

# Investigation of strategies to mitigate accelerated deterioration of pig buildings

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Swine buildings.  
Source: Prairie Swine Centre

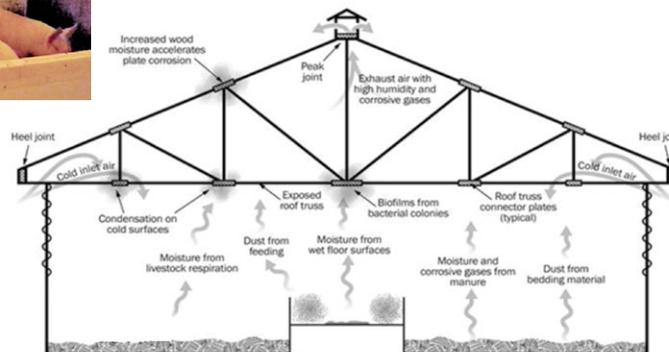


Figure 1. Sources of moisture, corrosive agents and dust that cause corrosion. Adapted from Beadle, 2016. Source: S. Beadle, 2017: "Corrosion of Roof Truss Connector Plates in Farm Buildings." Ontario Ministry of Agriculture, Food and Rural Affairs website

Based on a literature review and national survey, the following solutions seem to be the most promising to mitigate the rapid deterioration of Canadian swine buildings:

- Improving building ventilation systems, including environmental control and air treatments
- Applying surface treatments to reduce corrosion of building materials
- Having an effective building maintenance program

## Why was this study done?

Swine barns are highly susceptible to accelerated deterioration because of varying thermal conditions, presence of dust and decay microorganisms, and high levels of moisture and corrosive gases such as hydrogen sulphide and ammonia especially during the winter months. With this project, researchers wanted to identify potential solutions to mitigate the accelerated deterioration of Canadian swine buildings.

## What was done and what was the outcome?

A comprehensive literature search and an information survey of various stakeholders were carried out. Results confirmed that wood, concrete and steel (metal) were the most commonly used materials in agricultural building structures.

This work also showed that wood structures were degraded by a number of various factors, including the presence of fungi, bacteria, insects, solar radiation, as well as wetting and drying by precipitation, changes in relative humidity and temperature, application of chemicals for cleaning, sanding and power washing. As per metal structural components, the rate of corrosion was accelerated by high humidity levels and the presence of different microorganisms.

Based on this information and considering Canadian conditions, the following solutions have been identified as the most promising to mitigate the accelerated deterioration of pig buildings:

- Change certain techniques related to ventilation, environmental control and air treatments
- Improve the efficiency of corrosion protection for building materials
- Perform effective building maintenance

## Collaborators

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## Additional project information

Click on the links below for further information on this project

### **R&D Featured Articles—by Geoff Geddes for Swine Innovation Porc**

Articles may be found at: <http://www.swineinnovationporc.ca/resources-e-newsletters.php>

- [The Ceiling's the Limit in Barn Repair Options](#)  
- January 2019 (Vol. 3, No. 21.)

## Financial support for this project

This project is part of the Swine Cluster 2 (2013-2018) research program, made possible through financial support from Agriculture and Agri-Food Canada, eight provincial pork producer organizations and over 30 industry partners. [Click here to learn more about the financial partners for Swine Cluster 2](#)