

Alfalfa Leafcutting Bee Management / Alfalfa Seed Production
Select Research and Extension Publications
D.W. Goerzen
Research Scientist
(updated May 2026)

1. Publications in Scientific Journals

- Goerzen, D.W. **1991**. Microflora associated with the alfalfa leafcutting bee, *Megachile rotundata* (Fab.) (Hymenoptera: Megachilidae) in Saskatchewan, Canada.
Apidologie 22: 553-561.
- Goerzen, D.W., L. Dumouchel, and J. Bissett. **1992**. Occurrence of chalkbrood disease, *Ascospaera aggregata* Skou, in a native leafcutting bee, *Megachile pugnata* Say (Hymenoptera: Megachilidae).
The Canadian Entomologist 124: 557-558.
- Goerzen, D.W. and M.A. Erlandson. **2018**. Infection of the chalcid parasitoid *Pteromalus venustus* Walker (Hymenoptera: Pteromalidae) with the male-killing symbiont *Arsenophonus nasoniae* (Gamma-Proteobacteria: Enterobacteriaceae).
Journal of Invertebrate Pathology 154: 24-28.
- Goerzen, D.W., M.A. Erlandson, and J. Bissett. **1990**. Occurrence of chalkbrood caused by *Ascospaera aggregata* Skou in a native leafcutting bee, *Megachile relativa* Cresson (Hymenoptera: Megachilidae) in Saskatchewan.
The Canadian Entomologist 122: 1269-1270.
- Goerzen, D.W., M.A. Erlandson, and K.C. Moore. **1990**. Effect of two insect viruses and two entomopathogenic fungi on larval and pupal development in the alfalfa leafcutting bee, *Megachile rotundata* (Fab.) (Hymenoptera: Megachilidae).
The Canadian Entomologist 122: 1039-1040.
- Goerzen, D.W. and D.C. Murrell. **1992**. Effect of fall dichlorvos treatment for control of a chalcid parasitoid on viability of the alfalfa leafcutting bee, *Megachile rotundata* (Fabricius) (Hymenoptera: Megachilidae).
Bee Science 2: 37-42.
- Goerzen, D.W., K.W. Richards, and G.H. Rank. **1995**. Drifting in populations of the alfalfa leafcutting bee, *Megachile rotundata* (Fab.) (Hymenoptera: Megachilidae).
Journal of Applied Entomology (Zeitschrift für Angewandte Entomologie) 119: 575-579.
- Goerzen, D.W. and T.C. Watts. **1991**. Efficacy of the fumigant paraformaldehyde for control of microflora associated with the alfalfa leafcutting bee, *Megachile rotundata* (Fabricius) (Hymenoptera: Megachilidae).
Bee Science 1: 212-218.
- Goettel, M.S., D.W. Goerzen, and G.M. Duke. **1997**. Pathogenicity of *Ascospaera larvis* Bissett to larvae of the alfalfa leafcutting bee, *Megachile rotundata* (Fabricius).
The Canadian Entomologist 129: 1059-1065.
- Goettel, M.S., K.W. Richards, and D.W. Goerzen. **1993**. Decontamination of *Ascospaera aggregata* spores from the alfalfa leafcutting bee (*Megachile rotundata*) nesting material by fumigation with paraformaldehyde.
Bee Science 3: 22-25.

