

# Biobased Composite Materials for Structural Applications

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# Motivation for the Study

Biobased composite materials manufactured from agricultural-based products are attractive from an ecological, agricultural, and governmental perspective because of their renewability, biodegradability, and potential economic impact



ND  
Farmers

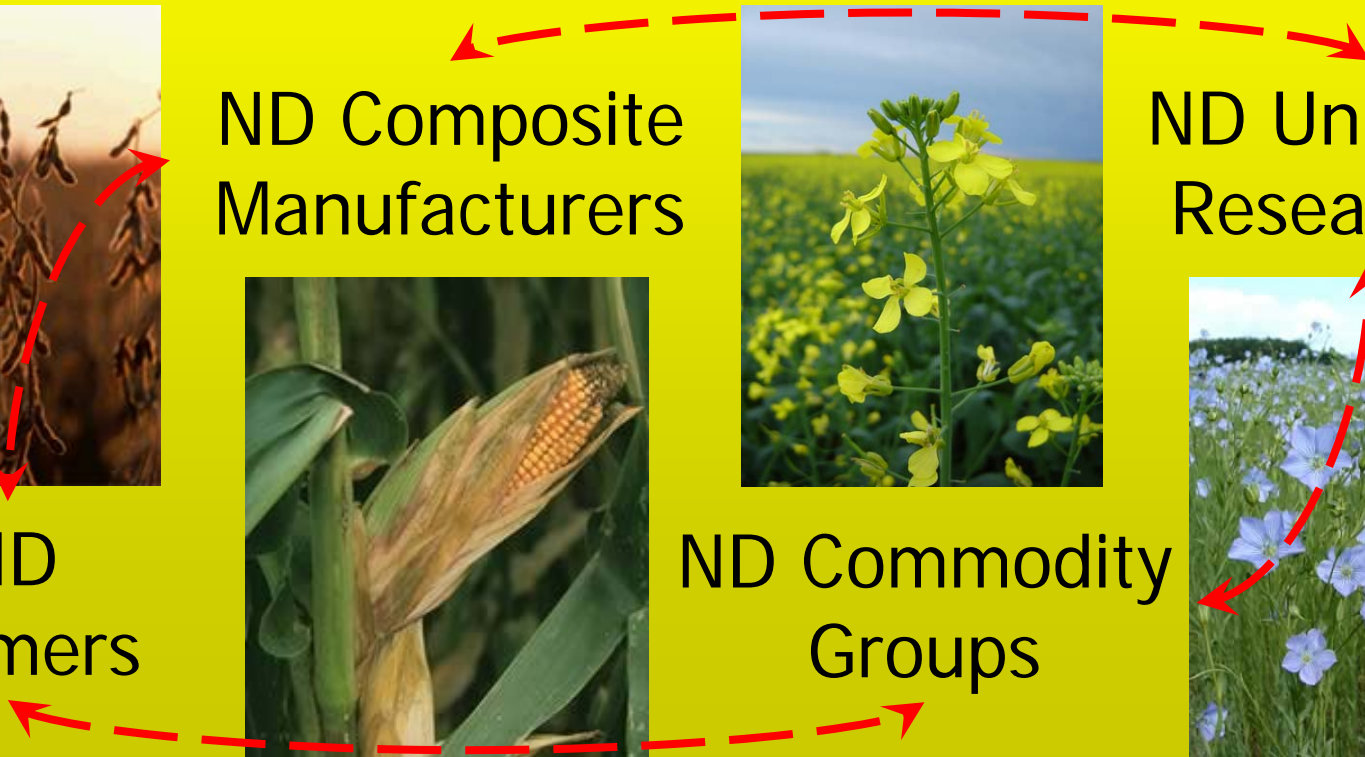
ND Composite  
Manufacturers



ND Commodity  
Groups



ND University  
Researchers



# The Role of Biobased Composites



- ✓ Lighter weight
- ✓ Good specific strength and stiffness properties
- ✓ Better insulation and sound absorption properties
  - ✓ Reduction in VOC & HAP emissions
- ✓ Better degradation when service-life is exhausted
- ✓ Reduction in the dependence on petroleum based products

