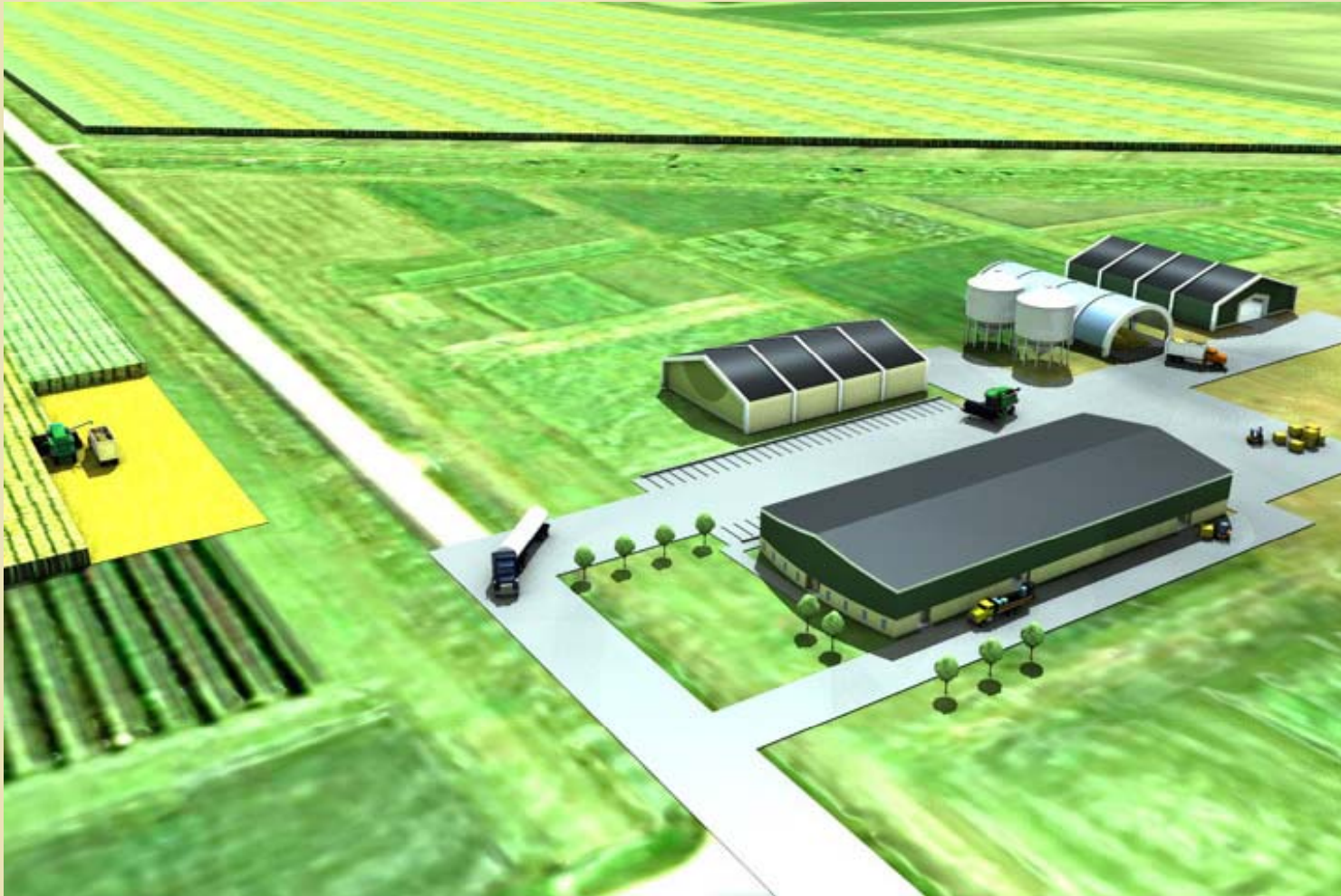


## New Century Farm



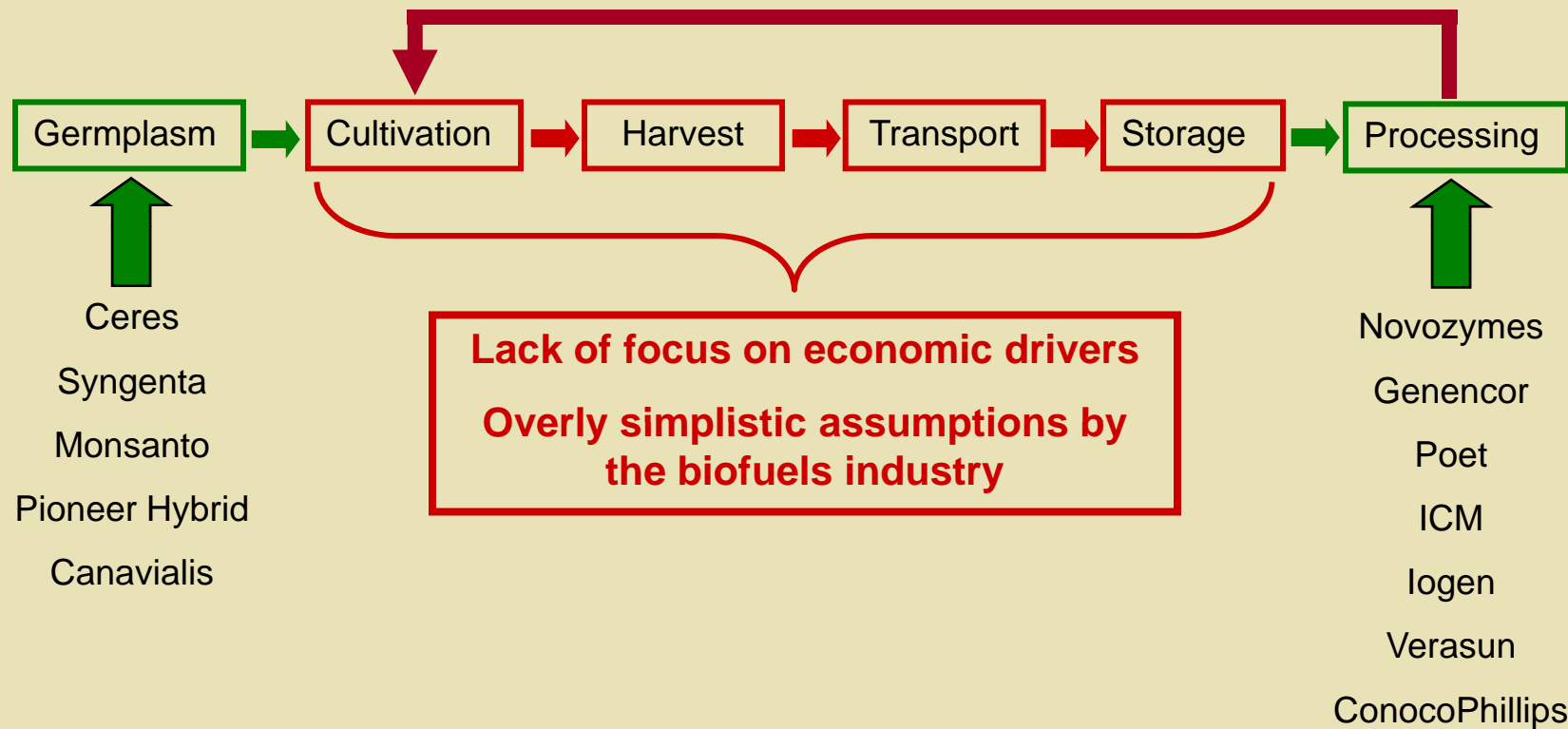
**ICM Visit**  
**April 26, 2007**

## So, what is the New Century Farm?

- An integrated biomass production, processing & utilization facility
- A research, teaching & extension facility to make Iowa, Midwest & nation “feedstock ready!”
- A “place” to research sustainable production, harvesting, transportation and storage of biomass to be used for biofuels & bioproducts



