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PS 103-166: Evidence for the establishment and persistence of genetically modified canola populations in the U.S

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## Background/Question/Methods

Concerns surrounding the commercial release of genetically modified crops include the risks of escape from cultivation, naturalization, and the transfer of beneficial traits to native and weedy species. Among the crops commonly grown in the U.S., a likely candidate for escape is canola, *Brassica napus* L. (Brassicaceae), an allotetraploid that hybridizes spontaneously with more than 10 native and naturalized species in the U.S. Canola is grown on approx. 2.0 M ha in the U.S., and this distribution is expected to increase as the demand for biofuels increases, and as varieties are developed for winter rotation in the southeastern U.S. We confirmed casual observations of feral genetically modified canola populations in North Dakota, USA, by establishing transects along road sides throughout the state. 1 X 50 m transects were established every 8.05 km of roadway in which all identifiable *B. napus* plants were counted. One plant from each transect was collected, photographed and vouchered. A leaf fragment from the voucher specimen was tested for the presence of CP4 EPSPS protein (confers tolerance to glyphosate herbicide) and PAT protein (confers tolerance to glufosinate herbicide) with TriatChek lateral flow test strips (SDIX, Newark, DE). Each vouchered specimen is archived at the University of Arkansas.

## **Results/Conclusions**

Road surveys conducted in North Dakota, USA, provide incontrovertible evidence that transgenic plants are growing outside of cultivation. We travelled 5400 km of interstate, state and county roads. Of the 406 *B. napus* plants collected, 347 tested positive for CP4 EPSPS or PAT (86%). Densities of feral canola ranged from 0 - 175 plants per m<sup>-2</sup>. Moreover, two instances of "stacked traits" (single individuals with both traits) were found. Canola varieties with multiple transgenic traits have not yet been released commercially. These observations indicate feral populations are reproducing and have become established outside of cultivation making this is the first report in the U.S. of established populations of genetically modified organisms in the "wild". As such, these observations have important implications for the ecology and management of native and weedy species, and as well as for the management of biotech products in the U.S.

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