

Department of Agriculture and Forestry Case Study

Introduction

The Prince Edward Island Department of Agriculture and Forestry boasts the Land-On-Line application, developed by Baseline Business Geographics Inc., which combines soil mapping, property mapping, road centre line files, forest outlines and water attribute data. Using the application, farmers can visualize information relating to their farmland that allows them to easily adhere to legislation and support the sustainability of the province's resources.

Background

Farming is PEI's largest industry and provides a large source of income to the province. In recent years, however, government, the public and farmers have been increasingly concerned with potential negative effects of some farming practices. Soil erosion, stream sedimentation, chemical water pollution and fish kills caught both public and political attention. It had been clearly demonstrated that some farming activities on land had the potential to negatively affect life on rivers, lakes and estuaries.

In effort to amend the situation, the provincial government passed two new pieces of legislation:

1. Prevent persons farming from disturbing soil or cutting trees within a buffer zone along water bodies/courses. The size of the buffer varies upon slope, type of water body, type of vegetative cover around streams.
2. Prohibits farming of row crops of slopes greater than 9%.

Problem

During the industry consultation process, the government quickly realized that farmers recognized problems and were willing to comply. But in order to act in accordance with the legislation, they needed to be able to know what parts of their farm there are restrictions upon (e.g. not allowed to farm on).

CUSTOMER:

Department of Agriculture and Forestry

NEEDS:

- Location technology and data to support a timely and effective notification system for farming information
- Better monitoring of land use
- Mapping analysis easily integrated with other technologies

PROBLEM:

- Reliance on manual mapping
- Lack of ability to effectively communicate vital crop and land information to farmers

SOLUTION:

- With Land-On-Line, provide farmers with an easy-to-use location based system implemented cost effectively on the Web.

BENEFITS:

- An extremely timely and effective notification system for farm-related crisis – resulting in a highly technologically advanced mapping system
- Enables farmers to locate restricted areas of farmland themselves
- Department of Agriculture and Forestry can better monitor land use
- Savings of environmental resources due to better communication and decision-making.

The farmers' challenge to the Minister of Agriculture was in their ability to be able to see where and how much of their land is affected by regulations. The Minister took this challenge back to his GIS department and posed the question of how to get the appropriate information out to the farmers. The GIS department provided him with two options:

1. Have staff in district offices equipped with MapInfo and a plotter to plot off maps of farmlands for farmers. A quick analysis of the process determined that it would not be feasible because of the cost of staff and the cost of printing thousands of maps annually.
2. With a self-service approach, a farmer could go on-line from his home or office and, in a secure environment, type in his username and password. After doing this, the user would have digital maps of his farms fields appear with the slope of land and restricted buffers clearly indicated.

The Minister chose the second option for several reasons: 1) There is a high rate of Internet use in the farming community; 2) The deployment is cost effective; and 3) Users are able to manage the information and keep it current.

Solution

The Department of Agriculture and Forestry are early innovators in GIS technology, using it to manage PEI's resource lands. Over the past number of years, they have mapped the entire province with applicable data (e.g. land use forest inventories for 1980, 1990, and 2000). Baseline Business Geographics Inc. developed a mapping solution for the Department and farmers that provided fast and easy access to the proper information, which allows for enhanced communication and decision-making between all parties involved. The solution combines digital contours soil mapping, property mapping, road centre line files, forest outlines and water attribute data, such as rivers, lakes and water bodies. Other geographic details can be integrated into the application as the Department's needs change.

The application also enables users to see digital ortho-imagery (air photos) of their farms, contours, soils mapping, field boundaries, road centre line files and associated attribute data. The Department of Agriculture and Forestry sees value in this application not only because it is a cost-effective way to disseminate information to key players in the industry, but also because the Department's staff and extension workers can use in their existing system. The Department is currently in the process of rolling out the system to every farmer on Prince Edward Island.

Since the implementation of Land On-Line in October of 2002, the Department has identified and applied many other uses for their high-end on-line mapping tool, including providing information to land owners and land managers in the forestry sector. The application has also been adapted to provide slope calculation functionality and soil loss calculation.

“Land-On-Line provides extensive amounts of information that collectively affect the sustainability of our land's natural resources,” affirms Brian Douglas, Director of Agriculture Resource for the Department of Agriculture, Fisheries, Aquaculture & Forestry. “This advanced mapping application allows farmers to see where and how much of their land is affected by regulations, which considerably heightens their insight into many important environmental and agricultural issues.”

Later incorporated in Baseline's Land On-Line application was an early, rapid warning system used to notify farmers in the event of a farming crisis, such as potato wart or foot and mouth disease. The Department can select all farmers with fields within a specific distance of an incident. It can then notify them by e-mail, fax or telephone as to what measures to take in order to minimize the negative impact of the incident.

Baseline created the application so that only secure users could access the information with a username and password. Different levels of staff and farmers have access to different types of information according to their username and password.

The implementation of this efficient system saves the Department both time and money, and improves farming practices and record keeping. Farmers no longer have to worry about using out-of-date maps, as updates and new data layers can be added to the application without having to reissue maps. The time to produce maps is greatly reduced, and with the cohesive effort of farmers and the Department of Agriculture, the province is on its way to restoring its valuable resources.