

TWENTY YEARS OF BT CORN IN CANADA: GROWERS' SURVEYS CONDUCTED IN COLLABORATION WITH THE CANADIAN CORN PEST COALITION



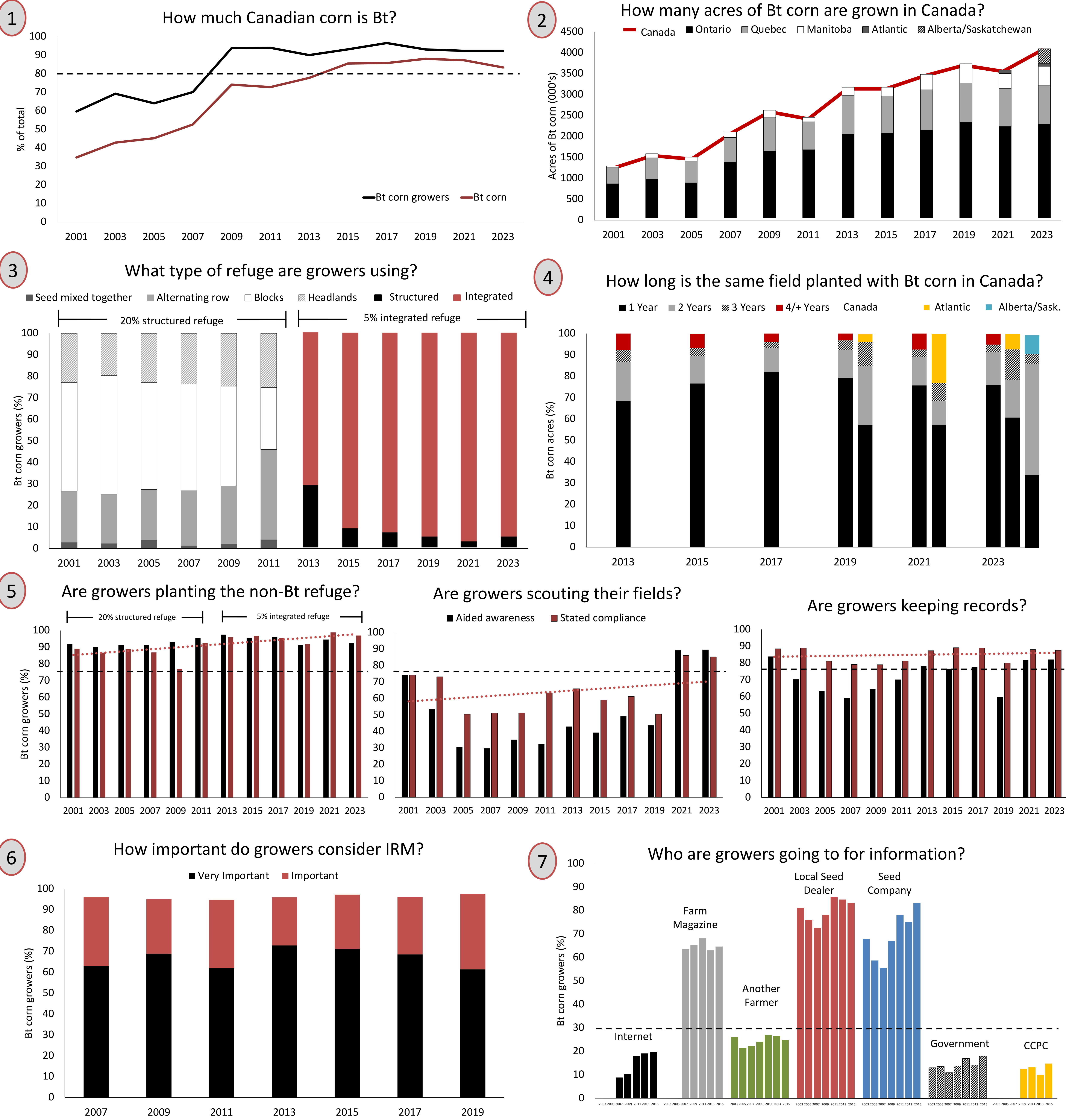
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INTRODUCTION

The Canadian Corn Pest Coalition (CCPC) was established in 1997 with the introduction of Bt corn. The CCPC is a collaborative organization of the University of Guelph, provincial and federal government, growers' associations, and biotech and agrichemical industry groups to promote stewardship, insect resistance management (IRM), and educational outreach of corn pest management technologies. One of the initiatives of the CCPC is biannual surveys with Canadian Bt corn growers. The survey was intended to continually evolve IRM best practices to minimize the development and impact of resistance to Bt corn in Canada and monitor and improve growers' adoption of IRM best practices. Detections of insect resistance to Bt corn has begun in Canada in the past decade. The surveys represent an important tool to determine how well Bt corn adoption and best management practices have been implemented over the past 20 years in Canada. Data presented will focus on county-wide and inter-provincial trends between 2001-2023 that involved Ontario, Quebec, and Manitoba growers; the survey was expanded to the Atlantic and Prairie provinces in 2021 and 2023, respectively. Survey results will shed light on whether we have been making the right assumptions account growers' habits and decisions regarding Bt corn, and to improve our strategies for communication and effective IRM strategies to target rising issues of insect resistance to Bt corn in Canada.

RESULTS



INSECT RESISTANCE TO BT CORN

- 2013: corn rootworm (Ontario)
- 2018: European corn borer (Nova Scotia)
- First detection in world
- Resistance to both spreading in Canada



KEY TRENDS

- Bt corn has been widely adopted in Canada**
 - Canadian growers planting Bt corn has increased 50%
 - Canadian corn that is Bt has increased 130%
 - Bt corn consistently >80% of Canadian corn since 2013
- Intense Bt corn production in Ontario and Quebec**
 - Canadian Bt corn acreage has increased 170%
 - Bt corn acreage has at least doubled in ON, QC, and MB
 - Niche Bt corn market in Atlantic
- Seismic shift to integrated refuge**
 - Integrated refuge introduced in 2012 to increase grower compliance
 - Since 2015, >90% of refuge in Canada is integrated
- Majority of Canadian Bt corn is being rotated**
 - >60% of Canadian corn is 1st year Bt each year
 - Atlantic and Alberta/Saskatchewan corn is typically rotated less often
- Majority of Canadian Bt corn growers are following best practices, even if not aware they are regulated to**
 - Compliance has remained consistent or increased for non-Bt refuge planting, scouting, and record keeping
 - Majority of growers were planting a 20% refuge, and continued to comply with a 5% integrated refuge after 2012
- Growers are prioritizing IRM**
 - Nearly all Canadian Bt growers considered IRM 'important'
- Growers are turning to industry and publications for information**
 - More than half of growers are primarily seeking information from farm magazines and industry sources
 - The internet, other farmers, government, and the CCPC remained consistently used, although were less sought after by growers

CONCLUSIONS

Bt corn was a success story in Canada

- Bt corn widely adopted
- Majority of Bt growers following best practices and prioritizing IRM

Refuge compliance high, but refuge acreage itself declined after 2012

- The proportion of Canadian growers complying with refuge planting remained consistent pre- and post-integrated refuge
- However, the amount of refuge being planted dropped with the shift from 20% structured refuge to 5% integrated

Importance of continued collaboration

- Growers consistently turning to industry as their main source of information
- Challenges of insect resistance will grow, important to continue collaboration between CCPC, industry, and other interest groups to effectively communicate with growers and encourage their pattern of stewardship displayed between 2001-2023