## Agricultural & Bioenergy Value Chain

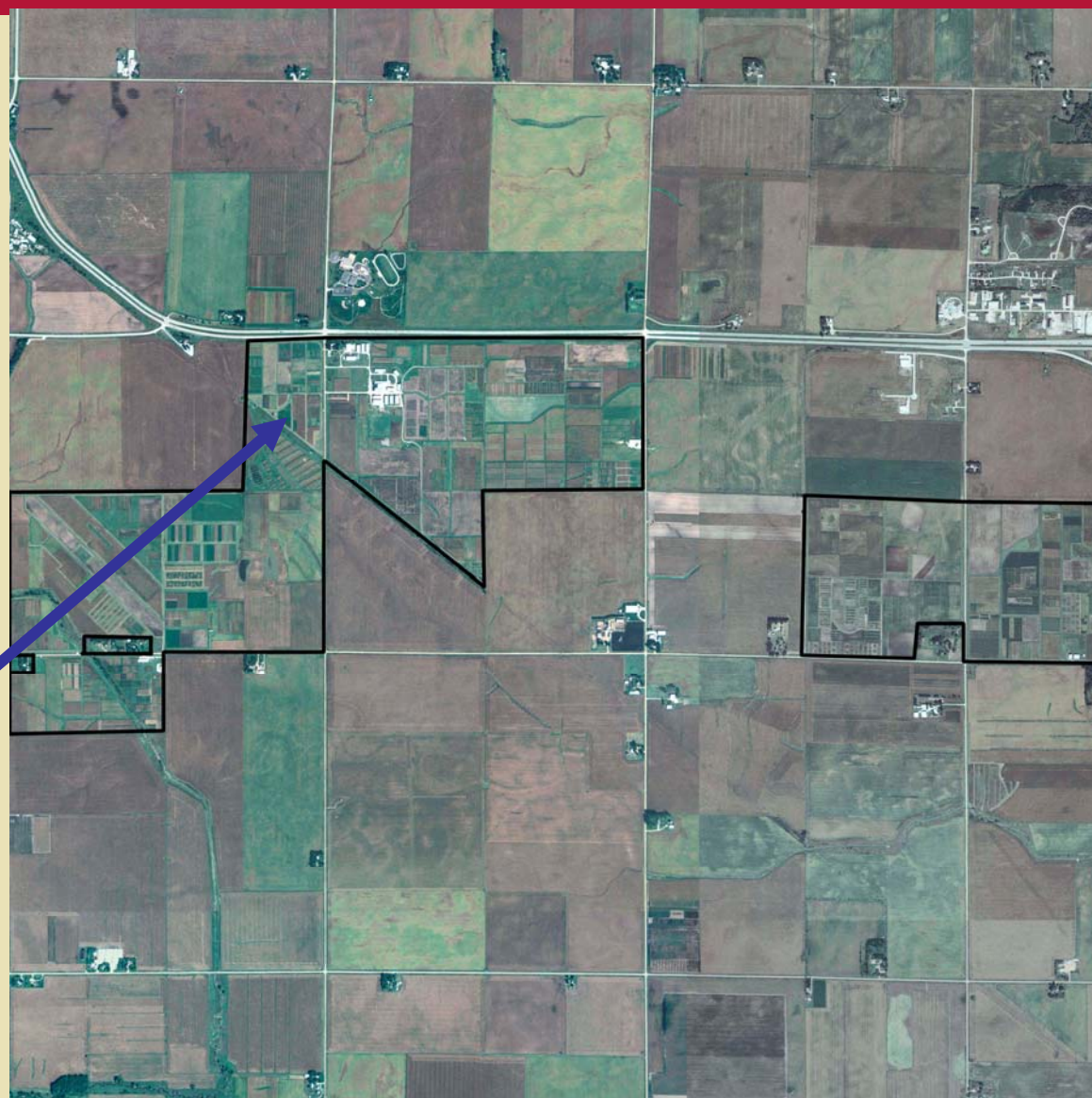


*"If any one step on the value chain does not work, the entire value chain does not work."*

Prepared by Jill Euken, Iowa State University,  
[jeuken@iastate.edu](mailto:jeuken@iastate.edu), based on discussions with BP

