

Does comfrey promote growth and fruit production of saskatoon berry and black currant?



Farmer-Researchers

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Project Timeline: May 2017 - Sep 2020

In A Nutshell

Perennial cover crops have many ecological benefits. However, they may compete with the crop or not provide sufficient weed control.

Progress to Date:

In their second year with comfrey, Pat found no difference in saskatoon growth or production compared to shrubs without comfrey.

In their first year, Arthur and Ivan collected baseline data, and they will continue to measure growth and production for another 2 years.

METHODS

Perennial cover crops like **comfrey** (*Symphytum spp.*; **Figure 1**) provide ecological benefits including:

- **Nutrient accumulation:** Bringing immobile nutrients to the soil surface
- **Microclimate:** Moderating soil temperature and moisture
- **Mulch:** Competing with and suppressing weeds while accumulating biomass to feed the soil biology
- **Biodiversity:** Adding plant diversity and promoting beneficial insects

There is also concern, however, that they compete for nutrients and space, or provide insufficient weed control.



Figure 1. Comfrey (*Symphytum spp.*)

Design

To investigate the effect of comfrey on saskatoon and black currant, Pat planted **saskatoon bushes** (*Amelanchier alnifolia*) in 2005 and Arthur planted **currant bushes** (*Ribes nigrum*) in 2017 and Ivan planted currants in 2014 and 2015.

At each farm, growers randomly assigned groups of bushes to receive either:

- **Comfrey companion plants**
- **No comfrey control**

Table 1			
Experimental design at the three farms.			
	Pat	Arthur	Ivan
Design	4 reps x 2 trt with 4-7 bushes each = 42 sask. total	3 reps x 2 trt with 4 bushes each = 24 currant total	3 reps x 2 trt with 4-6 bushes each = 28 currant total
Control managment	Mostly grass with no comfrey; no other fertilizer.	Low grass with no comfrey; no other fertilizer.	Tarp for weed control; no other fertilizer.

Multi-Farm Trial

Pat's measurements in 2018 are a continuation of farmer-led research she started in 2017, where she observed no detectable difference in growth between shrubs planted with and without comfrey. Arthur and Ivan joined Pat's trial in 2018 to add additional replicates and relevance to the findings.

RESULTS

Crop growth

- In 2017 when Pat planted the comfrey, she did not detect a boost in growth in saskatoon shrubs with comfrey as a companion (refer to 2017 Research Report).
- In 2018, Pat also found no statistical difference between saskatoon shrubs planted with and without comfrey with respect to height of tallest shrub branch or number of new shoots (**Table 2**).
- In the establishment year of comfrey in their young orchards, Arthur and Ivan collected baseline data but did not measure for differences between bushes with and without comfrey.

Table 2		
Growth of saskatoon bushes at Pat's the second year after comfrey planting.		
Treatment	Growth (inches)	Number of new shoots
Comfrey	2.7 +/- 2.7	4.4 +/- 2.8
Control	3.6 +/- 2.8	4.8 +/- 1.7
P-value*	0.18	0.58

* P-values are the probability that the difference between comfrey and control is not real. Although average growth and new shoots were greater in the control, there's a lot of variability, as indicated by the +/-.

Fruit Production

- There was no practical or statistical difference in sugar content (Brix) of the fruits (**Figure 2**) or harvestable yield (**Figure 3**).
- Average Brix and yields were slightly higher from saskatoon bushes with comfrey, but the differences are too small to have enough certainty that they were due to comfrey.

Multi-Farm Sites



A young currant plant with comfrey as a companion at Eden in Season, Ivan's farm.

- Arthur and Ivan collected baseline data and will continue to measure shrub growth, soil moisture and fruit quantity and quality for another 2 years.

