

## 2014 4R Fertilizer Management Survey

Significant improvements have been made to the management of fertilizer application in Canada. Farmers have adopted several practices that improve the efficiency of fertilizer use, including banding of fertilizers, timing of fertilizer application to maximize plant uptake, and the use of enhanced-efficiency fertilizers. The adoption of these practices not only benefits farmers regarding productivity and profitability, but also the environment by reducing the potential for nutrient losses from the land. Fertility management has a significant impact on environmental outcomes such as greenhouse gas emissions and water quality – both issues which are top of mind for consumers, industry and governments.

Today, there are no national surveys in existence which collect information on fertilizer management practices for crop production. There is a real need to understand the current state of fertilizer management in Canadian crop production, both to frame the current landscape and to track future changes in nutrient management.

The Canadian agriculture sector has focused heavily on improving the industry's ability to report on sustainable nutrient management practices. By linking commercial interests in the food sector, the 4R Nutrient Stewardship system – the Right Source, at the Right Rate, at the Right Time and in the Right Place (4R.fertilizercanada.ca) can capture market opportunities arising from the food industry's demand for information on how their food is grown.

In order to advance the knowledge base of Canadian agriculture, the Canadian Canola Growers Association, CropLife Canada, Fertilizer Canada, Grain Farmers of Ontario, Manitoba Pulse and Soybean Growers, and Pulse Canada, funded in part by Agriculture and Agri-Food Canada's Growing Forward 2, developed a survey to collect fertilizer management information. A focus of this project is on using 4R Nutrient Stewardship as a tool that will enable the Canadian grain, oilseed and pulse industries to measure sustainability performance. This survey also supports the development of sustainability metrics for Canadian crop production, including the Canadian Field Print Calculator ([www.fieldprint.ca](http://www.fieldprint.ca)). This new information aims to demonstrate fertilizer efficiency on varying Canadian crops and advance the agriculture sector's ability to report and communicate achievements of sustainable food production.

An online survey was developed and delivered to farmers during the winter of 2014-15 – returning results from a random sample of 430 farmers in Western Canada (Alberta, Saskatchewan and Manitoba) and 270 farmers in Eastern Canada (Ontario and Quebec). Producers were asked to provide information on canola, spring wheat and pea production in Western Canada, and corn and soybean production in Eastern Canada. The survey focused on collecting information on fertilizer management practices for individual crops including:

- source of fertilizers (e.g. urea, anhydrous ammonia, etc.)
- rate of application of different nutrients,
- timing of fertilization (e.g. fall application, at seeding, etc.), and
- placement of fertilizer (e.g. broadcast and incorporated, banding, etc.).

Questions related to general fertility management were also posed to the survey audience, such as:

**For your fertilizer application on your 2014 canola crop, did you use variable rate technology based on prescription maps?**

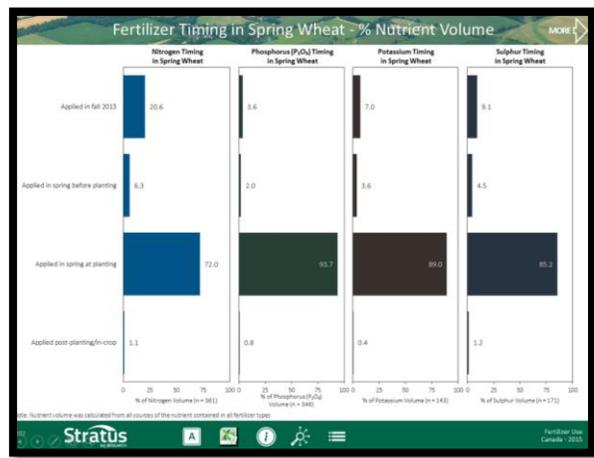
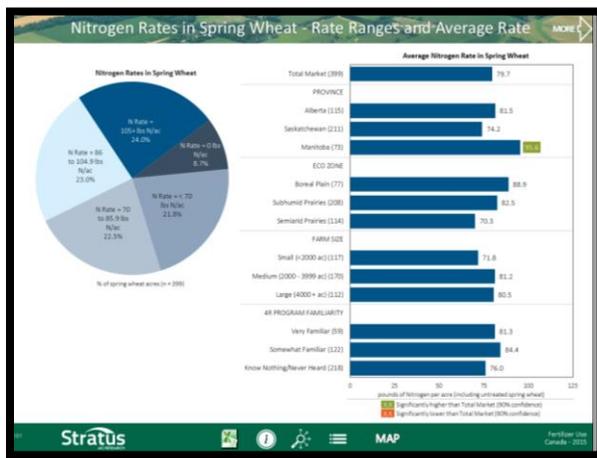
**How often does each of your fields typically get soil tested for Nitrogen?**

**Please tell us what keeps you from soil testing for nitrogen every year.**

**In 2014, did you use any of the following for your decisions about fertilizer and nutrient management?**

The results of this survey created a large dataset, which has been formatted into a navigable PowerPoint document consisting of 326 slides. The information developed from the survey provides a clear picture of the current state of fertility management for these major crops in Western and Eastern Canada.

Below are some sample figures depicting content of survey results:



The 2014 survey is the first of four surveys to be conducted during this project. Subsequent surveys will be conducted during the winters of 2015-16, 2016-17 and 2017-18. The goal is to capture baseline information for all grain, oilseed and pulse crops in Canada. In Western Canada, these crops will include barley, oats, durum wheat, winter wheat, lentils, soybeans and flax. In Eastern Canada, data for winter wheat will be captured. Future surveys will also focus on refining information collected during the 2014 survey, including asking more specific questions regarding fertilizer placement (e.g. depth of fertilizer band), or timing of applications (e.g. date of application of fall anhydrous ammonia).

The results of the 2014 survey fill a large gap in information, which will be of value to Canadian agricultural associations, researchers, and governments. The results of this survey will enable the development of sustainability metrics which reflect the current state of fertility management in Canada. In addition, the results of this survey will be used to develop future messaging and support for the on-farm adoption of the 4R Nutrient Stewardship program.