BROCHURE

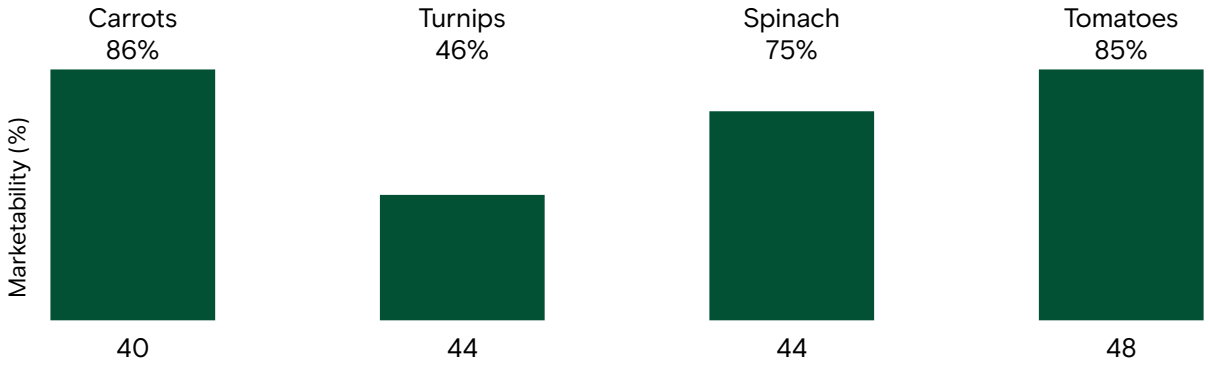
Boron in vegetables

Research in vegetable nutrition and physiology has shown that boron is the key element in several plant growth processes affecting quality.

Boron (B) fertilization has dramatically reduced several common nutritional disorders such as brown-heart, canker, and low fruit set that affects quality and market value. Boron is essential for normal growth and production of sound, healthy vegetables. Boron has been linked with:

- Initiation and development of growing points
- Movement of sugars and starches to developing parts
- Movement of nutrient elements within the plant
- Formation of plant hormones affecting growth
- Root growth and health of fleshy roots
- Flower and fruit set
- Vegetable quality and flavor

Boron improves marketability



Leaf boron concentration (ppm) with addition of 2 lbs B/acre

How much boron is enough?

- A wide range of vegetable crops respond to boron fertilization with increased yields and quality. Most universities recommend boron in vegetable fertilization programs to ensure that boron will not be a limiting factor.
- Boron demand is high in some vegetable crops and low in others. Standard ranges of boron fertilization are normally recommended to meet specific vegetable crop needs under average local conditions.
- Boron rates depend on soil test and/or plant analyses, field history, production goals, and application method.

Source: Reeve E, Prince AL, and Bear FE. 1944. The boron needs of New Jersey soils. New Jersey Agricultural Experiment Station. Bull: 709. Rutgers University, New Brunswick, New Jersey.

BROCHURE: BORON IN VEGETABLES

Boron fertilization in vegetable crops

Typical recommended ranges: Broadcast soil application

Vegetable crop	B/acre (lbs)
Asparagus, beets, broccoli, Brussels sprouts, cabbage, cauliflower, celery, collards, kale, mustard, parsnips, radishes, rutabagas, spinach, turnips	2–3
Carrots, eggplant, horseradish, leeks, lettuce, melons, onions, pumpkins, rhubarb, squash, sweet corn, tomatoes	1–2
Okra, peppers, potatoes, sweet potatoes	0.5–1
Beans, cucumbers, peas	0–0.5

Normal plant analysis levels (ppm) for best quality and marketability

Vegetable crop	Leaf B levels
Asparagus	40–65
Broccoli, Brussels sprouts, cabbage, celery, lettuce, melons, onions, peas, pumpkins, snapbeans, rhubarb	25–50
Carrots, parsnips	25–70
Cauliflower, collards, cucumbers, kale, mustard	30–60
Eggplant, horseradish, leeks	40–50
Okra, sweet potatoes, white potatoes	20–40
Peppers	40–100
Radishes	20–50
Red beets	30–70
Rutabagas, turnips	25–60
Spinach	40–60
Squash	30–40
Sweet corn	12–20
Tomatoes	30–80

Your boron fertilizer options

- *Granubor*®: An ideal material for dry blends applied broadcast preplant incorporated
- *Fertibor*®: Best in fertilizer suspensions for preplant broadcasts
- *Solubor*®: Application flexibility as it can be dissolved alone in water or in liquid fertilizers, and/or along with pesticides and then applied to the soil or directly onto the crop. *Solubor* is ideal for use in fertigation.*

* Foliar sprays should not exceed 0.5 lbs/acre boron per application. Fertigation allows timely split applications of boron when it is needed by the crop and minimizes leaching. Drip-trickle fertigation allows incremental applications of 0.1 to 0.25 lbs/acre boron through the drip system. The total amount of boron added in foliar sprays or split applications should not exceed the total broadcast recommendations.

About U.S. Borax

U.S. Borax, part of Rio Tinto, is a global leader in the supply and science of borates—naturally-occurring minerals containing boron and other elements. We are 1,000 people serving 650 customers with more than 1,800 delivery locations globally. We supply around 30% of the world's need for refined borates from our worldclass mine in Boron, California, about 100 miles northeast of Los Angeles.

Our local agriculture experts understand the uses and benefits of boron on crops. In addition to a global sales team, we have a number of agronomists on staff to help fertilizer distributors maximize the benefits of borates in agriculture applications. Our ag team can answer individual growers' questions and concerns about their particular crop.

High quality, high reliability, high performance borate products. It's what we're known for.

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