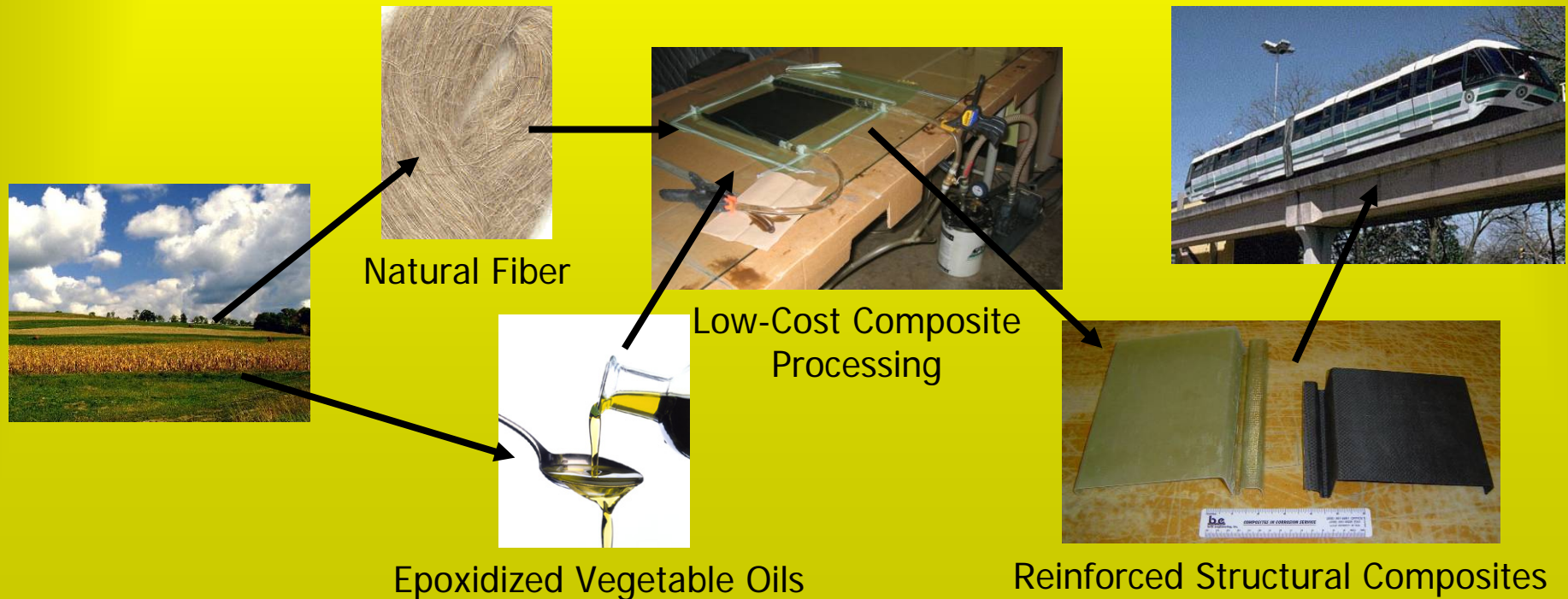
## Candidate Materials in ND

Polymers: Canola, Corn, Soybean, Flaxseed, etc.

Fibers: Flax, Corn, Sunflower, Sugar Beat, Switch Grass, etc.

# NDSU Research Approach

A multidisciplinary team is being assembled at NDSU focused on improving the growth, harvesting, treatments, and development of new agri-based precursors for processing structural biobased composites in local and regional composite manufacturing facilities for use in a wide range of applications



# Past Biobased Composite Application Success



A successful biobased composite application was developed for John Deere farm implements between the University of Delaware (ACRES), Ashland Chemical Co., and John Deere Co.



Mercedes-Benz C and A-Class use flax/PE biobased composite underbody panels, engine and transmission covers