

The effect of a seaweed biostimulant, Kelpak[®], on banana (*Musa paradistica*) yields in South Africa

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Introduction

Seaweed has been used in farming practices for centuries. In recent times more refined seaweed products *Ecklonia maxima*, using unique low temperature cell burst technology. This process maintains the raw kelp's delicate, active compounds in Kelpak, making it a unique auxin dominant product. Kelpak application rates, methods and timings were evaluated in three trials on banana.



Materials and methods

Period of study 2004 to 2011

Locations Commercial farms in Mpumalanga Province, South Africa

Crop Williams variety bananas

Statistical design Randomized block, 6 single plant replicates per trial

Treatments Soil drench, trunk injection, bell injection, foliar spray

Cultivation Standard fertilizer and pest and disease control practices

Measurements Bunch mass, hands, fingers

Results and discussion

Trunk injection – 2004 Application where 50 ml of 0.5% and 1% Kelpak was injected 30 cm above soil level with a sharp hollow needle at pre-flower and fruit fill stages. A negative effect was observed in bunch mass at harvest (data not shown).

2008: Application method terminated.



Bell injection – 2004 Application where 50 ml of 10% and 20% Kelpak was injected at cigar leaf emergence (photograph) and before bell drop. No effect on bunch mass was recorded (data not shown due to 10-fold rate error). 2008: 1% and 2% Kelpak increased bunch mass with 15% and 12% respectively. 2010: 1% Kelpak increased yield by 11%.

Soil drench – 2004 Application where 400 ml of 0.5% and 1% Kelpak was poured on soil around plant base at pre-flower and again at fruit fill. Treatment had no effect on bunch mass. 2008: 200 ml of 0.5% and 1% Kelpak applications gave increases of 5% and 10% respectively. 2010: Application method terminated.

Foliar spray – 2004 Mist blower application at 2 L and 4 L Kelpak in 300 L water/ha applied 5, 4, 3 and 2 months before estimated harvest gave 10% and 15% increases in bunch mass respectively. 2008: 2 L/ha and 3 L/ha Kelpak gave increases of 16% and 17% respectively. 2010: 2 L/ha and 3 L/ha Kelpak applied four times increased bunch mass by 11% and 17% respectively. Two 3 L/ha applications 5 and 3 months before harvest also gave 17% yield increase, while two applications 4 and 2 months before harvest had no effect. None of the treatments had an effect on hands per bunch or fingers per hand, indicating larger fruit, rather than more fruit (data not shown).

Similar to many other crops, the results indicate that Kelpak foliar application at 3 L/ha to bananas can improve yields significantly. If bell injection is used for pest control, it provides an option for Kelpak application at a 1% rate. Kelpak continues to be a valuable asset to the farmer in improving banana yields.

