Location in Agriculture:
Mapping Better Decisions
Baseline Business Geographics Inc. Whitepaper

Introduction

The agricultural industry is experiencing rapid changes in how farmers do business and in the resources that are available to them. Governments, the public and farmers are increasing their awareness of the roles that they play in sustaining and developing the environment and ensuring that they conserve and protect the earth's natural resources.

The agricultural industry deals with extensive amounts of information that relate to geographic locations. Many different types of information collectively affect the sustainability of our land's natural resources; therefore, it is important that the people who influence those resources have access to that information - namely farmers.

Farmers constitute the majority of people whose actions affect the development, conservation and management of the land's resources. They use a variety of plants, plant materials and chemicals that are valuable in managing their crops; but, depending on where these inputs are being used, they may have a negative effect on the land and water resources, and the life that inhabits them.

Farmers need to be able to access and understand specific information concerning their land in order to make the best decisions on how to manage it. However, the lack of a system of making such information available to the appropriate people has caused a roadblock to the agricultural industry. Regulations are in place to protect our environment, but farmers need to know how their land is affected in order make the regulations effective.

Problem

As you know, many of the earth's natural resources are finite. Others are renewable given sufficient time. Ensuring that these resources are available in the future depends upon a delicate balance between preservation and exploitation.

Government, the public and farmers are becoming increasingly concerned with potential negative effects of some farming practices. Soil erosion, stream sedimentation, chemical water pollution and fish kills are just a few of the environmental issues catching both public and political attention. It has been clearly demonstrated that some farming activities on land have the potential to adversely affect life within rivers, lakes and estuaries.

Most often, farmers recognize the problems and are willing to comply. But in order to act in accordance with the legislation, they need to be able to see where and how much of their land is affected by regulations (e.g. what parts of their land they are not allowed to farm on).
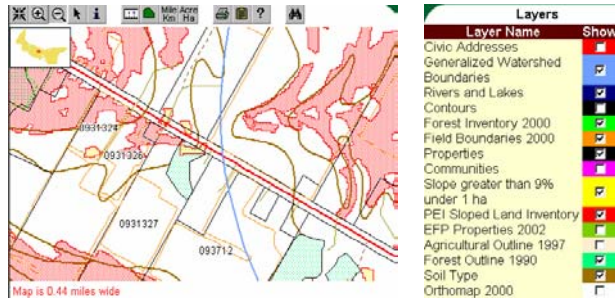
Solution

Baseline Business Geographics Inc. developed Land-On-Line – a software application for agricultural agencies, such as the Department of Agriculture and Forestry. It is comprised of 2 separate modules:

1.   *Maps*:

The Land-On-Line application includes a layer control tool, which allows farmers and Departmental staff to produce and customize reports by selecting from a comprehensive set of data layers. It incorporates external maps and data with information from the Department's database, and the user can perform searches for any type of information within the application. Land-On-Line incorporates maps of the following:

- Soil mapping;
- Property mapping;
- Road centre line files;
- Water courses;
- Contours;
- Sloped land inventory;
- Field boundaries;
- Rivers/lakes boundaries
- Forest outline;
- Digital Ortho-imagery (air photos) of farms, contours, and soil mapping; and
- Associated attribute data.

2.   *Client Tracking System (CTS)*:

The application incorporates a database of information possessed by the Department on farmers, containing data such as:

- Contact information
- Soil type
- Type of livestock/produce/commodities on farmland
- Associations to which the farmer belongs
- Ownership details
- Any other appropriate information

The applications are customized so that it contains all the information you need to make informed business decisions and carry out environmentally sustainable agricultural practices. Our focus is on helping you to understand and manage information intelligently and cost-effectively. Baseline can provide you with detailed insight into many important environmental and agricultural issues.

