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ORGANIC BLACKCURRANT PRODUCTION: FERTILITY AMENDMENTS AND WEED CONTROL

Interim Research Report E2010-55

BACKGROUND

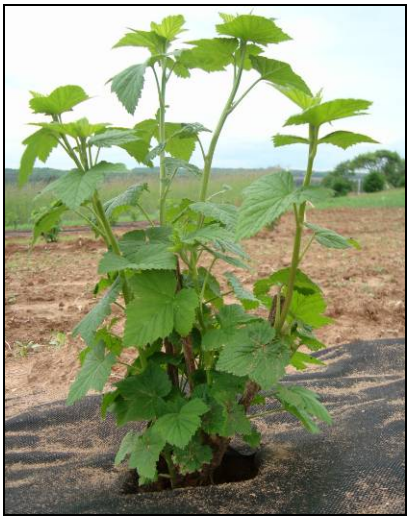
Organic producers looking to diversify their operations are beginning to turn to high-value perennial fruit crops. In Prince Edward Island, a contingent of producers has begun planting blackcurrants to supply a lucrative Japanese market. While organic or transitional blackcurrant production now occupies over 40 acres of land in PEI, organic management options have yet to be rigorously examined.

As blackcurrant production grows, producers will require mechanical equipment for harvest. Harvesting equipment is generally capable of harvesting berries that lie 6" above the ground. Shortages in nitrogen (N), especially in the early growth stages of the plant, may result in shorter bushes with many low fruit clusters not well suited to mechanical harvest. Low N levels may be due to insufficient fertilization or weed competition.

WHAT WAS DONE

In 2009, the Organic Agriculture Centre of Canada began trials in PEI blackcurrant plantations to examine the impacts of fertility management and weed control on blackcurrant bush size and yield. Trials were initiated at two farms with new plantings in 2009, and two farms with bushes planted in 2008.

In all trials, fertility was supplied from a mixture of crabmeal and pelletized poultry manure (50:50 mix, based on N content). Crabmeal has been estimated to have 6% available N and poultry manure has approximately 2% available N. Both of these nutrient sources are available in the Maritimes and are suitable for organic production. Weed control was supplied by a 3 foot (90 cm) wide strip of landscape fabric extending along the crop row. Landscape fabric and spring fertility treatments were applied in late May, while fall fertility amendments were applied in late August.



Young blackcurrant bush (J. MacKenzie)

Plant measurements recorded over the 2009 growing season included plant height and width (monthly), insect damage ratings (June) and disease ratings (September). Interim results are presented based on the four rates of spring fertility.

INTERIM RESULTS: 2008 PLANTINGS

Weed control and fertility treatments examined included:

1. No weed control, no fertility (control)
2. Weed control with landscape fabric
3. Weed control with soil amendment (100 kg N ha^{-1})
4. Weed control with foliar application of fish fertilizer from fish processing wastes

Weed control measures significantly increased seasonal plant growth (Fig. 1) and leaf N content. Growth (bush height and width) was 25% lower in the no weed control treatment than in those with landscape fabric. The addition of organic nitrogen fertilizers did not significantly impact plant growth, but did increase leaf N content at one site.

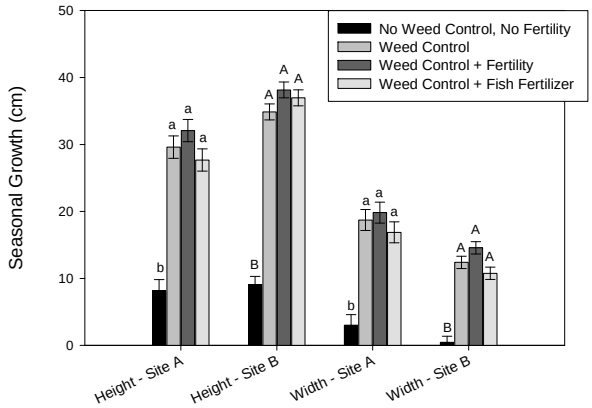


Figure 1. Seasonal plant growth (June – September) as impacted by fertility and weed control treatments in plants established at two sites in 2008.

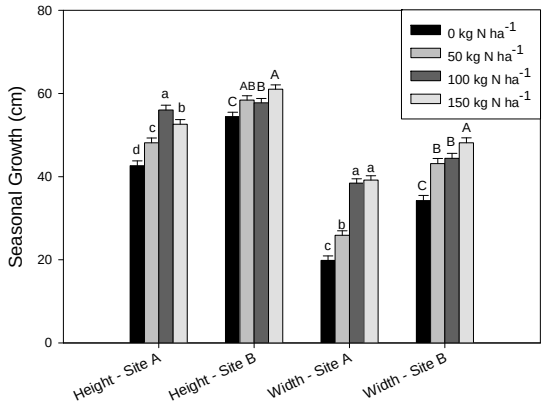


Figure 2. Seasonal plant growth (June– September) as impacted by varying levels of supplemental fertility in plants established at two sites in 2009.

INTERIM RESULTS: 2009 PLANTINGS

These trials focused on identifying the most effective rate and timing of fertility amendment to support the growth of the young bushes. Weed-controlling landscape fabric was applied to all plots. Treatments examined in 2009 included:

1. No supplemental fertility
2. Spring fertility at 50 kg N ha^{-1}
3. Spring fertility at 100 kg N ha^{-1}
4. Spring fertility at 150 kg N ha^{-1}

The incorporation of organic fertility amendments soon after planting increased plant growth (Fig. 2) and leaf N levels in the first year. In 2010, plants will be evaluated to determine if this translates into larger stores of root reserves and hence larger and faster growing plants in subsequent years. Optimal nutrient amendment rates for spring application appear to be in the range of 100 to 150 kg N ha^{-1}. The effect of fall fertility amendments applied in 2009 will be examined.

Blackcurrant trial on plants established in 2009 (J. MacKenzie)

In addition to N, the amendments contain many other nutrients that may also have contributed to plant growth. These responses will also be monitored in the future.

Disease (white pine blister rust) issues have emerged in some varieties of the currants. Future research will evaluate management options including variety selection and organic control measures.

THE BOTTOM LINE...

For optimal stands of blackcurrants in the Maritimes, appropriate fertility and weed control measures must be implemented and maintained at the establishment stage.

CREDITS

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