Fig 1. Effect of Kelpak on Banana Yield 2004 -05 season

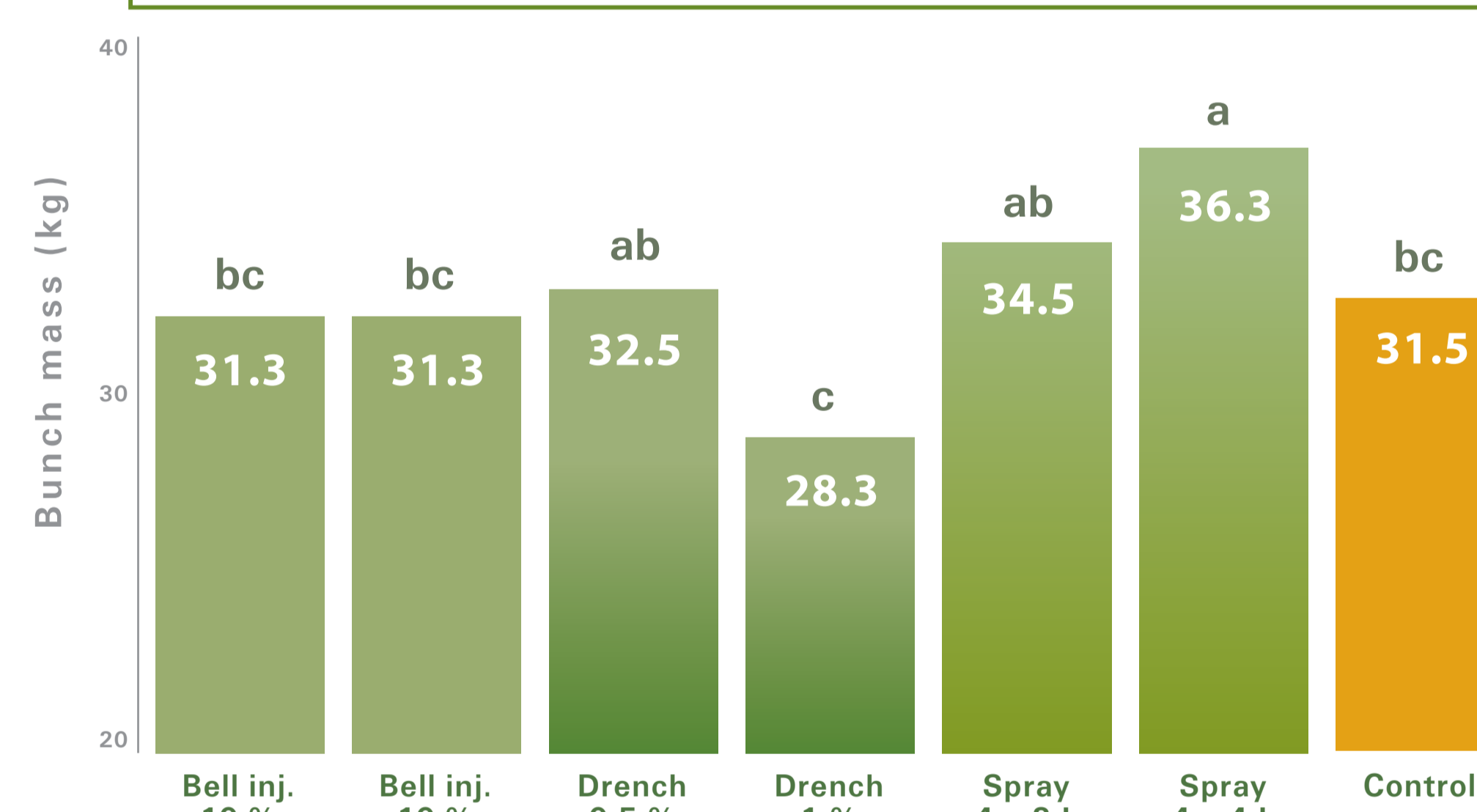


Fig 1. Effect of Kelpak on Banana Yield 2008 -09 season

