

**Effect of spraying soils with
Bio Active Powder (BAP)
on ware potato quality and yield**

Department of Agriculture

Tests conducted by

Stichting Proefboerderijen Noordelijke Akkerbouw
(Northern Experimental Crop Growing Farms Foundation)

on behalf of

This report was drawn up after testing in collaboration with Holland Green B.V.

Effect of spraying soils with *Bio Active Powder (BAP)* on ware potato quality and yield

KW 0014

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Introduction

Good yields and quality crops depend on the availability of a wide range of minerals, inorganic substances and trace elements.

Magnesium, just as nitrogen, is contained in the leaf proteins that are responsible for photosynthesis, and its ions are involved in all enzymatic reactions. Plants absorb magnesium through root tips, and interrupted root growth or reduced supply may cause deficiencies. Potato plants have a max. demand for magnesium (and sulfur) when their tubers start to grow, and during the flowering period.

Magnesium deficiency first affects the oldest leaves which, starting from the center, turn a light green between the veins. Serious deficiencies will cause the leaf to turn yellow quickly, to develop dead spots between the veins, and to die eventually. If only little nitrogen is supplied, such deficiencies are observed earlier, but sensitivity to magnesium deficiency varies clearly from one variety to another.

Trials conducted together with Holland Green B.V. were meant to test how BAP affected ware potato yield and quality.

November 2000

Experimental setup

Location	Treatment	Dosage	Time
A.	untreated	-	-
L	Bio Active Powder	1 kg/ha	1* prior to row cultivation

General test results

Variety	Asterix
Planted on	May 2, 2000
Planting distance	30 cm
Previous crop	Spring barley
Soil analysis	pH-KCl, 7.4; CaCO ₃ 9.2; org. matter 3.5; Lutum*) 22 %; Pw no. 27; K no. 28; K-HCl 27; MgO 141; Mn 150
N min. 0-60 cm	29 kg N
Fertilization	Sept. 11: 400 kg/ha K ₂ O (Vinassekali)
April 10	200 kg/ha P ₂ O ₅
May 15	165 kg N+81 kg N (June 23) KAS
Herbicide	May 16 2 l/ha Afarin
Crop disease control	field application of Shirlan + 1*2.5 l/ha Curzate M (June 27)
Defoliated on	Sept. 14
Harvested on	Oct. 4

*) pesticide

Test practice

Seed potatoes of the variety Asterix, size 35/50, were well chitted in trays and hardened in a greenhouse.

Two thirds of fertilizer were given on May 15, followed by additional fertilization with KAS on June 23. Furrows were tilled by rotary cultivator on May 15, after spraying location L with BAP.

Emergence around May 26 was good and uniform, with approx. 41,400 plants per ha.

Soil coverage was 71% on June 21, 95% on June 29, and 99% on July 6.

Spraying was carried out on these days:

Slight color differences were found.

On Aug. 16, the untreated location (A) showed serious Mn deficiency, which was less in the other locations.

After the entire field had been defoliated with Reglone, the potatoes were lifted on Oct. 4. They were dried and graded, followed by underwater weighing of the 50/60 mm sizes. A mixed sample was also sent to ALF for tuber analysis.

Results

Analytical findings for leaf stalks are given in Table 1. Table 2 lists analytical results for the dry matter of leaves, Table 3 for the dry matter of tubers, and Table 4 yields per variety, underwater weight and leaf color as found on Sept. 1.

Table 1: Elements (mg/l) found in leaf stalks on Aug. 1

Loc.NO₃PKMgSCaNaClMnBFeZnCuA5647213501281541063430.20.40.31.30.3L555221
56226847718536800.40.31.10.3

Table 2: Elements (mg/100 g) found in dry matter of leaves on Aug. 1, 2000

Loc.MnDsTotNPKCaMgFeBZnNaCuMoA1.2111.21597044245241156402.4103.63.1241.
90.16L1.212.69566045346721164387.6113.33.2211.70.25Location A (untreated) showed
high values for most elements

Table 3: Elements (mg/100 g dry matter) found in leaves on Nov. 3, 2000

Loc.DsTot-
NPKCaMgFeMnBZnNaCuMoA20.351,7302622312951135.90.410.632.289.30.810.02L21.
6615.402342144831126.80.390.462.289.80.760.03Location A (untreated) had the highest
readings for TotN, P, K, Mn and B.

Table 4: Yields per variety (kg/Ar), underwater wt. (UWW) and leaf color on Sept. 1

Loc.<4040/5050/6060/70>70total>50%>50UWWColorA5311116010611441278623787L4
694177143334923537137671sd8163152217788890.4Locations L (BAP) and N had the
highest percentages > 50.

Yields were low for location A (untreated).

„N“ was a test using other means. No BAP was used on location A, „L“ was the treated location.

There was a total of 4 locations using no BAP, and 4 locations treated with BAP.

Surplus yield per ha: 5,100 kg

BAP-P was made available by:

Holland Green B.V. in Waspik

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Translator's remark – Line „L“ in Dutch text was partly crossed out