

Plant Pathology in the Classroom. Plants get sick too!

Canadian Phytopathological Society (CPS)

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Overview

- **Why Plant Pathology?**
- **Where does it fit into the curriculum?**
- **Significance of one disease- Fusarium head blight**
- **Effective approaches for scientific investigation**



Why Plant Pathology?

- **Plants are essential to maintenance of life.**
- **Food, clothing, essential drugs.**
- **Change in crop requirements caused by**
 - **Shifts in population**
 - **Trends in consumer preferences**
 - **Relative costs of land, labour and equipment**



Why plant pathology?

- **Plant pathology is concerned with the health and productivity of growing plants.**
- **Disease losses are hazards which can be minimized by research and education**
 - **Changes in crop varieties**
 - **Changes in climate cycles**
 - **Regional shifts in production of crops may bring new problems of disease**



Irish Potato Famine

- 1845 Severe epidemics of late blight of potatoes in Great Britain, The Netherlands and Belgium.
- 1846 Infected potato tubers planted - crop destroyed. 80% of the Irish food supply lost.
- More Irish died in the Famine of 1845 to 1849 than in any war before or since.
- More than a million of a population of 8 million people in Ireland died.
- Of the survivors, one and a half million emigrated to North America. Huge demographic changes.



- **Bioweapons** that attack crops could wreak economic damage, destabilize governments, or deprive an enemy of food during wartime.

By 1968 the US had stockpiled 50,000 tonnes of wheat stem rust spores to drop on the Soviet Union and 1 tonne of rice blast for Asia. The Soviet Union had stockpiled wheat stem rust and pathogens of maize and rice. Iraq had wheat smut bomb.



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Where does plant pathology fit into the curriculum?

- **Senior 4**
- **Describe the factors which cause malfunctions in plants. Discuss dehydration, mineral deficiencies, insects and diseases.**
- **Describe the significance of plant life to the economy and the environment**



Where does plant pathology fit into the curriculum?

- **Grade 6**
- **Grasslands – The Evergreen Project**
- **A field guide to the Prairies**
- **The Tree of Life**
- **Stalking Mysterious Microbes**



Where does plant pathology fit into the curriculum?

