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## BRINGING INNOVATION TO PEST MANAGEMENT POLICY

Posted 30 May 2017



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**The next agricultural policy framework needs a strategy for reducing the use of synthetic pesticides and promoting innovative pest management practices.**

Canadian agricultural lands are diverse: expansive prairie flats of grains, canola and pulses; rolling coastal berry bushes and potato fields; central acres of corn and soy; southern greenhouse vegetables and fruit orchards; and northern pastures. In contrast, Canada's pest management is a one-size-fits-all blunt instrument. We need, and have, more refined tools. What is missing is innovative policies that support the use and development of these tools.

Pest management in Canadian agriculture is overly reliant on the widespread application of synthetic pesticides, which are used as a suite of generalized

solutions to diverse pest problems. This pest management approach has become entrenched in laws, policies and programs at Health Canada and Agriculture and Agri-Food Canada that encourage the use of synthetic pesticides and tend to discourage so-called alternatives. This approach persists despite the fact that the value of synthetic pesticides has been brought into question, even in a [recent report to the UN Human Rights Council](#) that accuses pesticide manufacturers of exaggerating benefits, systematically denying severe health and environmental impacts and obstructing global pesticide restrictions.

For Canada to be an innovative leader, our next agricultural policy framework needs to have a national synthetic pesticide reduction strategy at its core that limits synthetic pesticide use through regulation; subsidizes research and development and knowledge transfer about finely tuned, less synthetic and locally adapted pest management practices; and reorients business risk management programs to incentivize diverse pest management.

## INCREASING SYNTHETIC PESTICIDES, INCREASING PROBLEMS

Our current approach to pest management is rooted in technologies from the Second World War, when chemical warfare was diverted to agricultural use, and has proliferated based on the mistaken belief that it is indispensable to the growth and competitiveness of Canadian agriculture. Although Canada has banned some hazardous pesticides, synthetic pesticide use continues to increase, despite questionable gains in many cases and known risks. Taking insecticides as a first example, while the indiscriminate use of DDT has been banned for 45 years, newer insecticides like neonicotinoids (neonics) are currently in widespread use although some are at least 5,000 to 10,000 times [more toxic than DDT](#) in their acute effects on bees.

Concerns were raised at the [Standing Committee on Agriculture and Agri-Food](#) around Health Canada's [recent proposal](#) to phase out one particular neonic over the next three to five years. The case was made that producers' profitability is at risk of decline if they must stop using the neonic in question because they know of no affordable alternative. But current levels of prophylactic use — applying the substance as a preventive treatment to protect “yield potential” — cannot be supported. In Quebec, for instance, [less than 4 percent of agricultural land](#) has enough pests to justify the use of neonic seed treatments at all.

Concerns in a similar vein could be raised about some of Canada's most widely used synthetic herbicides, like atrazine, which has been shown to lead to a [3 to 4 percent increase in corn yields](#) in the best of cases and in the worst of cases, [no increase at all](#). These low margins are hard to justify, considering evidence of the risks posed by atrazine. These include its hormone-disrupting effects, which have been shown to lead to [sex changes in frogs](#); extensive [surface water](#) and [drinking water contamination](#); and its potential links to health [impacts](#) on people such as [farm workers](#). However, [Health Canada](#) has recently registered atrazine for continued use, while launching a secondary, more comprehensive review in order to assess concerns over human health and the environment.

And then there's Canada's most-used herbicide, glyphosate, not without its own set of [environmental](#) and [health risks](#), but recently evaluated by [Health Canada](#) and registered for continued use. Canada's dependence on glyphosate is in large part due to the use of genetically modified glyphosate-tolerant crops. Although it was earlier hoped that the engineered characteristics of these crops would lead to declines in herbicide use, they in fact require repeated spraying with glyphosate year after year, which has led not only to increased glyphosate use but also to the proliferation of [weeds that are resistant to it](#). These superweeds — the varieties of which are diversifying and multiplying — are so hardy that glyphosate manufacturers are now encouraging producers to deploy a combined chemical approach, applying not only glyphosate but also other older herbicides like 2,4-D and dicamba.

The newest weapon in the fight against superweeds is crops with [“stacked resistance”](#): crops genetically modified to be resistant to multiple herbicides. Canada may have been the first country in the world to approve these crops in 2014, but it cannot be considered an innovative leader: this technology and similarly short-sighted solutions are based on patching up an antiquated pest management strategy that ironically heightens vulnerability rather than resilience. It should not be surprising that multiple weeds found in Canada are now tolerant to many herbicides, rendering this “cutting edge” technology out of date.

While [synthetic pesticide](#) use continues to mount, the most recent Census of Agriculture (2016) has revealed that [farm profits are not increasing](#). This is when the penny drops: this bleak statistical picture must force us to conclude that Canada's pest management strategy is not only far from innovative but also far from working well. Farm profitability matters, and it is dependent on farm viability. Farm viability should include not just the accumulation of farm revenues but also the preservation of the health and

well-being of producers as well as the viability of the agricultural ecosystem for current and future generations. All of this is currently at risk.

## REGULATORY AND POLICY DECISIONS THAT SUPPORT INNOVATIVE PEST MANAGEMENT

A wide variety of pest management strategies that are less dependent on synthetic pesticides not only exist but are also showing great results, including increased agricultural yields. One shining example is locally adapted, low-synthetic-input wheat varieties; just as with any other technologies, increased investments in research and development would allow these innovations to be deployed on a larger scale in Canadian agriculture. The success of these pest management practices should provide the impetus to finally develop an effective national strategy to reduce synthetic pesticide use in Canada. Herein lies the true challenge for policy innovation.

A synthetic pesticide reduction strategy should reorient the legislative and regulatory framework from a primary focus on the registration of pesticides toward a focus on limiting the use of synthetic pesticides. This change would require setting Canadian targets and thresholds for synthetic pesticide use, and Quebec's proposed strategy is a promising example of how this approach could look.

Limiting synthetic pesticides cannot be done just through regulation, however. It should be supported by services that transfer knowledge to producers; these services should not be tied to pesticide manufacturers but rather should be led by specialists in agronomy and producers with sound understanding of and experience with the application of locally adapted solutions. As it stands, pesticide manufacturers provide pest management knowledge transfer to producers free of charge. On the other hand, if producers access independent services, they are handed a bill, with the cost subsidized in part by government funding. Individual producers must not be the ones bearing the costs of less toxic pest management strategies, especially when the future of our agricultural system depends on them.

Finally, the business risk management (BRM) programs, fiscal tools within the current federal policy framework that are designed to enhance the ability of producers to manage risks, need to incentivize producers to reduce synthetic pesticides rather than doing the opposite. The current BRM programs are biased against diversified farms that rely on less synthetic pesticides because eligibility for the programs is contingent on the

production of the same crop on a large scale, year after year. Producers using highly effective pest management strategies based on diversified farm design ([crop rotation](#), for instance) are excluded, so current BRM programs act as a fiscal disincentive to transition to more innovative, producer-driven pest management strategies.

To be cutting edge, Canada needs to get off its toxic treadmill by supporting made-in-Canada pest management solutions that are finely tuned and grounded in unique and diverse needs. We will miss the mark if this objective is not reflected in the next agricultural policy framework through a national synthetic pesticide reduction strategy that includes research and development, regulation, knowledge transfer and fiscal incentives.

This article is part of the [Canadian Agriculture at the Cutting Edge](#) special feature.