Fe (mg/100g/DW)	Zn (mg/100g/DW)
AMELIA	17.3	7,0	15.9	31.7	1.8	1.4
BELA	25.9	5,0	29.1	26.8	2.0	1.5
CECILIA	18.3	5,0	21.4	27.5	1.7	1.3
DELVIA	23.4	7,0	5.9	32.8	1.7	1.3
ERICA	16.7	6,0	23.9	24.8	1.7	1.2
ESTHER	18.6	2,0	10.5	26.4	1.6	1.1
GLORIA	14.9	5,0	24.6	31.5	2.0	1.4
ININDA	22.2	8,0	13.1	27.4	1.9	1.4
IRENE	19.6	7,0	7.7	28.6	1.9	1.5
JANE	21.2	5,0	26.8	28.5	1.7	1.3
LOURDES	18.3	5,0	30.5	25.5	2.0	1.5
MELINDA	27.1	7,0	10.5	25.2	1.7	1.3
NAMANGA	19.3	5,0	32.8	26.1	1.9	1.4
SUMAIA	21.6	6,0	28.2	25.9	1.9	1.4
TIO JOE	20	6,0	38.4	25.8	2.1	1.4
Mean	20.29	6,0	21.26	27.63	1.84	1.36
Min	14.90	2,0	5.90	24.76	1.60	1.13
Max	27.10	8,0	38.35	32.79	2.10	1.46

2.3 Traits measured and data analysis

Storage root yield (t/há), vine yield (t/há) and beta carotene were measured

Data was analysed in STATISTICA software.

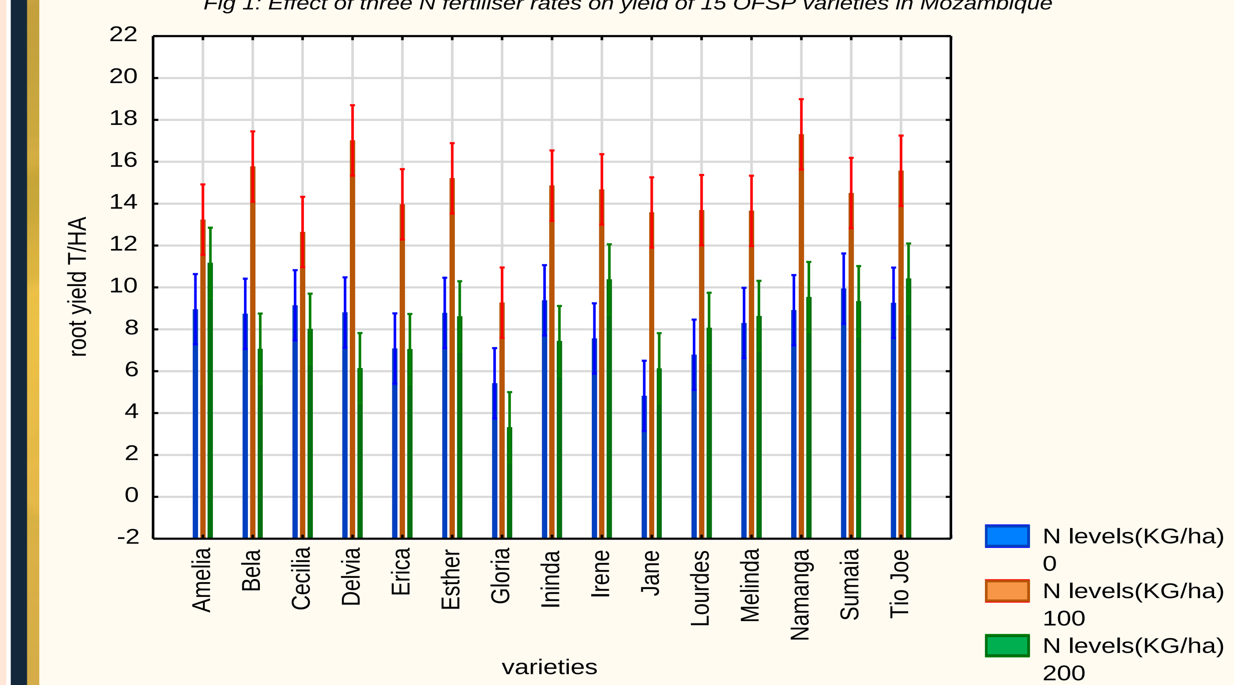
3.0 Results

3.1.Storage root yiield

N = 100 kg/há had significantly higher yields than N = 0 and N = 200kg/há *(Figure 1)*

