



Harvest Quality Vision for Quantitative Fruit Assessment

PREPARED FOR

The Research Committee of the State Horticultural Association of Pennsylvania

PREPARED BY

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January 3, 2019

The Research Committee of the State Horticultural Association of Pennsylvania

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To the Research Committee of the State Horticultural Association of Pennsylvania (SHAP):

Please find enclosed our software implementation proposal for your kind consideration.

At Croptracker, Inc. we pair innovative crop management software solutions with a client-oriented company ethos. Since its inception in 2006, Croptracker has been built on a foundation of collaboration with growers and growers' associations. This is reflected in our team's tradition of augmenting the software to accommodate a wide variety of user needs.

We are confident Croptracker's comprehensive platform and its client centricity make it an ideal functional and conceptual fit as an institutional research tool. We would like to offer the State Horticultural Association of Pennsylvania free, unlimited use of Croptracker for implementation in research and day-to-day maintenance of its research fields and orchards, as well as a dedicated support team and first access to the upcoming Harvest Quality Vision™ module. As recompense, Croptracker would request links to the software website be provided on SHAP's website and social media pages to assist in our US expansion.

We invite you to book a live demo in which myself, Croptracker's CEO Matthew Deir, and a support team representative may introduce you to the software and its capabilities in greater detail.

Thank you in advance for your time spent reviewing our proposal. We look forward to discussing with you further how Croptracker can support the research initiatives of the State Horticultural Association of Pennsylvania.

Yours Truly,

Jeff Chemeres

Chief Strategic Officer, Croptracker, Inc.

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Introduction to Croptracker

Croptracker began development in 2006 when our founder was asked by a fruit growers' association to create a digital traceability and record-keeping solution for its members. Now, 13 years and countless software enhancements later, Croptracker continues to be shaped by grower input as it expands around the world. As a result, our software reflects and combats today's most pertinent challenges facing growers. Our mission is to help users grow smarter, safer, and more efficiently.

Today growers, associations, and co-operations of all sizes in 41 countries use Croptracker's cloud-based desktop and mobile apps to execute and monitor their harvest, schedule and track their chemical usage, cut operational costs associated with supervision and auditing, enhance their traceability and food safety, and make more informed decisions for their operations.

Justification

Harvest Quality Vision™ (HQV) will be a rapid, economic, and objective means to monitor and analyze your harvest progress. It will save time and money by eliminating the need for manual qualitative inspections, and by alerting growers of problems and deviations so they can course-correct early on in the harvest process.

Current fruit and vegetable computer vision systems are located in packing line equipment and are focused on rapidly processing individual pieces. We intend our solution to be a macro approach for growers who store their harvested products for a period of time before packing/processing. Our macro computer vision system will give these producers a better understanding of what they have harvested in terms of quality and quantity before they pack and process. This additional information will allow them to increase profits by best fitting customer orders to the appropriate product. No such technology currently exists. A patent lawyer has searched for relevant patents in the space, and found none which would prevent us from operating or patenting the technology in the future.

The HQV will also allow large growers and co-operatives to uphold quantitative and qualitative standards across thousands of workers and millions of pounds of produce. Conservative estimates based on one global apple exporter suggest millions of dollars more in revenue could be generated from consistently delivering more apples of higher quality with the help of the HQV.

We are confident in this technology's ability to make significant cost-saving contributions to growers' operations by reducing and eliminating costs related to crop and quality management, and to contribute to the pursuit of greater automation in food safety.

Duration

One year (52 weeks)

Objective

The objective of this project is to research and develop an in-field computer vision camera system add-on for our software platform Croptracker. The system will assist with quality management in fields and orchards by capturing images of bins and subjecting them to cloud-based image processing. Through its instantaneous image analysis and processing capabilities, the HQV determines the size, color, and quantity of fruit in its visible range and alerts key managers to deviations from predetermined standards.

Therefore, growers and field/orchard managers become aware of and can deal with issues like quantity shortages, defects, and disease much quicker - without the need for time-consuming manual inspection or waiting for a packing report.

Procedures

Please find below a GANTT chart with objectives and timelines for the HQV development over the next 39 weeks. We expect a time contingency of 33%, which places the maximum expected timeline to be 52 weeks, or 1 year.



Personnel

- **Matthew Deir (Project Lead)** - 20 years in software development, 15 years managing software projects connected with research and development grants. (+1 800-903-1492 x200; Innovation Park, 945 Princess St, Kingston, ON K7L 3N6; matt@croptracker.com)
- **Charles J. Cliffe (Developer)** - 25 years in software development, 9 years working on software projects connected with research and development grants.
- **Nick Robson (Developer)** - 10 years in software development, 5 years working on software projects connected with research and development grants.
- **Mike Hall (Developer)** - 7 years in software development, 4 years working on software projects connected with research and development grants.
- **Jeff Chemeres (Chief Strategic Officer)** - 20 years in software development, 6 years working on software projects connected with research and development grants.
- **Rachael Shaw (Marketing Manager/Research)** - 1 year in market research.

Budget

Salaries: N/A

Supplies: \$3,500 for 3 iPad & Camera Systems

Hourly Wages: N/A

Travel: \$1,500 for 1 trip to volunteer grower sites

Fringe Benefits: N/A

Miscellaneous: N/A

Total: \$5000

Other Support

- \$30,000 Bioenterprise Seed Fund
 - Program funded by the Government of Canada to provide non-repayable seed financing to assist start-ups and small- and medium-sized enterprises (SMEs) in the agriculture and agri-food sectors, as well as sustainable and environmental technologies.

Contact Information

Please feel free to book a meeting in which myself, Croptracker's CEO Matthew Deir, and a support team representative may provide you with a live demo of the software and discuss our proposal in greater detail.

**To arrange a meeting time or to discuss further,
please phone or email:**

Jeff Chemeres, Chief Strategic Officer
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Please also feel free to visit our website at www.croptracker.com.

