

**2017 ACORN Conference & Trade Show  
Best Western Glengarry - Truro, NS**

**Workshop Title:** How to have custom machinery built for your farm

**Presenter:** Daniel Haartman

**Executive Summary:** Having custom machinery built for farm work can be a rewarding task. It is imperative to know the parameters of the design that is needed for it to do the job effectively, to communicate clearly with the builder, and to take safety into consideration at each step.

The Basics:

- What do we want to produce?
- How much of it?
- What is it going to be worth?
- What existing equipment could be adapted to do the job?
- Who could help research the solution?
- Who might partner for financing research?
- What are the health and safety considerations?

When setting up his workshop, Daniel expressed that given the unknowns in a new space, consultation with someone with building skills would have been helpful to save time & money.

Daniel's background: started working on farm, a "tinker-er", an on-farm incident had a major impact on his attention to safety considerations: design considerations; appropriate technology for the job; implements that will support the job.

- Think about the lifestyle you want
- Will the equipment be able to pay itself off?
- Bridge communication gaps
  - Site photos
  - Rank features in order of importance (ease of use, noise, materials (most output for the least input), capacity, cost, corrosion resistance)
- Have your numbers handy
  - When do you need it ready?
  - Machine throughput required (weight, temperature, cycle time, volume, harvest cycles)
  - \*\*consider the bottleneck in your process and look for where efficiencies could be made
- Stationary machinery
  - Safety, fire

- o Noise
- o Foundation
- Tractor Implements
  - o 3pt hitch class
  - o PTO specs
  - o Horsepower
  - o Hydraulic volume
- Making sure it's viable
  - o Service life
  - o Pay off
  - o Will you be able to liquidate the equipment when it comes time? Will it be attractive to others?
  - o Can you repair or replace parts in an emergency?
  - o Will you be able to maintenance the equipment?
  - o Is there a budget for space parts?

Example - Bryan Dyck: Designing a compost spreader:

- Step 1 - Decide on a way to communicate - Facebook
- Step 2 - Determine priorities & specifications:
  - o Spreading width
  - o Capacity: 60 cubic foot would be ideal: Daniel' calculations brought him to 40 cubic feet (for reference there are 27 cubic feet per cubic yard)
  - o Self-loading
  - o 3pt hitch w/4000lb capacity
  - o Corrosion resistance - plant to store inside
- Step 3 Financing
- Step 4 hours and timeline
  - o Construct a prototype
  - o Estimate hours and materials
  - o Test run

Keep in touch!

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## Q&A:

Q) How will custom design compare to purchase in terms of cost and design?

A) Daniel and Bryan have looked at what is commercially available, most in EU or Asia; proprietary restrictions are also in place. Cost will likely shake out to be fairly similar compared to purchase. Research cost is covered by Daniel - chance to build prototype.

Q) Do your custom builds/design then become a proprietary tool? Who owns it?

A) Daniel is not interested in patenting. He is looking to be on the innovative edge. He's been asked to sell drawings for a design. Safety is a huge consideration for design and sharing. Daniel is limited by ownership of what he can share/show.

Q) Are your designs open source?

A) Daniel believes in specialization - not everyone needs to know how to do everything.

Q) Are there other examples of custom machinery that you've built or seen built?

A) Pedal-powered salad spinner for greens, harvest and cultivation equip, 2 wheel walk behind cultivation. Daniel wants to see a drastic switch away from workshop and back into the woods.

Q) Do you use standardization with respect to fasteners and materials?

A) Definitely. Space with regular increments saves time later. Use off-the-shelf materials. When designing he tries to think about what clients will have access to after the fact - ease of use post completion (repairs, etc.). Avoid 1/4" fasteners, try to use 3/8" - they are more common.

Q) Bryan, why did you go this route?

A) Parameters (no loader on tractor); the models that are locally available would not work as well with their current on-farm setup; want to spread thick enough to mulch; spread in pathways of tractor wheel; looking for multiple functions - "off the shelf" might not do the trick. Time savers that work for permabed system with rotation! Willing to spend more to find the right fit vs paying for something that doesn't do what they need.

Q) How do you build a self-loading composter?

A) Hydraulic with 3pt hitch.

Q) Equipment Sharing - any there any co-ops in Atlantic Canada?

A) There is one starting up in Cumberland (Nova Scotia); another near Sussex (New Brunswick) starting up (Dykstra?), Open Sky? (Sackville). Lots of unemployment in Maritimes - co-ops can help people help themselves in life.

Attendee - Scottsburn, NS: Quonset hut - intention to open up shop & equipment to share with small scale farmers. For example, a sub-soiler has been used once, now looking for a walk-behind. Equipment is a large barrier for getting into farming.

Tim Livingstone in Pembroke, NB: vegetable production; sharing in community (hay, grain equip, combine) ie borrows round baler for \$2/bale. Rents seeder. Some own

equipment that cannot afford to rent out in case damage occurs (these pieces often used too often or unique). Informal arrangements are most often in place. Their team tries to do a little better each time in terms of saying thanks and returning equipment in good conditions, especially when no money is changing hands.

Daniel: It is a good idea to have a clear agreement in place in case of breakage or issues. Know the stakes ahead of time. Breakdown Insurance is available (quoted \$100/year).

Attendee: Lending and borrowing is a delicate task - must listen and pay attention to the tool or machine. He recommends to keep it for yourself or lend cautiously. On the other hand repairs can improve a tool!

Attendee: There often exists the possibility to hire a contractor to do the work with their own equipment.