**Location: west  
Ames  
Co-located with  
existing  
agronomy & ag  
engineering  
research &  
demonstration  
farm**

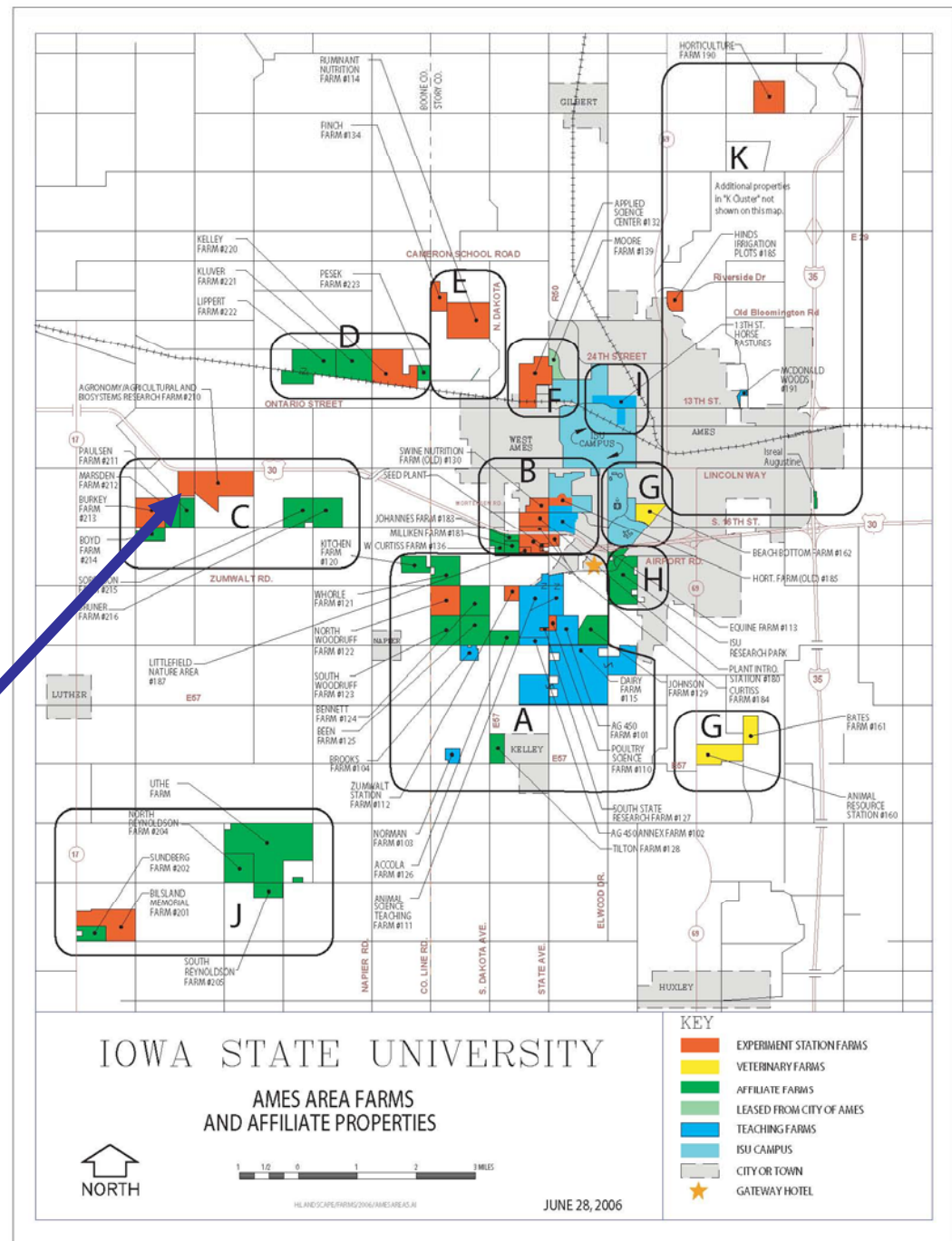
New Century Farm



# IOWA STATE UNIVERSITY Bioeconomy Initiative

Thousands of acres of ISU College of Agriculture research & demonstration farm land within 7 miles

