

Effects of hail damage on potato production and potential remediation

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Table 1: Potato developmental stages based on Irigoyen *et al*, 2011

| Estimated days after planting | Estimated weeks after emergence | Stage | Description |
|-------------------------------|---------------------------------|-------|--|
| 15 | | 1 | Tuber sprouting |
| 20 | | 2 | Two first leaves |
| 32 | 2 | 3 | Additional primary stems development. |
| 43 | 3 | 4 | Plant growth to 30 cm. No buds and tuber initiation. |
| 55 | 5 | 5 | Buds of primary stems visible. Beginning of tuber formation |
| 66 | 7 | 6 | Open inflorescences of primary stems. 30% final tuber mass. |
| 77 | 8 | 7 | Complete development on primary stems. 50% final tuber mass. |
| 88 | 10 | 8 | All flowers of primary and secondary stems have fallen. 60% final tuber mass. |
| 99 | 11 | 9 | All flowers have fallen and leaf yellowing. 100% final tuber mass. Tubers detach easily. |
| 120 | 14 | 10 | Complete dried of the plant and tuber maturation. |

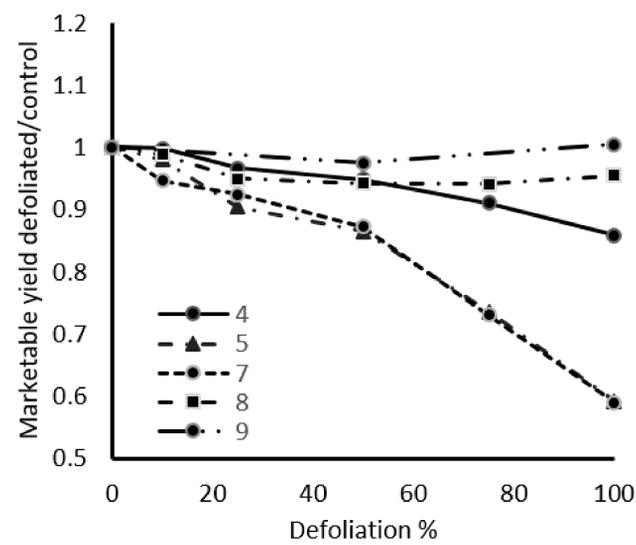
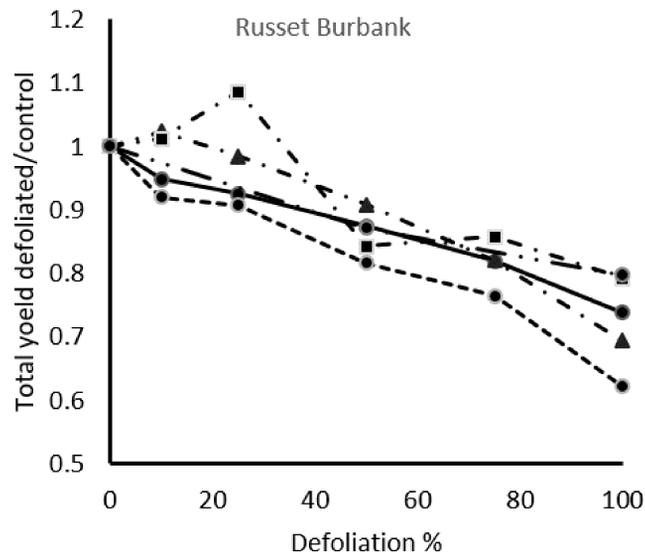


Fig 1: impact on Russet Burbank tuber yield of defoliation. Vine defoliation occurred at different developmental stages.