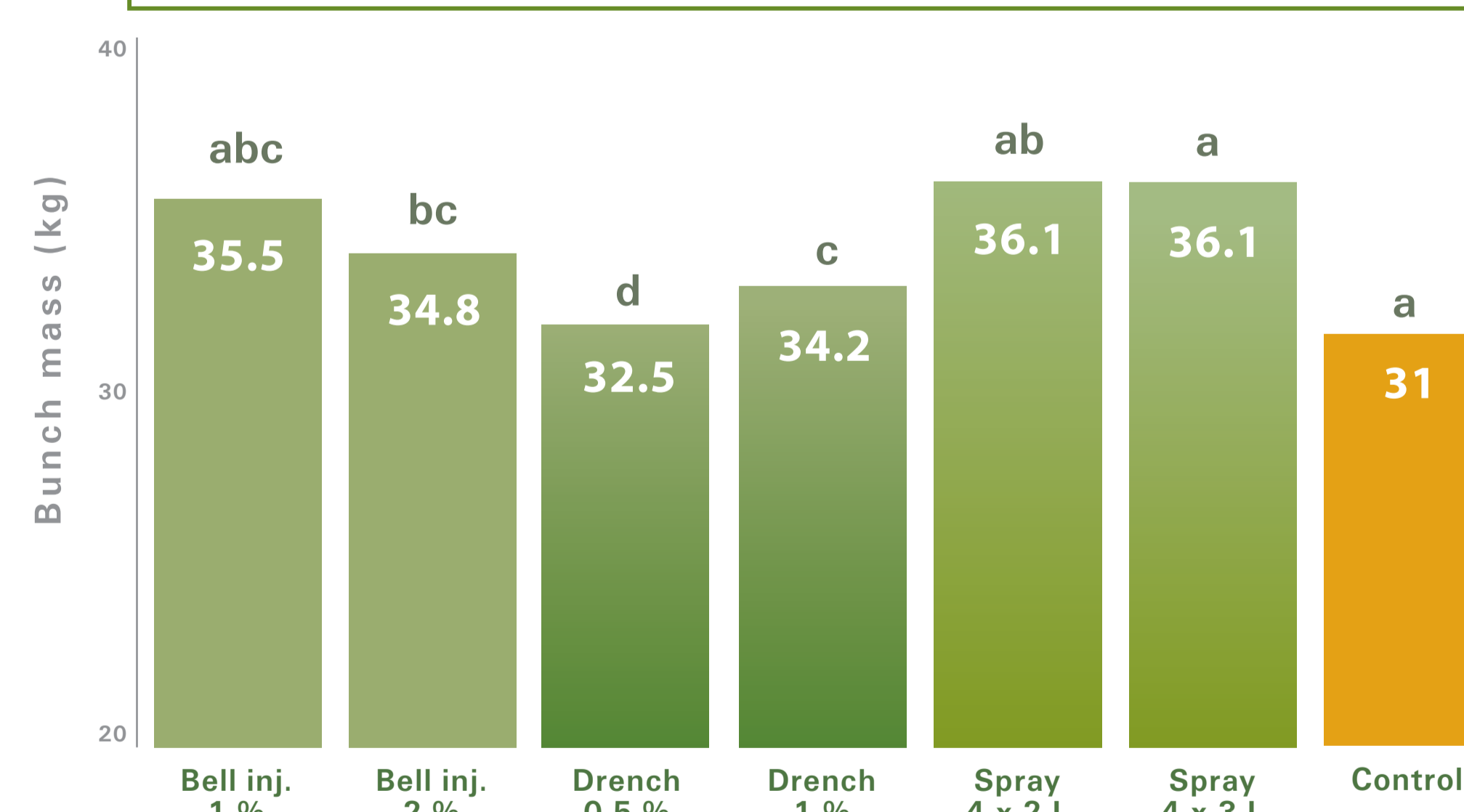
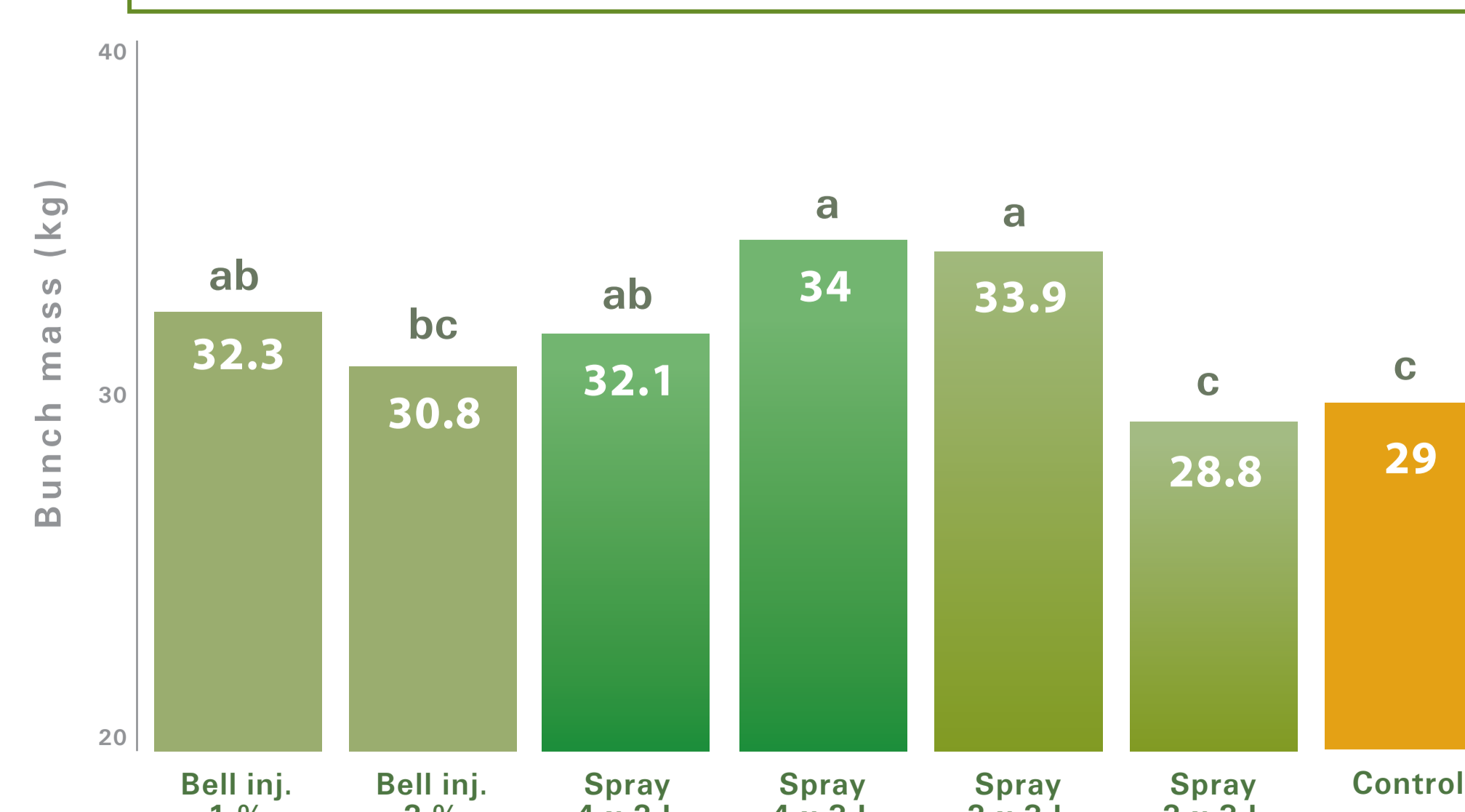


Fig 3. Effect of Kelpak on Banana Yield 2010 -11 season



KELPAK