- **Grade 3**
- **Growth and Change in Plants**



Fusarium head blight of spring wheat

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Possible Causes

- Tillage
- Rotations
- Environment
- Varieties



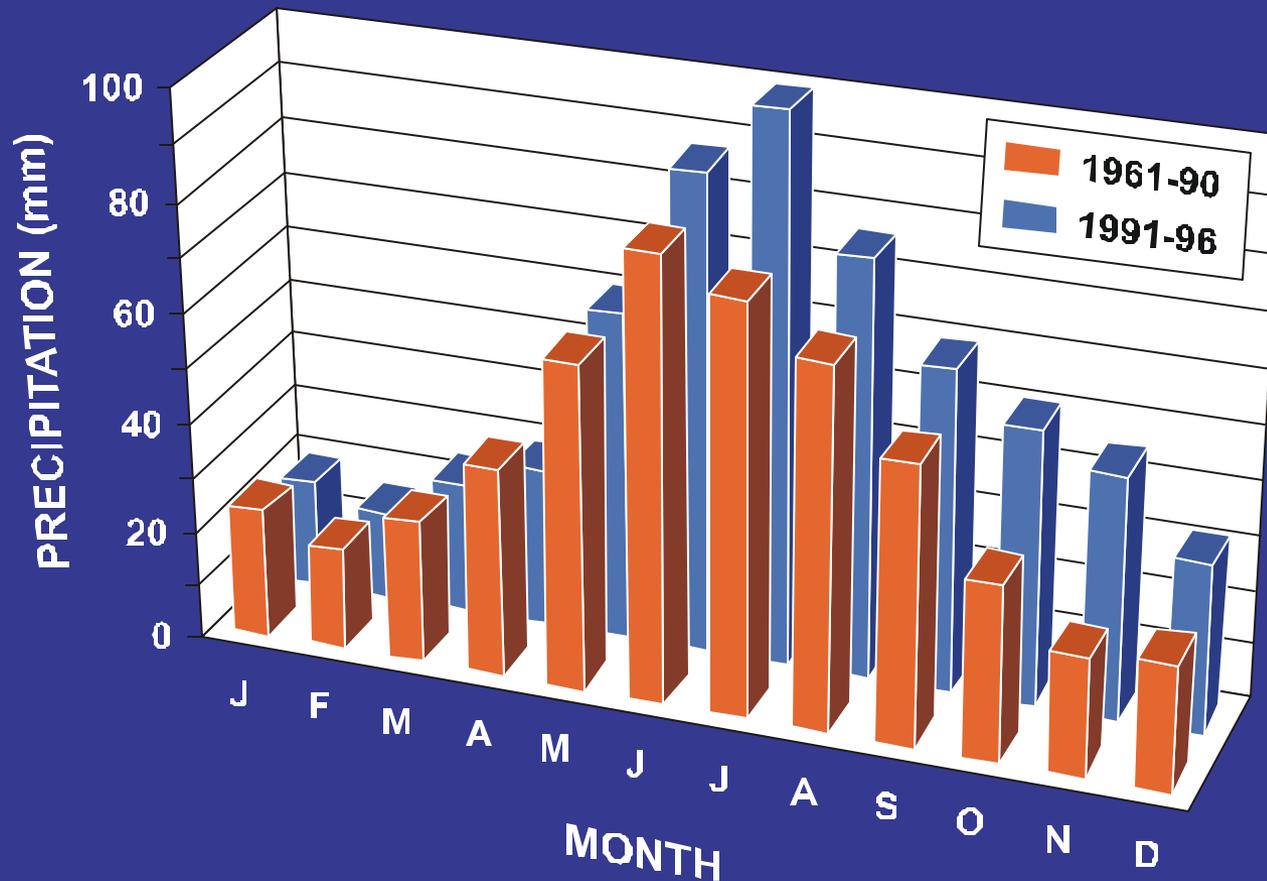


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Precipitation patterns 1991-96 compared to 30-year norms



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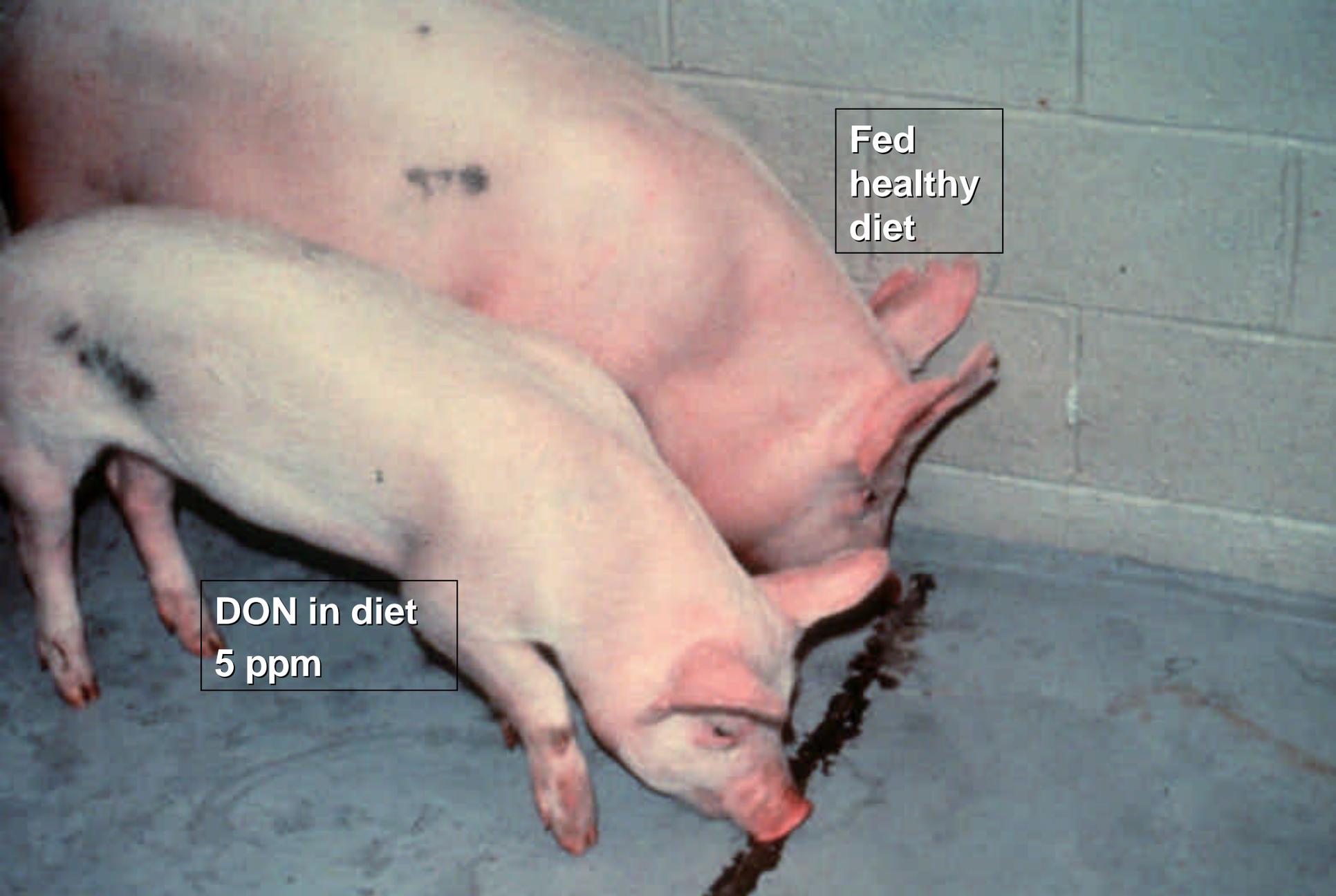
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Mycotoxins

- Wheat: mainly deoxynivalenol (DON) and its 3- and 15-acetyl derivatives.
Causes vomiting and feed refusal in livestock

Next slide shows 3 month old litter mates.
The larger fed healthy diet, the smaller had 5ppm DON in ration





**Fed
healthy
diet**

**DON in diet
5 ppm**



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The Ultimate Solution

- **RESISTANT VARIETIES**



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