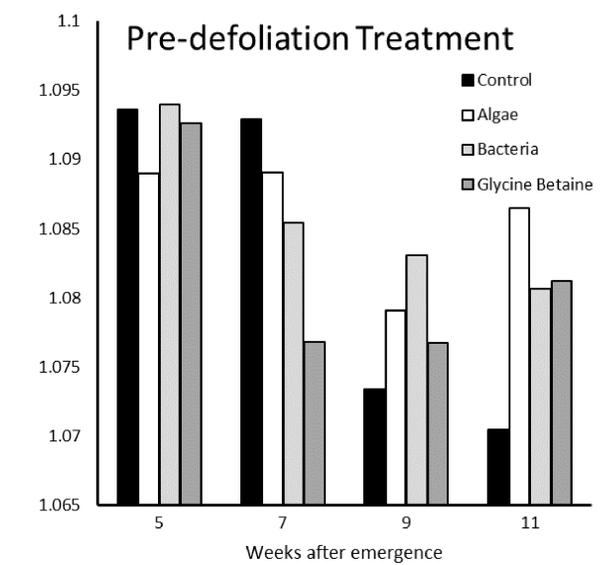
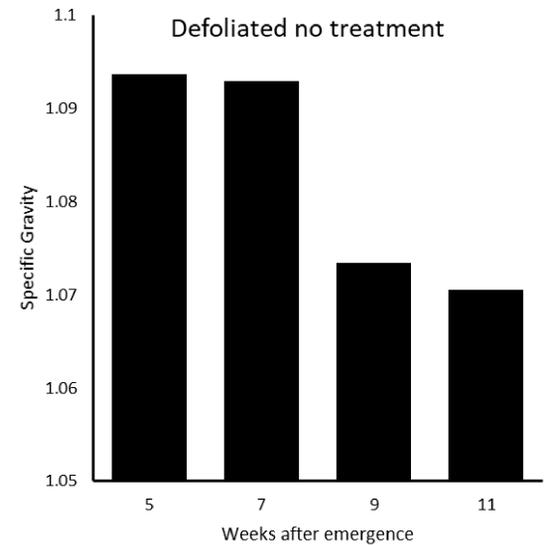


Fig 2: Effects of defoliation on specific gravity. Top: untreated control. Bottom: pre-defoliation treated.