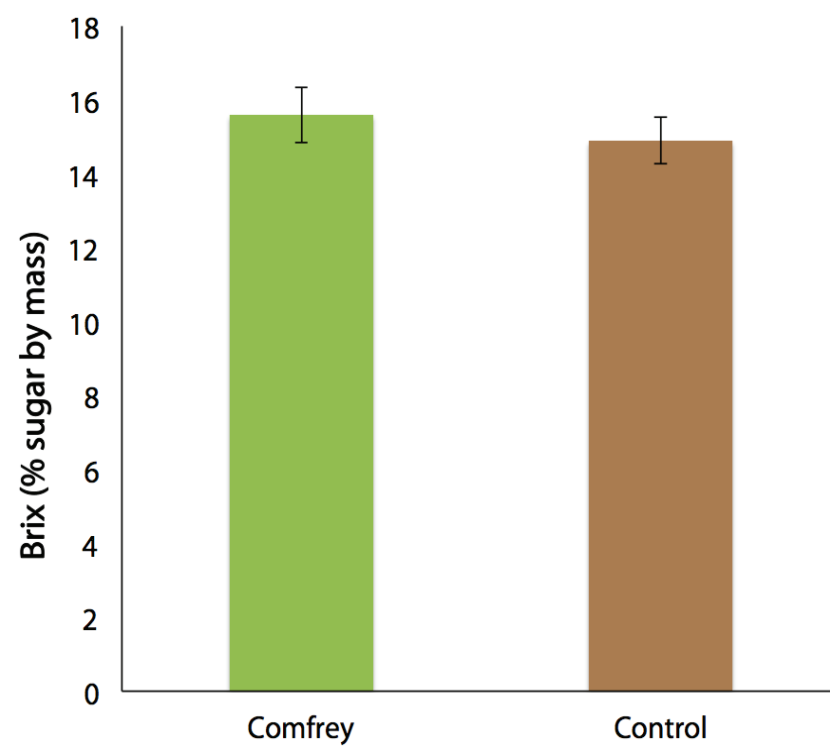


Figure 2. Average Brix readings of saskatoon berries from shrubs grown with and without comfrey.

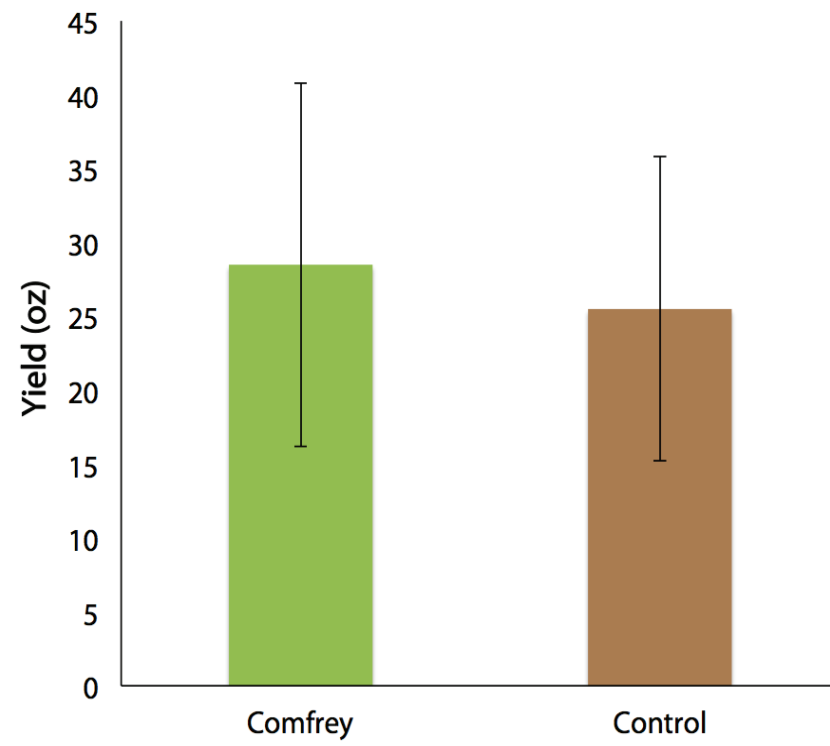


Figure 3. Cumulative yield of Saskatoon berries from shrubs grown with and without comfrey.

TAKE HOME MESSAGE

It is still unclear if comfrey is beneficial as a perennial cover crop. Pat, Ivan and Arthur will continue to monitor their crops over the next two years to evaluate its impact.

This year provided insights into how to take practical and meaningful measurements of shrub growth moving forward. For Pat, it highlighted the fact that height measurements of mature saskatoons are imprecise. She will include height measurements in 2019 and then focus only on fruit production and quality thereafter.

Leaving comfrey uncut in its first year may help it establish, and is a practical time savings. Cutting (chop and drop) the comfrey starting in the second year may be prudent in order to avoid possible caterpillar and mildew disease issues.