**AGRONOMY BULLETIN**

2014–2015

FŪSN
Fused-Safe Nutrients™

# Vegetable Production with FŪSN™ A JRS Advanced Nitrogen Source

## Introduction:

The warm-climate crops of California and Arizona require steady access to a nitrogen (N) source that is plant-accessible. Plants such as cantaloupes, chili peppers, bell peppers, and tomatoes were customarily fertilized with ammonium nitrate (AN), but this traditional source of N is highly explosive, which has led to growing regulatory restrictions intended to protect growers and the public from this safety and security risk.

## Challenge:

The most common alternative to AN is ammonium sulfate (AMS), which has a far lower risk of detonation but is not as easily utilized by growing plants as is AN. Finding a more stable source of N that is both readily absorbed by crops and cost-effective will give growers a valuable tool for successful agricultural production.

## Research:

Drip-irrigated fields were chosen in the southwestern deserts of Arizona and coastal areas of California. During the 2014 and 2015 growing seasons, researchers planted cantaloupe seeds and transplanted greenhouse tomatoes and two varieties of peppers into the loamy-sand soil. Plants were treated with either urea or FŪSN, a granular fertilizer that chemically blends AN with AMS for a less-reactive N source with good plant accessibility.

## Methodology:

Seven treatment levels included a control with no N applied, 89, 178, or 267 lbs/acre of urea, and 89, 178, or 267 lbs/acre of FŪSN. Half of the N dosage was applied dry at transplanting/seeding, while the other half was delivered through the drip tape halfway through the growing season.

Each treatment area was tested for soil nitrates before and after harvest. The 2015 trials included a lysimeter reading to find the amount of N that leached below the reach of plants' roots. Plants were sampled for N concentration. Melons, tomatoes, and peppers were sampled for total yield, marketable yield, and size.

## Results:

Cantaloupe yield increased up to 18% with FŪSN over urea. Chili pepper yield increased up to nearly 20% with FŪSN over urea. Tomato yield increased up to 25% with FŪSN over urea.

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## Practical Applications:

Although applications of FŪSN did not result in significant size increases, they did result in numeric increases in total yield and marketable yield. Using FŪSN as a source of N for warm-weather vegetable crops produced economically significant results in higher yield without sacrificing plant nutrition, worker safety, or community security.

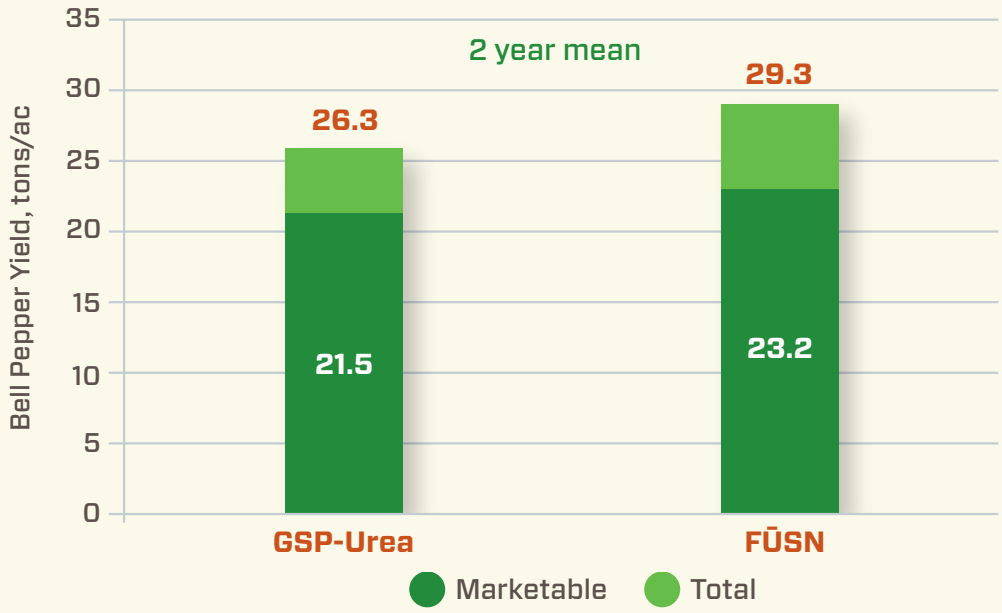


**Figure 1.** Bell pepper yield comparisons with FŪSN and urea (GSP)—Dave Holden, 2014–15.

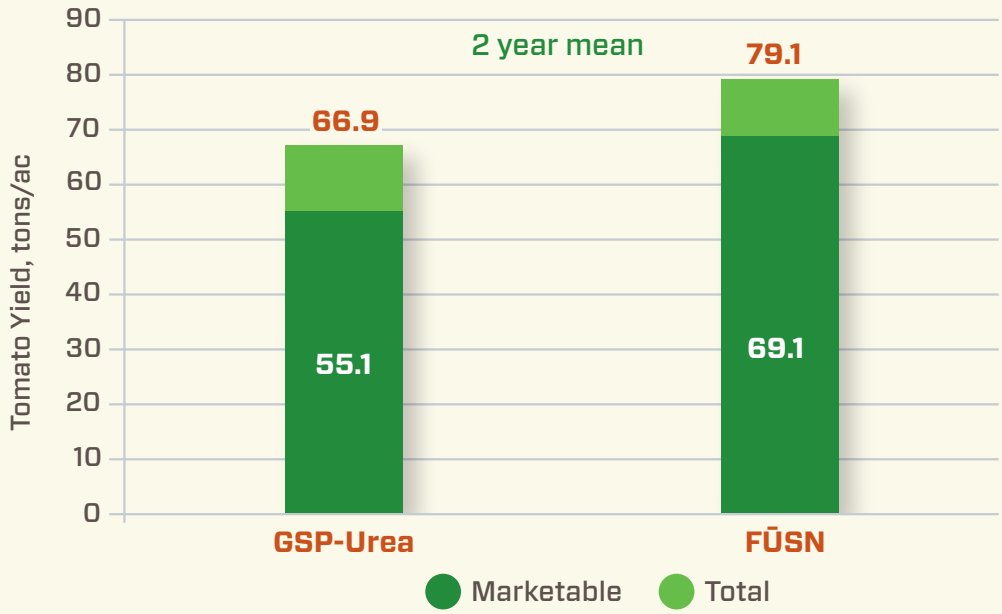


**Figure 2.** Processing tomato yield comparisons with FŪSN and urea (GSP)—Dave Holden, 2014–15.