- Lu, R., D.W. Goerzen, and G.H. Rank. **1996.** Use of RAPD analysis to distinguish immigrant bee species within populations of the alfalfa leafcutting bee, *Megachile rotundata* (Fabricius) (Hymenoptera: Megachilidae). **Bee Science 4: 30-37.**
- Lu, R., D.W. Goerzen, and G.H. Rank. **1996.** Use of RAPD analysis as a diagnostic technique for *in situ* identification of *Ascospaera aggregata* and *Ascospaera larvis* in larval cadavers of the alfalfa leafcutting bee, *Megachile rotundata*. **Journal of Invertebrate Pathology 68: 78-83.**
- Malhi, S.S. and D.W. Goerzen. **2010.** Improving yield in alfalfa seed stands with balanced fertilization. **Journal of Plant Nutrition 33: 2157-2166.**
- Mayer, D.F., J.D. Lunden, D.W. Goerzen, and B. Simko. **1991.** Fumigating alfalfa leafcutting bee, *Megachile rotundata* (Fab.), nesting material for control of chalkbrood disease. **Bee Science 1: 143-146.**
- Ong, M., N. Chomistek, H. Dayment, W. Goerzen, and D. Baines. **2020.** Insecticidal activity of plant powders against the parasitoid, *Pteromalus venustus*, and its host, the alfalfa leafcutting bee. **Insects 11 (6): 359 (20 pp. - published online June 09 2020).**
- Rank, G.H. and D.W. Goerzen. **1981.** Native leafcutting bee species and associated parasites in commercial hives in Saskatchewan, Canada. **Apidologie 12: 211-220.**
- Rank, G.H. and D.W. Goerzen. **1982.** Effect of incubation temperatures on emergence of *Megachile rotundata* (Hymenoptera: Megachilidae). **Journal of Economic Entomology 75: 467-471.**
- Rank, G.H., D.W. Goerzen, and J.H. Gerlach. **1989.** Crossed immuno-electrophoresis of major protein antigens during pupation of the leafcutting bee, *Megachile rotundata*. **Apidologie 20: 139-147.**
- Soroka, J.J., D.W. Goerzen, K.C. Falk, and K.E. Bett. **2001.** Alfalfa leafcutting bee (Hymenoptera: Megachilidae) pollination of oilseed rape (*Brassica napus* L.) under isolation tents for hybrid seed production. **Canadian Journal of Plant Science 81: 199-204.**

2. Extension Publications

- Goerzen, D.W. **Leafcutting bee foliar moulds and producer health.** Saskatchewan Agriculture & Food / Alfalfa Seed News Ext. Publ., 1 p. **(August, 1988).**
- Goerzen, D.W. **Foliar moulds in alfalfa leafcutting bees.** Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-534-0), 4 pp. **(December, 1989).**
- Goerzen, D.W. **Paraformaldehyde fumigation of alfalfa leafcutting bee nest material.** Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-556-1), 2 pp. **(February, 1992).**

- Goerzen, D.W. **Alfalfa leafcutting bee moulds and methods for their control.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-586-3), 4 pp.
(March 1992).
- Goerzen, D.W. **Paraformaldehyde fumigation for surface decontamination of alfalfa leafcutting bee cells.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-577-4), 2 pp.
(October 1993).
- Goerzen, D.W. **Alfalfa leafcutting bee mortality associated with use of dichlorvos for chalcid parasite control.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-636-3), 4 pp.
(February 1995).
- Goerzen, D.W. **Microorganisms associated with the alfalfa leafcutting bee and their potential impact on producer health.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-625-8), 4 pp.
(May 1995).
- Goerzen, D.W. **New alfalfa leafcutting bee incubator design for optimizing parasite control.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-730-0), 2 pp.
(February 2001).
- Goerzen, D.W. **Alfalfa leafcutting bee parasite control with pyrethrin aerosols.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-732-7), 2 pp.
(September 2002).
- Goerzen, D.W. editor / **Alfalfa leafcutting bee management and alfalfa seed production manual.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-694-0), 925 pp.
(June 2007).
- Goerzen, D.W. **Chalkbrood disease in alfalfa leafcutting bee populations.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-728-9), 2 pp.
(revised October 2016).
- Goerzen, D.W. **Stored product pests in Saskatchewan alfalfa leafcutting bee populations.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-720-3), 2 pp.
(revised November 2016).
- Goerzen, D.W. **Alfalfa leafcutting bee management and alfalfa seed production manual update.**
Sask Leafcutters Association Ext. Publ., 56 pp. **(February 2017).**
- Goerzen, D.W. **Alfalfa leafcutting bee management and alfalfa seed production manual update.**
Sask Leafcutters Association Ext. Publ., 56 pp. **(January 2024).**
- Goerzen, D.W. **Evaluation of anti-microbial compounds for alfalfa leafcutting bee safety and for efficacy in controlling *Ascospaera* species and related microflora.**
Sask Leafcutters Association Newsletter Vol. 30 (1): 8 - 9. **(February 2017).**
- Goerzen, D.W. **Preliminary evaluation of essential oil compounds and volatile organic compounds to determine safety to alfalfa leafcutting bees / efficacy as chalcid parasite control agents.**
Sask Leafcutters Association Newsletter Vol. 30 (1): 10 - 12. **(February 2017).**
- Goerzen, D.W. **Currently registered herbicides for use in seedling alfalfa and in established alfalfa grown for seed production - 2022.**
Sask Leafcutters Association Ext. Publ., 2 pp. **(November 2022).**

