INDEPENDENT TRIAL OF TwinN IN BROCCOLI, CALIFORNIA 2021

SUMMARY

The trial tested the effects on yield of broccoli grown with 75% and 100% nitrogen rates, with and without TwinN microbial biofertiliser. Reducing N to 75% with no TwinN application reduced total yields of marketable heads by 25%. However, the 75% N treatment, plus one application of TwinN, produced the highest yields in the trial with a 9.7% increase in total yield compared to the Grower Standard (100% N). This increased net returns to the grower by $1,686/acre.

INTRODUCTION

TwinN is a freeze-dried microbial biofertiliser from Australia. It acts to increase yields by a number of mechanisms. 1. The microbes colonise the roots and fix nitrogen from the atmosphere into a steady supply of plant available nitrogen through the season. 2. The microbes produce plant growth factors, particularly auxins, that increase secondary root structure which allows improved capture of applied nitrogen fertilisers. This improves nitrogen use efficiency and also reduces leaching of nitrogen into waterways. 3. The microbes produce several other plant growth factors which stimulate plant growth and yield accumulation.

TRIAL DESIGN

The trial was performed by Holden Research and Consulting, an independent research provider, and was completed in November 2021. The trial site was near Somis, California. Trial design was Random Complete Block with four replicates of four treatments. Plots were 5.33 x 20 ft. TwinN was applied once at transplant at the standard rate via tape to deliver the microbes into the root zone.

Harvest data was based on harvesting all heads in 10 ft/plot over five harvest points. The average marketable yields were extrapolated to a per acre basis and returns to the grower were calculated by price for pick day for all marketable heads.

TREATMENTS

Treatment 1 Grower Standard. 100% fertiliser rate. (100% N = 210 lb N/a total). **No TwinN**.

CRF 19-5-8 (100%) 500 lb/ac, pre-plant. AN 20, 20 gal/a at 3 wks post-plant plus 40 gal/a at 6 wks post-plant

Treatment 2 Grower Standard plus **1 TwinN** at planting. 100% fertiliser rate. (100% N = 210 lb N/a total).

Treatment 3 75% N (157.5 lb N/a) plus **1 TwinN** at planting.

CRF 19-5-8 (100%) 500 lb/ac, pre-plant. AN 20, 12 gal/a at 3 wks post-plant plus 20 gal/a at 6 wks post-plant.

Treatment 4 75% N (157.5 lb N/a). **No TwinN**.

RESULTS

The site and crop were nitrogen responsive as shown by a 25% reduction in total yield of broccoli heads from plots receiving only 75% 0f the standard N rate (100% N = 210 lb N/ac, 75% N = 157.5 lbN.ac). However, application of a single dose of TwinN at the standard rate to the 75% N produced the highest yields in the trial with a 9.7% increase in total yield compared to the Grower Standard (100% N). This translated into an increase of $1,686/acre in total returns to the grower. Note that two applications of TwinN are recommended for broccoli.

Table 1. Yield of marketable broccoli heads and corresponding returns to growers

Treatment	Total yield/ac (boxes)	$ returns/acre
Grower standard (100%N). No TwinN	734	17625
Grower standard (100%N). One TwinN	695	16673
Reduced N (75%N). One TwinN	805	19311
Reduced N (75%N). No TwinN	552	13238

SUMMARY

Application of TwinN to broccoli enabled a 25% reduction in nitrogen fertiliser while increasing yields and profits by almost 10%. Use of TwinN in vegetable crops increases yields and commercial returns to producers. It also increases sustainability of production via improved capture of applied nitrogen fertiliser (see Leaching Trial on www.mabiotec.com) which reduces nitrogen pollution of waterways and aquifers.

TwinN is supplied by Mapleton Agri Biotec Pty Ltd, Australia. www.mabiotec.com

For information on locating distributors of TwinN in USA contact ***DEWHOPS ENTERPRISES, LLC.***
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