Functionality

Warning System in the Event of Emergency

Incorporated in Baseline's Land-On-Line application is 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. Agencies that use Land-On-Line can visualize where and how much farmland may be affected by an incident and select all farmers with fields within a specific distance. Staff 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. Using the application, farmers can now easily adhere to legislation and support the sustainability of a district's resources.

Search Tools

The search can be done by landowner name, community name, civic address or parcel identification number. Departmental staff can search for specific properties or for specific characteristics within properties.

Current Map Updates

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 agricultural agencies, we can help restore the environment's valuable resources.

There is great value in delivering the Land-On-Line application to farmers, as well as Departmental staff and extension workers. The high-end, on-line mapping tool has many uses, including:

Soil Loss Calculation

Land-On-Line has the ability to input and calculate Revised Universal Soil Loss Equation (RUSLE).

Security Access to Private Information

Baseline created the application so that only secure users could access private information Username and password functionality provides users with access to data based on their need to know. Different levels of staff and farmers can have access to different types of information.

Benefits to the Department
- Quickly locate a farmer's property
- Determine what farmlands are within a crisis area
- Share real time information pertaining to regulations affecting farmland
- Improve the conservation, protection and enhancement of the environment
- Easily add or remove data as it changes
- Ensure privacy through secure authorization
- Easily customize the application to the look and feel of your organization

Benefits to the Farmer
- See where and how much of their land is affected by regulations
- Take proactive approach to farming
- Become informed of crisis as it happens
- Sustain and manage the land's resources
- Privacy is ensured
- Confidentially track crop rotation, nutrient management and/or spray applications
- Improve communication with the agricultural agencies

Advantages

- Land-On-Line links together disparate information sources such as Provincial maps, soil analysis data, forestry cover, slope and elevation, aerial photography, and crop records. Maps are the ONLY way to link this information together.
- Farmers can better determine where to place what type of soil conservation structures
- Reduce costs associated with manual paperwork, such as issuing and reissuing maps;
- Improve accuracy of communication throughout all levels of the agricultural industry;
- Provide land resource-related information quickly;
- Build stronger communication networks with farmers and improve their ability to respond to notifications;
- Increase efficiency from up-to-date information;
- Satisfy the need for a sustainable environment;
- Realize a substantial return on investment.

Features

Easy Customization – New interface uses HTML frames that can be placed on various HTML pages or in a single interface page. These pages can be easily customized for any jurisdiction to reflect local property laws and customs. The application is customized to the look and feel of your preference, and can include additional or less functionality.

Scalability and Flexibility - This application is easily interfaced with other applications.

Comprehensive And Easy-To-Use E-Commerce Applications - Land-On-Line allows you to run the application online, so that it can provide 24-hour service information to your constituents. This will enable farmers to obtain information about regulated areas and how it affects their farming practices. Such e-commerce initiatives also allow the Department to obtain and track client information.

Limitless Data Inputs - For instance, the Department may want to include various details pertaining to a landowner's profile, commodities on the farms or associations in which farmers belong.

Multiple Coverage Layers – Layers can be shown by selecting them from a simple color-coded list.

Administrative Tools - The tools available to users include distance and area calculators, an Info tool for pulling data from the map, a zooming tool, and a Print button to print a copy of the map.

Conversion Tools – Tools for measuring distance and area can convert the values between imperial and metric values.

Bulletin Board Feature – Allows the Department to post announcements, data updates, alterations and planned system maintenance so that farmers can be kept informed.

ASP – We can host the server for you, or your organization may purchase the license itself.

Why Choose Land-On-Line

The Land-On-Line application is viable in the agricultural industry for several reasons:

1) Land-On-Line is an essential part of being able to enforce buffer zone, sloped land and other legislation, as well as sharing data between district offices and other departments.
2) The high rate of Internet use in the farming community and the availability of broadband Internet services;
3) The deployment is cost effective; and
4) Users are able to manage the information and keep it current.

Land-On-Line is an award winning solution, recognized with the **Innovation Award**, from the Information Technologies Association of Prince Edward Island.