

What We Learned

This project taught us numerous skills and prepared us for careers as engineers. Specifically, we learned the importance of:

- ◆ Teamwork
- ◆ Budgeting
- ◆ Project Management
- ◆ Scheduling and Running Meetings
- ◆ Time Management
- ◆ Perseverance

Acknowledgements

Our thanks go to:

- ◆ Applied Research & Innovation
- ◆ IPM Innovation Alliance
- ◆ Algonquin College
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- ◆ Metal Supermarket
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- ◆ Norups Inc.
- ◆ Trevorrow Ltd.
- ◆ OCE (Ontario Centres of Excellence)

Design Recommendations

The engineering team recommends the following improvements for future versions of the Black Walnut Washer :

- ◆ Aluminum frame
- ◆ Stainless steel or plastic drum
- ◆ Stainless steel agitation bars
- ◆ Plastic water basin
- ◆ Lighter material
- ◆ Smaller size
- ◆ Sensor on auger
- ◆ Sensor controlled hopper gate

BLACK WALNUT



CONTINUOUS FLOW WASHER

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The Challenge

Many farms currently use cement mixers to wash black walnuts. The process is inefficient, time consuming, and labour intensive.

A successful black walnut washer had to be:

- ◆ Faster than the current method
- ◆ Safe to use
- ◆ Easy to move
- ◆ Able to maintain continuous flow



Creative Solutions

The engineering team used its creative energy to design and build the washer, and to find material at reasonable prices. This provided a great learning experience that replicated a real-world situation. The engineering team successfully met all of the criteria outlined above.

Budget

The engineering team received a grant of \$10,000 dollars from the OCE, IPM Innovation Alliance, and Neil Thomas. The grant covered the expenses of the project including materials, construction, and all additional costs.

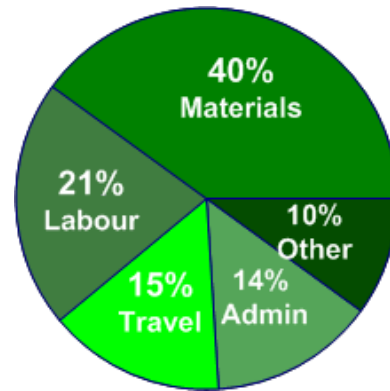


Figure 1: Cost Breakdown

Cycle of Operation

First, black walnuts are fed into the hopper. Then, the black walnuts flow into the rotating wash drum where they are washed with water and agitation, and conveyed towards the exit chute by the auger. Finally, the black walnuts are ejected through the exit chute.

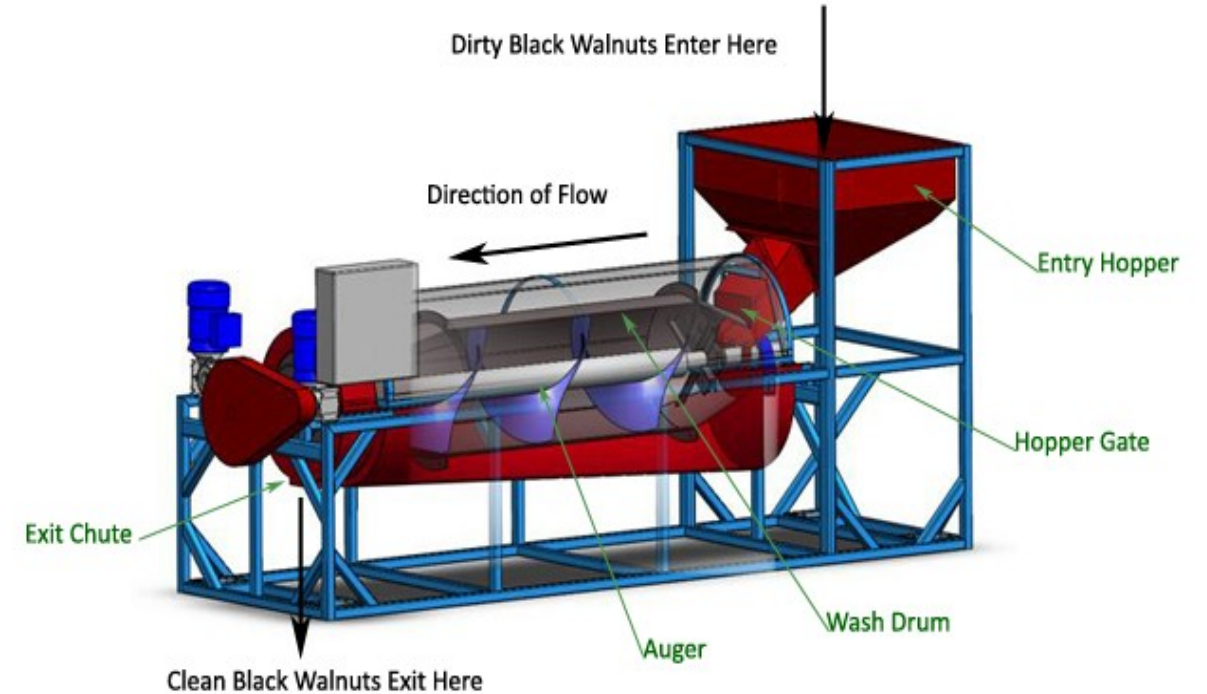


Figure 2: Black Walnut Washer