New Century Farm



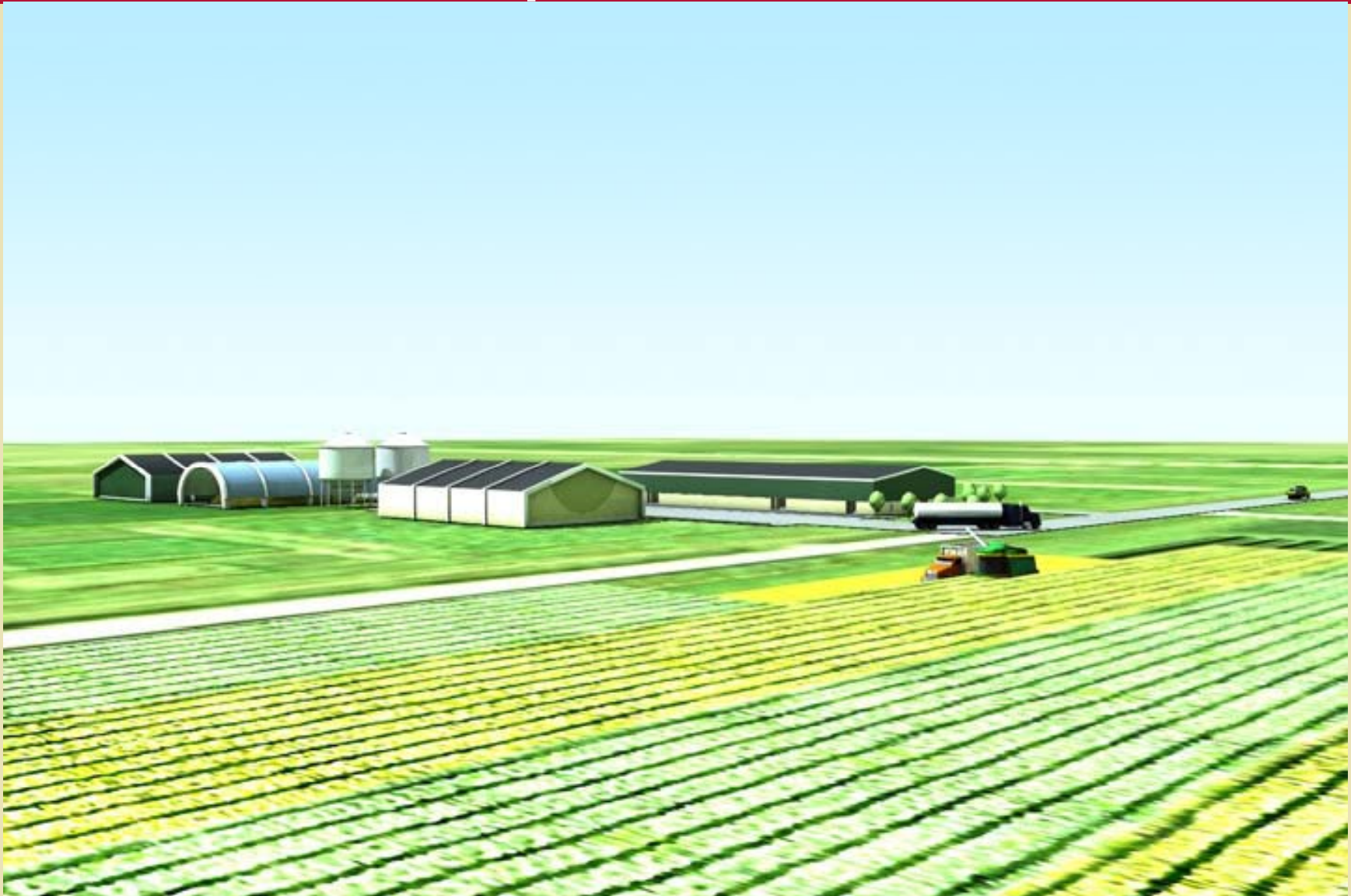
JUNE 28, 2006

**New Century Farm: Integrated biomass production & processing facility**

**Research questions to be answered:**

- **Crop production**
- **Biomass germplasm development**
- **Ecosystem impacts**
- **Harvesting, transporting & storing**
- **Biomass processing**
  - **Biochemical**
  - **Thermochemical**
  - **Bioprocessing**
- **Byproduct utilization**
- **Systems impact (ecosystem, social & economic, nutrient recycling)**

