NUMERATOR
TECHNOLOGIES, INC.

Research Report
NT 1255

Potatoes are shallow rooted and more sensitive to soil moisture stress than other deeper rooted crops. Moisture stress, depending on the crop growth stage, can reduce tuber yields, adversely affect the shape of tubers, and/or reduce the processing quality.

Moisture stress during stolon formation or tuber initiation can reduce tuber set, while moisture stress at tuber bulking stage can reduce tuber size. Careful water management has been shown to aid in optimizing yields, size distribution and quality of tubers. However, good water management can be affected by soil water repellency which can create non-uniform moisture conditions in the soil profile.

Numerator Technologies, Inc. is investigating the impact on yield from the use of an agricultural grade surfactant used to promote uniform vertical and lateral movement of water and solutes into and through the soil profile.

An evaluation trial using **NT 1255**, an agricultural surfactant candidate being evaluated by Numerator Technologies, Inc., was conducted in early 2011 on potatoes (*Solanum tuberosum*). This early research focused largely on phytotoxicity and yield response to a one-time early season application of the surfactant candidate, NT1255.

A summary of the trial is summarized below:

Study Director: Jim Turner
Location: Duette, Florida
Investigator: KAC Agricultural Research, Inc.
Replications: 4
Untreated treatments: 1
Design: Randomized Complete Block (RCB)
Treatment units: US standard
Treated 'Plot' size Width: 13.3 feet
Treated 'Plot' size Length: 50 feet
Application date: 1-19-11
Application volume: 200 L/ha

RESULTS:

Phytotoxicity

Measured in % Phytotoxicity

Trt No.	Treatment Name	Rate	Rate Unit	Plot	% Phytotoxicity
1	NT 1255	1	qt/a	101	0.0
				202	0.0
				301	0.0
				402	0.0
				Mean =	0.0
2	UNTREATED CHECK			102	0.0
				201	0.0
				302	0.0
				401	0.0
				Mean =	0.0

Yield (92 days after treatment)

Based on # 100 wt large, harvestable tubers (large = >2-1/4").

Trt No.	Treatment Name	Rate	Rate Unit	Plot	Yield # 100 wt
1	NT 1255	1	qt/a	101	303.3
				202	357.7
				301	367.1
				402	384.9
				Mean =	353.3
2	UNTREATED CHECK			102	264.6
				201	342.0
				302	427.8
				401	334.8
				Mean =	342.3

DISCUSSION:

No measurable amount of phytotoxicity on NT 1255 treated plants was observed throughout the trial. Numerically, NT 1255 had higher yields, with an average of 11 more 100 wt large tubers per acre than the untreated check. Moreover, the consistency of yield results in the NT 1255 plots (individual plot yield value compared to the mean) is impressive versus the untreated check and warrants more investigation. Based on these early results, NUMERATOR TECHNOLOGIES intends to proceed with further testing in 2012.