

An Evidence-Based Supplemental Irrigation and Water Management Demonstration Project
April 6, 2018

Background:

Cavendish Farms is committed to the competitiveness and to the sustainability of potato processing on Prince Edward Island. One of the most significant and strategic challenges faced by Cavendish Farms each year is securing adequate supplies of local potatoes that meet the specifications of customers. It is becoming apparent that in a changing climate, we are experiencing growing seasons with drought like conditions persisting during the critical growing period. The recent growing season (2017) is a good example, where rainfall was limited in parts of PEI and crop yields were below average. Climate change experts (e.g. UPEI) are forecasting that we can expect these conditions to become more frequent in the future.

Since 2001, the Government of Prince Edward Island in response to a number of environmental issues has imposed a moratorium on new permits for high capacity agricultural irrigation wells. PEI is one of the few jurisdictions that is completely dependent on groundwater for all of its water supply, thus ensuring the protection of the quality and quantity of water is understandably a priority.

As a branded food company, Cavendish Farms is very aware of the need to operate in an environmentally responsible manner in our owned operations as well as the farms under contract. Cavendish Farms recognizes that as a valuable public resource, water must be managed responsibly in an open and transparent manner to ensure protection of supply and quality.

PEI farmers recognize the importance of environmental sustainability and significant progress has been made since the 2001 moratorium was imposed. For both Cavendish Farms and PEI farmers to remain competitive, it is critical that farmers have access to tools like supplemental irrigation to manage the drought risk that is becoming more of a significant issue (not to mention additional benefits that may result from irrigated crops). It is also clear that issues like topography, field configuration, local water supply, farmer interest etc., all create practical limits to the potential scale of irrigation on PEI.

With the recent passing of the Water Act, which does not prohibit irrigation, there is an opportunity to generate data that could inform future regulations and policy relating to irrigation and the protection of water resources.

In response to requests for additional high capacity supplemental irrigation well permits, and in recognition of the preceding, government officials directed Cavendish Farms to identify watershed group collaborators as a first step toward considering sites for new permits. In response Cavendish Farms has met with and secured agreements with 3 watershed groups to collaborate in a project to demonstrate a sustainable approach to irrigation. The watershed groups are:

- Kensington North Watersheds Association Inc.
- Bedeque Bay Environmental Association
- West Point and Area Watersheds Inc.

The following is an outline of the proposal that was discussed with the watershed groups. The basic premise was that demonstrations would take place in fields not previously irrigated (i.e. new test / research well permits would be issued).

Project Objectives:

- To demonstrate the effective use of modern well monitoring / irrigation (supplied by high capacity well) technology in a manner that ensures the protection of the groundwater supply (sub-surface and surface) including the aquatic habitat of streams / rivers in close proximity.
- To assess how supplemental irrigation can improve the economic productivity of potatoes. This would include a full cost benefit analysis.
- To demonstrate that good agronomic practices (BMPs) when used in conjunction with supplemental irrigation in potato production can reduce nutrient loss to the environment and also reduce production of GHGs (key BMPs to include crop rotation and nutrient management).
- To demonstrate how modern irrigation technology can be used to apply nutrients in an effective manner.
- To demonstrate how managed irrigation can reduce the risk of crop loss providing benefits to farmers, Cavendish Farms, crop insurance and to the PEI economy in general.
- To generate data that could inform policy makers regarding best practice for irrigation permits on a go forward basis (new Water Act).

Project guidance:

The project would be guided by a multi-stakeholder committee to include, but would not be limited to watershed representative(s), Cavendish Farms staff, Provincial Departments of Environment and Agriculture, Agriculture and Agri-Food Canada, UPEI, and the PEI Potato Board. The committee would be chaired / co-chaired by an appropriate independent member.

- Dr. Yefang Jiang (Agriculture and Agri-Food Canada)
- Dr. Michael van den Heuvel (Canadian Rivers Institute and UPEI)

- Kensington North Watersheds
- Bedeque Bay Environmental Management Association
- West Point and Area Watersheds Inc.
- Greg Donald (PEI Potato Board)
- Jubs Bristow (Cavendish Farms)
- John MacQuarrie (Cavendish Farms)
- PEI Department of Agriculture and Fisheries (TBA)
- PEI Department of Communities Land and Environment (TBA)

The role of the committee will be to provide guidance to the project, to approve the final approach, review the results, ensure transparency throughout the project and ultimately to provide recommendations regarding the future of agricultural irrigation on PEI. It is important to note that at the outset, membership on the committee is not to be construed as taking a position on irrigation.

The project will require coordination to ensure the day to day management of the project and to ensure timely reporting to the guidance committee.

Project Outline:

In collaboration with each watershed group, it is proposed that two sites will be identified. One site will include an established irrigation well and an additional site to be selected for a new high capacity irrigation test well. Grower collaborators have been identified in each of the 3 watersheds. This is to be a multi-year project, ideally over the period of a 3 year rotation.

Justification for new test / research well permits includes the following:

- The project would employ the most modern / efficient irrigation equipment available which may not be the type of equipment currently being used (e.g. variable rate, low flow nozzles, low drift nozzles, aqua spy monitoring etc.).
- By including new and existing wells there will be an opportunity to demonstrate, measure and compare the results obtained based on the approach outlined in this proposal.
- Professional hydrogeological advice will be used to select well location.
- To demonstrate that irrigation can be managed on a go forward basis, it is critical to identify a site that has no history of irrigation (results will not be confounded by historic use of the local groundwater for irrigation).

Note:

As a condition of the test permit, it is expected that in the event that any adverse impact is detected on the local water supply or surface water the permit would be

revoked and the well decommissioned.

At each site, appropriate monitoring wells will be established to ensure that water supply is measured on an ongoing basis. Modern instrumentation to monitor soil moisture will be incorporated. Appropriate field plots within each site will be established to evaluate the impact of irrigation in combination with best agronomic practices.

Parameters to be measured include:

- Economic yield / quality
- Fate of nutrients applied
- Impact on local water supply
- Impact on local streams*
- GHG production*

*Note, stream and GHG measuring will be possible with the addition of technical support outside the capacity of Cavendish Farms.

As a principle, all information including data will be shared including live “real time” well water data. The siting of the well(s) will be accomplished through consultation with participating growers, watershed groups, groundwater consultants and staff of the PEI Department of Communities, Land and Environment. All reasonable efforts will be made to ensure the location of the well would not be injurious to the water supply, to local residents or to nearby streams and rivers.

As a next critical step, we seek the support of the Government of Prince Edward Island to collaborate in this investigation including a commitment to accept applications for new test / research high capacity well permits.

Contact:

Mr. Jubs Bristow, Vice President Agriculture

Cavendish Farms

1-902-439-5795

bristow.jubs@cavendishfarms.com