## Biomass production research



## Harvest, transportation, & storage research



**Cost-effective HTS must occur for system to work**



## Harvest research



**Ear snapper head and forage wagon.**

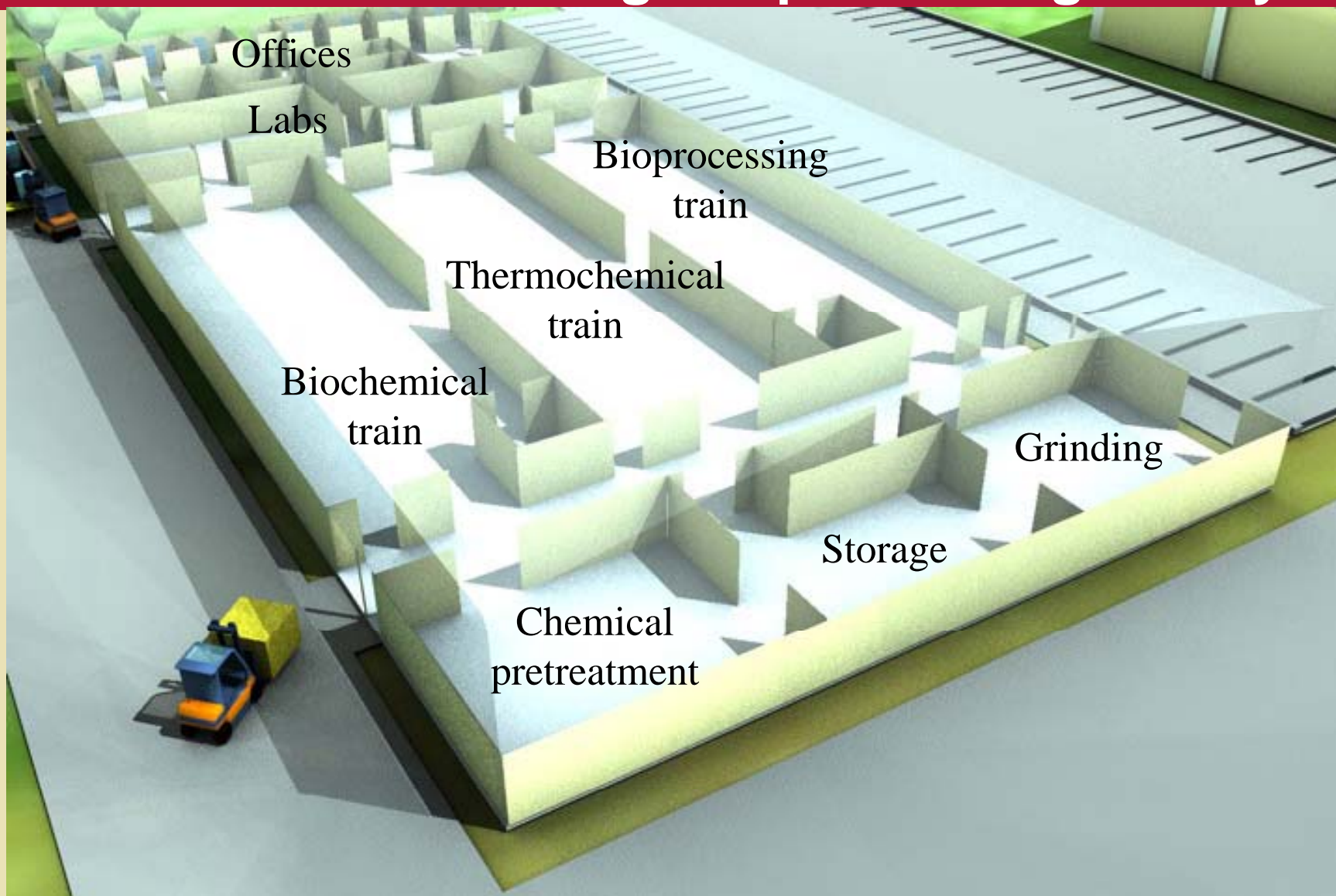


**Whole plant head**



**Ukrainian stalker head**

## Kitchen: Biomass & grain processing facility



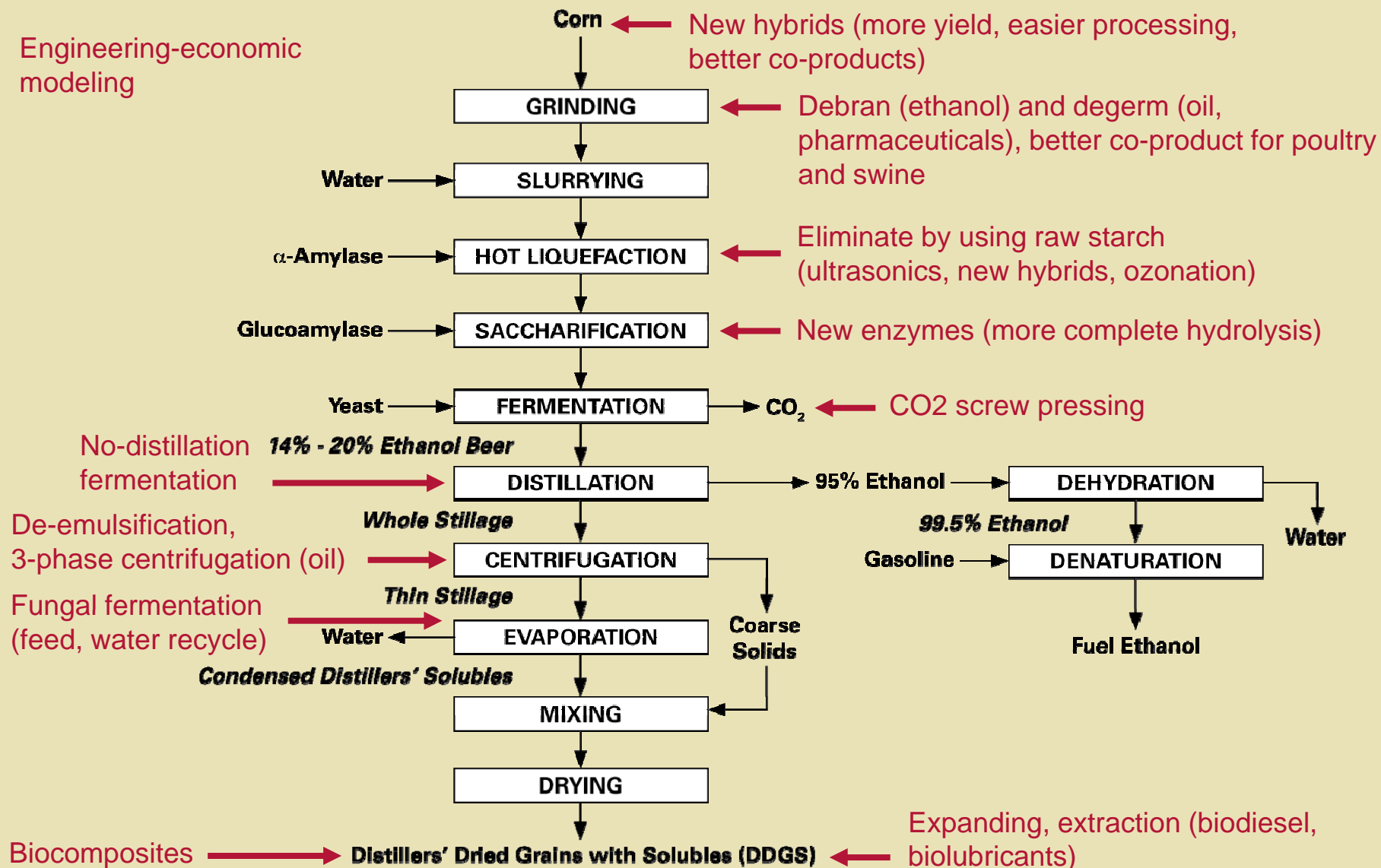
## CCUR wet processing pilot plant



## Types of research in the kitchen

- **Improved feedstocks (low lignin, high lignin, improved amino acid balance, feedstock quality)**
- **Plant fractionation (oil & protein separations)**
- **Improved conversion (enhanced enzymes, new pretreatments)**
- **Integration (bio. & chem. conversion of syngas & pyrolysis syrups)**
- **New fermentation technology and microorganisms for 2<sup>nd</sup> generation fuels and industrial chemicals**
- **Reduced water & waste (water treatment & recycle)**
- **Byproduct utilization (fungal fermentation of stillage, enhanced feedstock composition for feeds, biocomposites, biolubricants, nutrients for recycling to land)**

## Many opportunities to advance grain-based ethanol



# Questions??



## Next - Selected research projects to be discussed

- **Anaerobic digestion (AD)**
- **Fungal treatment applications**
- **Thermochemical**

A photograph of a person wearing a blue button-down shirt, standing in a lush green cornfield. The person's arms are slightly outstretched, and they appear to be looking towards the horizon. The sky is a clear, vibrant blue with a few wispy clouds. The foreground is filled with tall, green corn stalks, some of which are in sharp focus while others are blurred, creating a sense of depth. The overall mood is bright and hopeful, representing agriculture and sustainability.

IOWA STATE UNIVERSITY  
COLLEGE OF AGRICULTURE

**Bioeconomy Initiative , OBP & COA - New Century Farm**

## Current Ethanol Situation



Source: R. Wisner, ISU  
November, 2006