Storage root yield significantly declined for all varieties at N = 200 kg/há.

Fig 1: Effect of three N fertiliser rates on yield of 15 OFSP varieties in Mozambique



3.2.*Vine yield*

The N = 200 kg/há promotes vine growth at the expense of storage root yield.

Vine yield (kg/há) was significantly higher at the N = 200 kg/há than 0 or 100 kg/há *(Fig 2)*

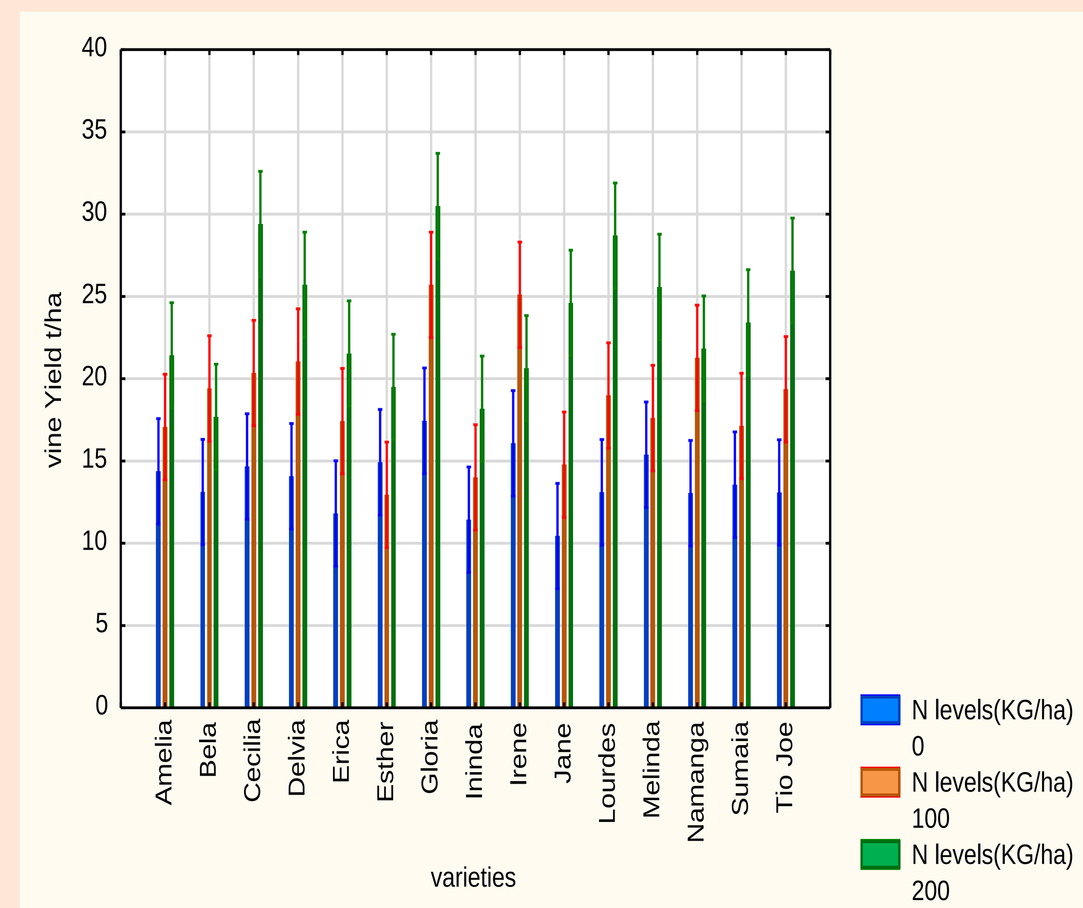
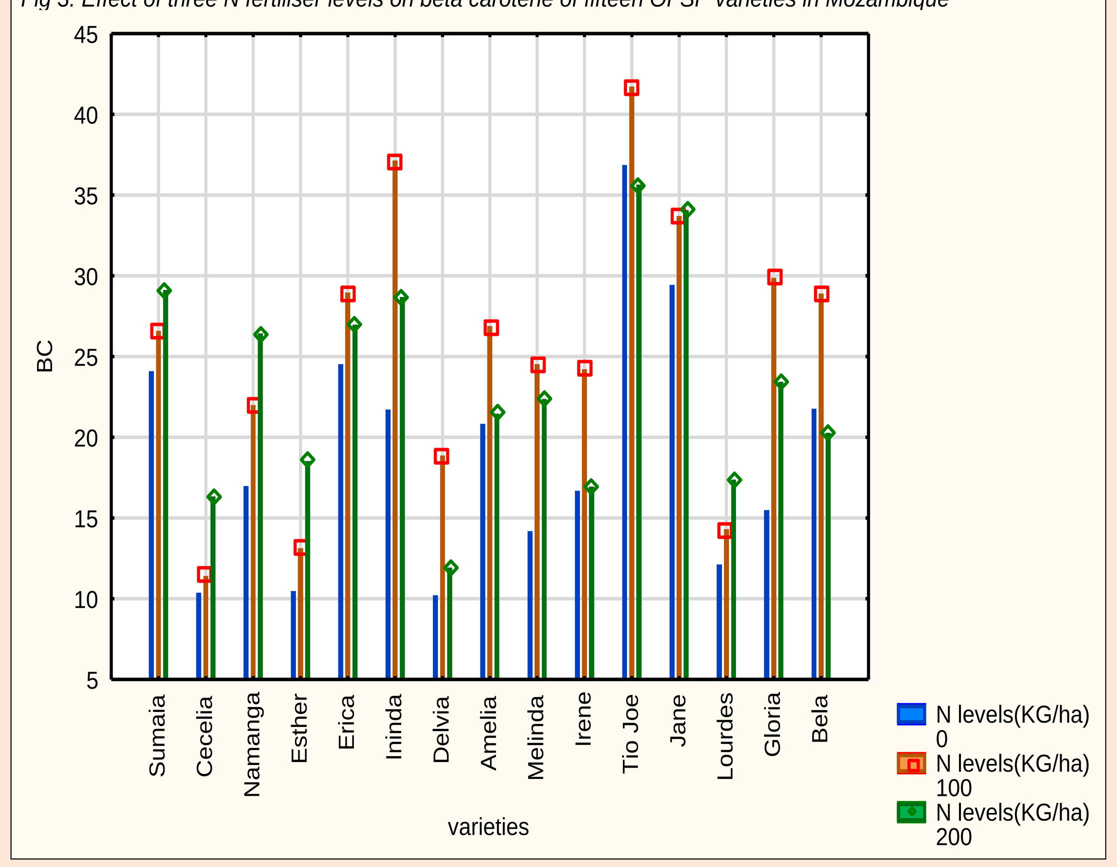


Fig 2: Effect of three N fertiliser levels on vine yield of fifteen OFSP varieties in Mozambique

3.3.Beta carotene

Beta carotene significantly dropped at the N = 200 kg/há (*Figure 3)*

Fig 3: Effect of three N fertiliser levels on beta carotene of fifteen OFSP varieties in Mozambique



4.0 Conclusions

Application of N at a rate of 100 kg/ha would increase farmers yields to 14 t/ha and increase beta carotene content by 18.9%. This N application rate appeared optimum in our experiments

However, when business is targeted at selling the vines the 200 kg/ha rate is ideal

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