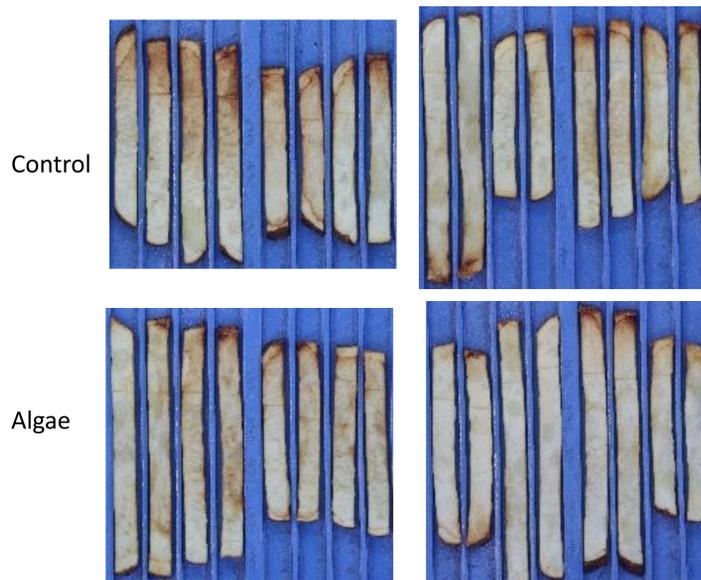
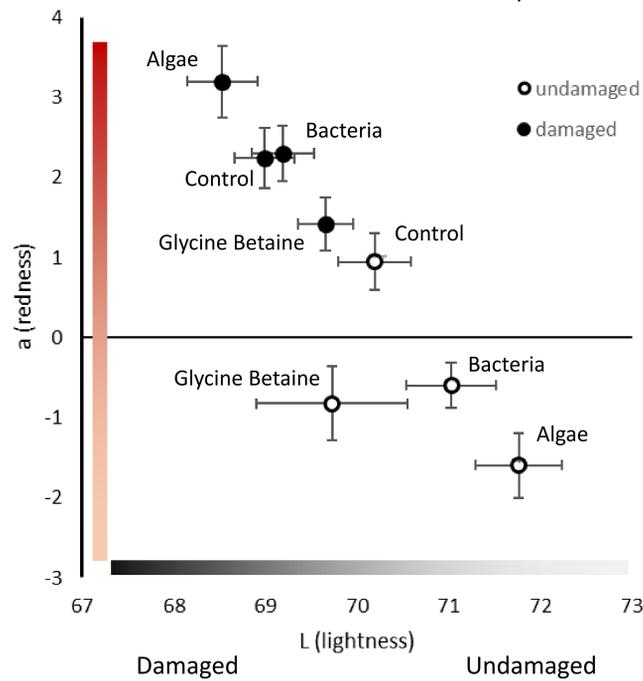
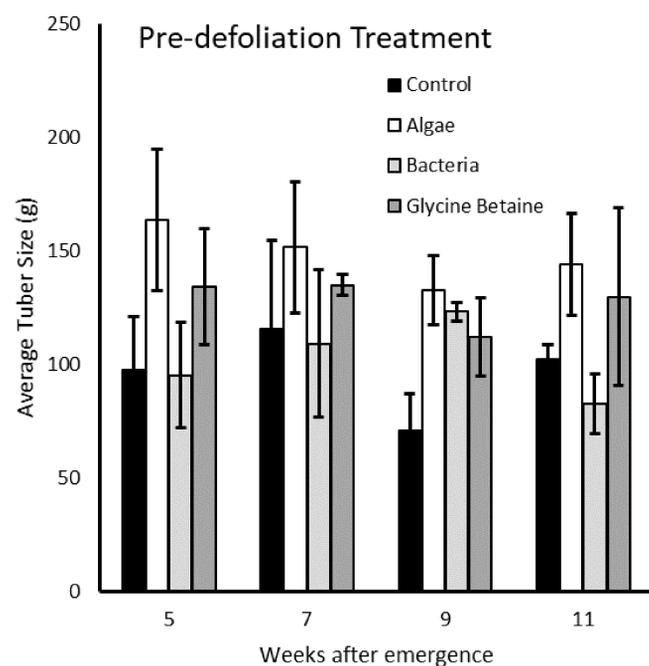
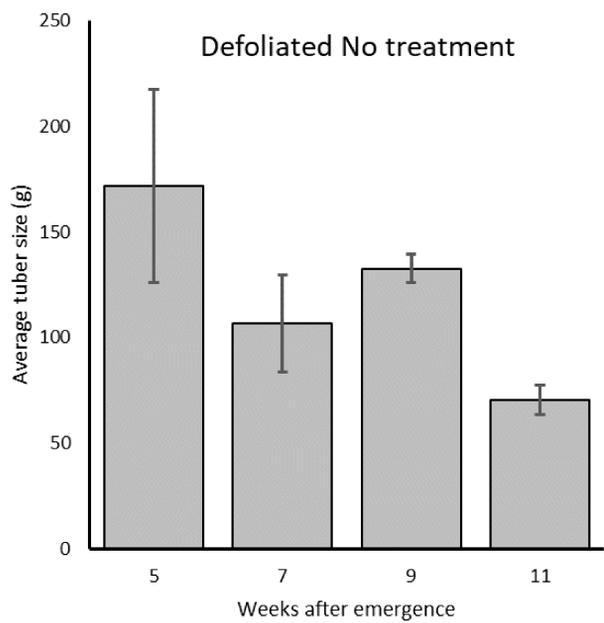


Fig 2: Effects of defoliation on fry color. Top: L and a values of defoliated and non-defoliated plants. Lighter fries tend to have higher L and lower a values. Bottom: example fries.

Key findings

Effects of vine defoliation on tuber yield is dependant on the timing of the defoliation in relation to plant development stage (Table 1, Fig. 1).

Plants defoliated late July and August were most impacted. This is typically post tuber initiation during tuber bulking.

Prior to tuber initiation potato vines are able to regenerate such that minimal impact to tuber yield is realized. Late defoliation after tuber bulking is complete has minimal impact as tuber production is complete.

Tuber quality, such as specific gravity (Fig. 2), size (Fig. 3), and fry color (Fig. 4) is also impacted by defoliation timing.

Pre-treatment of plants with products improved outcomes compared to untreated defoliated control plants (Fig. 2-4).

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Fig 4: Effects of defoliation on average tuber size. Top: untreated control. Bottom: pre-defoliation treated.