- Goerzen, D.W. **Fall and winter management of alfalfa leafcutting bees - 2025.**
Sask Leafcutters Association Newsletter Vol. 38 (2): 5 - 7. **(November 2025).**
- Goerzen, D.W. **Alfalfa leafcutting bee parasite & disease control (May 2026).**
Saskatchewan Alfalfa Seed Producers Development Commission
Ext. Publ., 6 pp. **(May 2026).**
- Goerzen, D.W. **Alfalfa insect pest management (May 2026).**
Saskatchewan Alfalfa Seed Producers Development Commission
Ext. Publ., 4 pp. **(May 2026).**
- Goerzen, D.W. **Alfalfa disease management (May 2026).**
Saskatchewan Alfalfa Seed Producers Development Commission
Ext. Publ., 4 pp. **(May 2026).**
- Goerzen, D.W. **Alfalfa leafcutting bee incubation calendar - 2026.**
Sask Leafcutters Association Newsletter Vol. 39 (1): 3. **(May 2026).**
- Goerzen, D.W. **Chalcid parasite control in alfalfa leafcutting bee populations - 2026.**
Sask Leafcutters Association Newsletter Vol. 39 (1): 4 - 5. **(May 2026).**
- Goerzen, D.W. and G.M. MacInnis. **Bioactive compounds for parasite control in alfalfa leafcutting bee populations.**
Sask Leafcutters Association Newsletter Vol. 36 (2): 8. **(November 2023).**
- Goerzen, D.W. and S.C. Mueller. **Alfalfa leafcutting bee alternative crop pollination research in central California.** Proc. SASPA 2005 Saskatchewan Alfalfa Seed Conference (Saskatoon, SK), **January 13-14 2005 (pp. 19 - 23).**
- Goerzen, D.W. and J.J. Soroka. **Insect pest management in alfalfa grown for seed production - 2026.**
Sask Leafcutters Association Newsletter Vol. 39 (1): 6 - 10. **(May 2026).**
- MacInnis, G.M. and D.W. Goerzen. **Research update 2025 / bioactive compounds for parasite control in alfalfa leafcutting bee populations.**
Sask Leafcutters Association Newsletter Vol. 38 (2): 8 - 9. **(November 2025).**
- Murrell, D.C. and D.W. Goerzen. **Chalkbrood control in alfalfa leafcutting bees.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-598-7), 4 pp. **(April 1994).**
- Murrell, D.C. and D.W. Goerzen. **Alfalfa seed and leafcutting bee production in Saskatchewan.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 8-88656-669-X), 11 pp. **(revised September 2001).**
- Soroka, J.J. and D.W. Goerzen. **Alfalfa weevil and other legume weevils in Saskatchewan.**
Saskatchewan Alfalfa Seed Producers Association Ext. Publ. (ISBN 0-88656-715-7), 2pp. **(revised December 2016).**