Corn Lines With Improved Nutritive Content

APPLICATION AREAS
Development of Novel Corn Lines

ABSTRACT
Corn and products derived from it are well recognized for their importance as livestock feed, food products for human consumption, and as raw materials for industrial uses. By introgressing new genes from *Tripsacum dactyloides* L (eastern gamagrass) into corn, ISU investigators and their USDA colleagues have developed corn lines with improved nutritive content for increased processing value. For example, one set of corn lines has both high protein (up to 18.1%) and high oil (5.4%) compositions, while a second set of lines have high oleic acid content (>60%) relative to the total fatty acid content; oleic acid is a monounsaturated fatty acid and is considered a more healthful substitute for animal fat. An additional group of corn lines has altered fatty acid profiles in which the content of the fatty acids palmitic, stearic, linoleic or linolenic acid (or any combination thereof) are either high (about 7%) or low. These sets of lines thus permit the selection of corn lines that are more oriented toward end use, and may provide for enhanced value for processing. For example, livestock fed corn higher in protein and unsaturated fat can produce animal products and eggs with increased amounts of more healthful unsaturated fat while products made from corn with higher oleic acid content will have increased monounsaturated fat, and can help lead to healthier cholesterol profiles. Corn with altered fatty acid profiles may also be useful for the production of margarine, shortening, and stable frying oils that also resist the generation of harmful compounds, such as trans fats, when heated.

BENEFITS
- Provides enhanced value for end users
- Produced through traditional breeding methods
- Offers increased genetic diversity

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