



# INVASIVE ALIEN SPECIES

## Jointed Goatgrass (*Aegilops cylindrica*)

aka Jointgrass

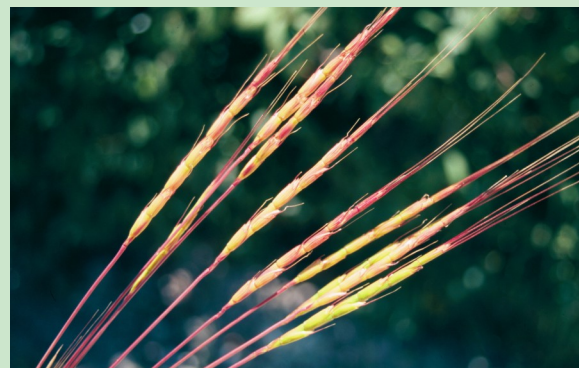
**SK Provincial Designation: Prohibited**

### Overview:

Jointed goatgrass is a winter annual invasive grass that is native to southeast Europe. It was accidentally introduced into Kansas in the late 1800s as a contaminant of wheat.<sup>1</sup> Jointed goatgrass was first reported in the U.S. Pacific Northwest in 1917<sup>2</sup> and became a major weed of winter wheat in the 1970s.<sup>3</sup> It currently infests 2 million ha of cropland, 1 million ha of fallow and is spreading at the alarming rate of 20,000 ha per year.<sup>4</sup> It is now considered one of the ten most common weeds of cereals in the United States.<sup>5</sup> Jointed goatgrass was unknown in Canada until 2006, when a small population was discovered near Port Colborne, Ontario. A second population was detected in southern Ontario the following year.<sup>5</sup>

Winter wheat is particularly vulnerable to jointed goatgrass because they germinate at the same time and develop at about the same rate.<sup>4</sup> The similar seed size and weight makes removal of jointed goatgrass seeds from the crop very difficult.<sup>2</sup> There are reports that the two species can hybridize in the field to produce fertile offspring but fertility rates are usually low.<sup>5</sup>

Jointed goatgrass could become a serious problem for wheat producers in Canada. The common practice of hiring custom combiners who travel north from Texas to the Canadian prairies is a potential means for spread.<sup>5</sup>



### Habitat:

In general jointed goatgrass prefers dry, open habitats.<sup>5</sup> It is most commonly found in winter wheat fields but also infests rangelands adjacent to wheat-growing areas, fence lines, roadsides and waste areas.<sup>4</sup> Jointed goatgrass appears well adapted to both cultivated and less disturbed sites.<sup>7</sup> It thrives in reduced tillage farming systems.<sup>4</sup>

### Identification:

**Stems:** Erect, 35-75 cm tall with one-many tillers (branches).<sup>7</sup> Plants can easily develop up to 50 stalks.<sup>5</sup>

**Leaves:** Alternate with blades 2-5 mm wide and 3-15 cm in length.<sup>5</sup> Usually short, evenly spaced hairs occur along the margin near the collar region (where the blade meets the stem) which helps to distinguish jointed goatgrass from cereals in the vegetative stage.<sup>1</sup> Small, hairy auricles (clasp structures) are also present at the collar.<sup>5</sup> The first leaf to emerge is usually reddish-brown to green in colour.<sup>4</sup>

**Flowers:** Tiny flowers (florets) are located in clusters (spikelets) in narrow, jointed, cylindrical seed heads (spikes) 5-10 cm in length.<sup>5</sup> Each spikelet is 1 cm long and generally contains two flowers, although as many as 5 may be produced.<sup>4</sup> The lower spikelets lack an awn or bristle at the tip but the uppermost spikelets have long, narrow awns.<sup>5</sup>

**Seeds:** Seeds are reddish-brown, 6.5-9 mm long, 2 mm wide and grooved.<sup>5</sup> On average a jointed goatgrass plant growing in a wheat crop will produce 130 viable seeds.<sup>4</sup>

LEFT: Jointed goatgrass seed head (photo by Steve Dewey, Utah State University, Bugwood.org)

TOP: Jointed goatgrass in a wheat field (photo by USDA APHIS PPQ Archive, USDA APHIS PPQ, Bugwood.org)

*continued next page*





# INVASIVE ALIEN SPECIES

## Jointed Goatgrass *(continued)*

### Prevention:

Since jointed goatgrass only reproduces by seed, preventative tactics should be aimed at avoiding the spread of seed. Jointed goatgrass is classed as a prohibited Noxious Weed in the Seeds Act and Regulations and thus using certified seed will prevent planting it along with the crop.<sup>5</sup> Other practices to minimize spread include cleaning combines before entering new fields, covering trucks when transporting contaminated grain and avoiding the movement of contaminated straw to non-infested areas.<sup>4</sup>

