

Prevention of Blossom End Rot in tomatoes with Intra Eco Shield



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Blossom End Rot (BER, *neusrot*) is a physical malformation of the fruit tips of greenhouse crops with serious economic consequences (**Figure 1**). Many factors may contribute to this growth disturbance, but an affected calcium homeostasis probably plays a major role, which may be caused by an improper nutritional potassium/calcium balance, insufficient water intake or evaporation and/or structurally weak roots and xylem vessels.

Intra Eco Shield contains the highest concentration of plant-available ortho-silicic acid that is incorporated in the plant and strengthens the tissues including the xylem

vessels and improves the plants water and calcium management. Therefore, we performed a practical experimental study to assess the effect of Intra Eco Shield on the development of Blossom End Rot in tomatoes.

Practical set-up of the trial

The trial was designed to maximize the induction of Blossom End Rot by the selection of a BER-sensitive tomato breed and the use of a sub-optimal nutrition scheme.

In total four gutters with each 12 San Marzano, Dunne breed tomato plants were grown under LED light and were pollinated manually (**Figure 2**). All four gutters received suboptimal nutrition including a disturbed K:Ca ratio to stress the plants; plus 40 ppm Intra Hydro pure for 6 days per week (24/6) to keep the irrigation water clean. One day per week, gutter 2 and 4 received 500 ml/ha Intra Eco Shield, gutter 1 and 3 received identical irrigation water without Intra Eco Shield.



Figure 1: A disturbed calcium homeostasis can cause Blossom End Rot in tomatoes. Photo: MasteringHorticulture.com

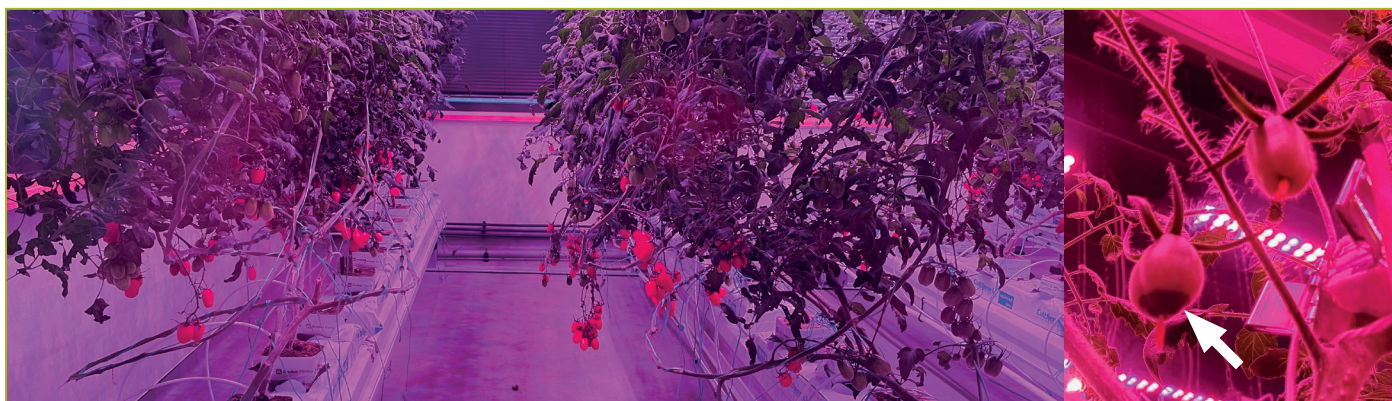


Figure 2: Practical set-up of the Blossom End Rot trial and example of an affected tomato (arrow).

More tomatoes and less Blossom End Rot with Intra Eco Shield

Every week, the total number of tomatoes and the number of tomatoes with Blossom End Rot was counted for the duration of in total three weeks (**Table 1**). The first week, incidental cases of Blossom End Rot were observed in both groups. In week 2 and 3 the incidence of Blossom End Rot rapidly increased to 7 - 8% in the untreated controls, while the plants with Intra Eco Shield only had 3 - 4% of cases (**Figure 3**). This corresponds with 48 to 56 % less Blossom End Rot in the plants that have been treated with Intra Eco Shield. In addition, the total number of 566 tomatoes of the plants treated with Intra Eco Shield was 17% higher than the 482 tomatoes of the untreated plants.

Gutter	Intra Eco Shield	Week 1		Week 2		Week 3	
		Total tomatoes	Tomatoes with BER	Total tomatoes	Tomatoes with BER	Total tomatoes	Tomatoes with BER
1	No	36	1	123	10	217	14
2	Yes	70	1	174	8	253	10
3	No	77	0	165	13	265	22
4	Yes	54	1	161	6	313	8

Table 1: Total number of tomatoes and number of tomatoes with Blossom End Rot (BER) per week for the four gutters treated with or without Intra Eco Shield.

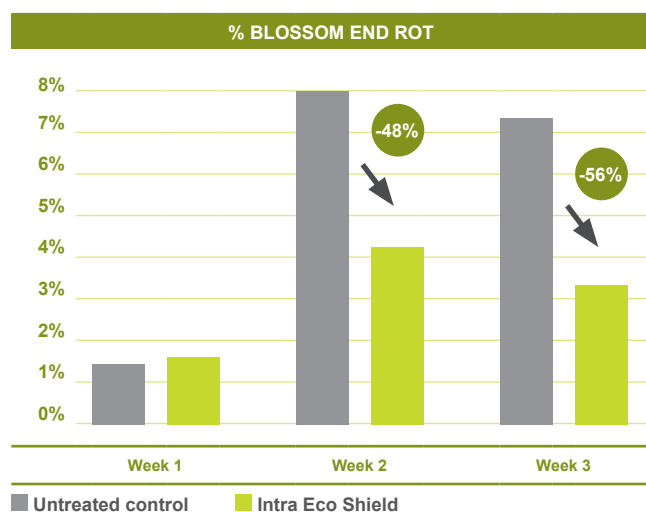


Figure 3: Weekly treatment with Intra Eco Shield resulted in a significant reduction in Blossom End Rot.

Conclusion

One day a week application of the plant enhancer Intra Eco Shield resulted in 17% more tomatoes with 56% less Blossom End Rot. This indicates that even under these challenging growing conditions designed to maximize the induction of Blossom End Rot, Intra Eco Shield strengthens the plant tissues and improves its water management and calcium homeostasis. The regular application of Intra Eco Shield protects the entire plant against mechanical damages and abiotic stress situations like drought, heat or salt stress.