



7 May 2014

To Whom It May Concern:

This letter is intended to resolve any questions concerning the GM status of hybrid sunflower (*Helianthus annuus* L.), including confectionery, oilseed, and ornamental types, regardless of trait package (high oleic, NuSun[®], ExpressSun[®], Clearfield[®], etc.). All commercial hybrids marketed in the United States are GM free. For the purposes of this statement, GM includes all modifications due to events that do not occur in nature, including "transgenic" and "recombinant DNA" techniques of any kind. Conversely, it does not include methods such as traditional breeding, interspecific hybridization (which occurs both in nature and in laboratories), and the hybrid breeding method itself (merely a specific method of traditional breeding).

Two major constraints have kept sunflower from becoming a GM organism. First, despite several scholarly publications that suggest sunflower transformation is practical (*e.g.* Plant Cell, Tissue, and Organ Culture, 110 (2):275-287; Plant Physiology, 133 (1):170-181), sunflower is recalcitrant to transformation and a truly efficient method of transformation has not yet been discovered. Inefficient transformation methods make it difficult to produce a hybrid seed product that is both GM and commercially viable. This is especially true given the relatively small research and development budgets for sunflower.

The second major constraint to GM sunflower is concerns of transgene escape to weedy or native conspecifics (other *H. annuus* plants) and congeners (other *Helianthus* species). Such escape could result in wild plants that are more invasive in natural and agricultural environments. GM events that could give a wild plant an advantage under stress could result in rapid movement of the transgene through wild populations (Ecology Letters, 10:383-393). Even if the GM event *per se* did not increase invasiveness, the transgene would still be expected to drift into natural populations (Science, 300:1250). The flow of transgenes to wild *Helianthus* would be inevitable if a commercial GM product would ever be released.

Hybrid sunflower is a non-GMO product, and given the limitations outlined here, will continue to be for the foreseeable future.

Sincerely,

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