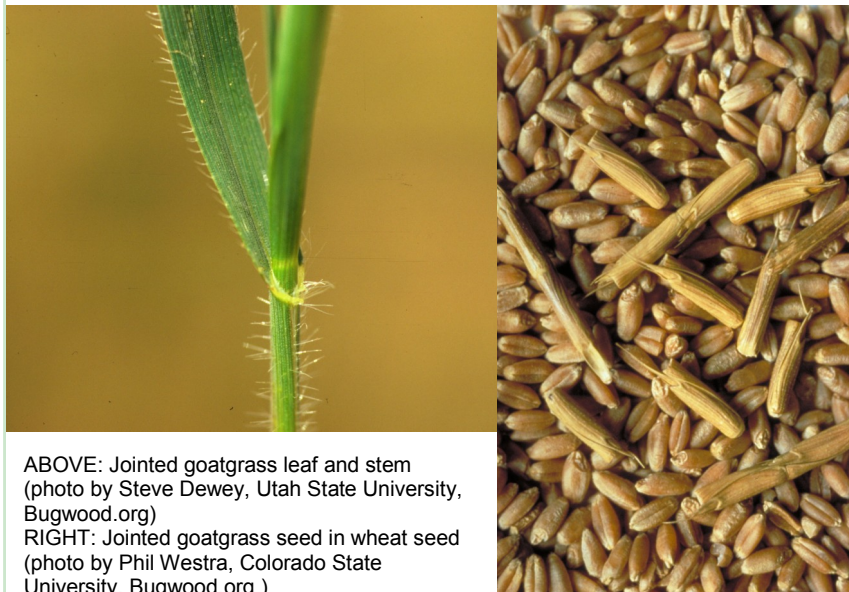
### Control:

**Cultural:** Research indicates that crop rotation is the most effective cultural practice to control jointed goatgrass.<sup>4</sup> It is recommended that the period between winter wheat crops be at least 3 years to help deplete the seedbank since seeds only persist for 3-5 years in soil.<sup>5</sup> Delayed fall seeding may allow opportunities for control of jointed goatgrass before planting.<sup>8</sup> Studies also indicate that planting the crop at higher seeding rates and at narrower row spacings than normal can increase competition with the weed.<sup>1</sup>

**Mechanical:** Mowing jointed goatgrass patches is effective in preventing seed production along roadsides and in non-crop areas.<sup>1</sup> However timing is critical and it is recommended that mowing be done between flowering and the soft dough stage of the seeds. If done too early, new tillers will form and viable seed will still be produced.<sup>8</sup>

**Chemical:**<sup>9</sup> Similarities in physiology and growth habit between jointed goatgrass and winter wheat makes selective in-crop control with herbicides difficult.<sup>6</sup> Therefore non-selective products like glyphosate have been most commonly used to control the weed in herbicide tolerant canola, fallow fields and non-crop areas.<sup>5</sup>

**Biological:** The similarity between jointed goatgrass and wheat makes the likelihood of finding truly selective agents rather low.<sup>8</sup>



ABOVE: Jointed goatgrass leaf and stem (photo by Steve Dewey, Utah State University, Bugwood.org)  
 RIGHT: Jointed goatgrass seed in wheat seed (photo by Phil Westra, Colorado State University, Bugwood.org )



ABOVE: Jointed goatgrass seed heads (left) and wheat seed heads (photo by Washington State University)

### References

- 1 Integrated management of Jointed Goatgrass in the Pacific Northwest. Washington State University Extension EB2042. <http://www.JointedGoatgrass.org>
- 2 [http://www.nwcb.wa.gov/weed\\_info/Aegilops\\_cylindrica%20.html](http://www.nwcb.wa.gov/weed_info/Aegilops_cylindrica%20.html)
- 3 <http://JointedGoatgrass.wsu.edu/JointedGoatgrass/index.htm>
- 4 NAPPO Pest Fact Sheet – *Aegilops cylindrica*. [http://www.napso.org/RASheets/Aegilops\\_cylindrica.pdf](http://www.napso.org/RASheets/Aegilops_cylindrica.pdf)
- 5 CFIA *Aegilops cylindrica* – Jointed Goatgrass. <http://www.inspection.gc.ca/english/plaveg/invENV/pestrava/aegcyle.shtml>
- 6 Kappler, B.F., D.L. Lyon, P.W. Stahlman, S.D. Miller and K.M. Eskridge. 2002. Wheat plant density influences Jointed Goatgrass (*Aegilops cylindrica*) competitiveness. *Weed Tech.* 16:102-108
- 7 A Guide to Weeds in British Columbia Jointed Goatgrass. [http://www.agf.gov.bc.ca/weedsbc/pdf/Jointed\\_Goatgrass.pdf](http://www.agf.gov.bc.ca/weedsbc/pdf/Jointed_Goatgrass.pdf)
- 8 Lyon, D.J. and R.W. Klein. Controlling Jointed Goatgrass. NebGuide G1252 <http://elkhorn.unl.edu/public/pages/publicationD.jsp?publicationID=87>
- 9 Always follow the product labels. Pesticides should only be applied by certified pesticide applicators. The use of pesticides in any manner not published on the label or registered under the *Minor Use of Pesticides* regulation constitutes an offence under both the *Federal Pest Control Products Act* and provincial acts in Saskatchewan. For the latest information on pesticides for agricultural use in Saskatchewan, please consult the provincial *Guide To Crop Protection*, produced annually by the Saskatchewan Ministry of Agriculture.