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Emergence and control of naturalized weeds, *Barbarea vulgaris* R. Br., *Anthemis cotula* L., and *Matricaria inodora* L., in wheat fields in northern Tohoku, Japan

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Summary:
This research was conducted from 1994 through 2002 in the northern Tohoku region of Japan to determine the influence of herbicide application and timing and inter-row cultivation on the control of 3 invasive plant species from Europe, namely, *Barbarea vulgaris* R. Br., *Matricaria inodora* L., and *Anthemis cotula* L. that have invaded the winter wheat fields of Japan. In this region, *A. cotula* emerges most frequently in the fall and spring. The overwintering adult plants arising from the seedlings that emerge in fall cause serious problems in the fields. In the wheat fields, 3 weed species were effectively controlled by the application of linuron (1,000g a.i. ha^{-1}) to the soil immediately after sowing, the application of ioxynil (600g a.i. ha^{-1}) in early November, which is the time period close to the end of the annual emergence period of these plant species, and by employing either inter-row cultivation or application of ioxynil (600g a.i. ha^{-1}) in early May. The emergence and spread of the 3 weed species could be controlled using a combination of any 2 of the 3 above-mentioned methods. The foliar application of thifensulfuron-methyl (75g a.i. ha^{-1}) is highly effective for the control of *A. cotula* and *M. inodora.*

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