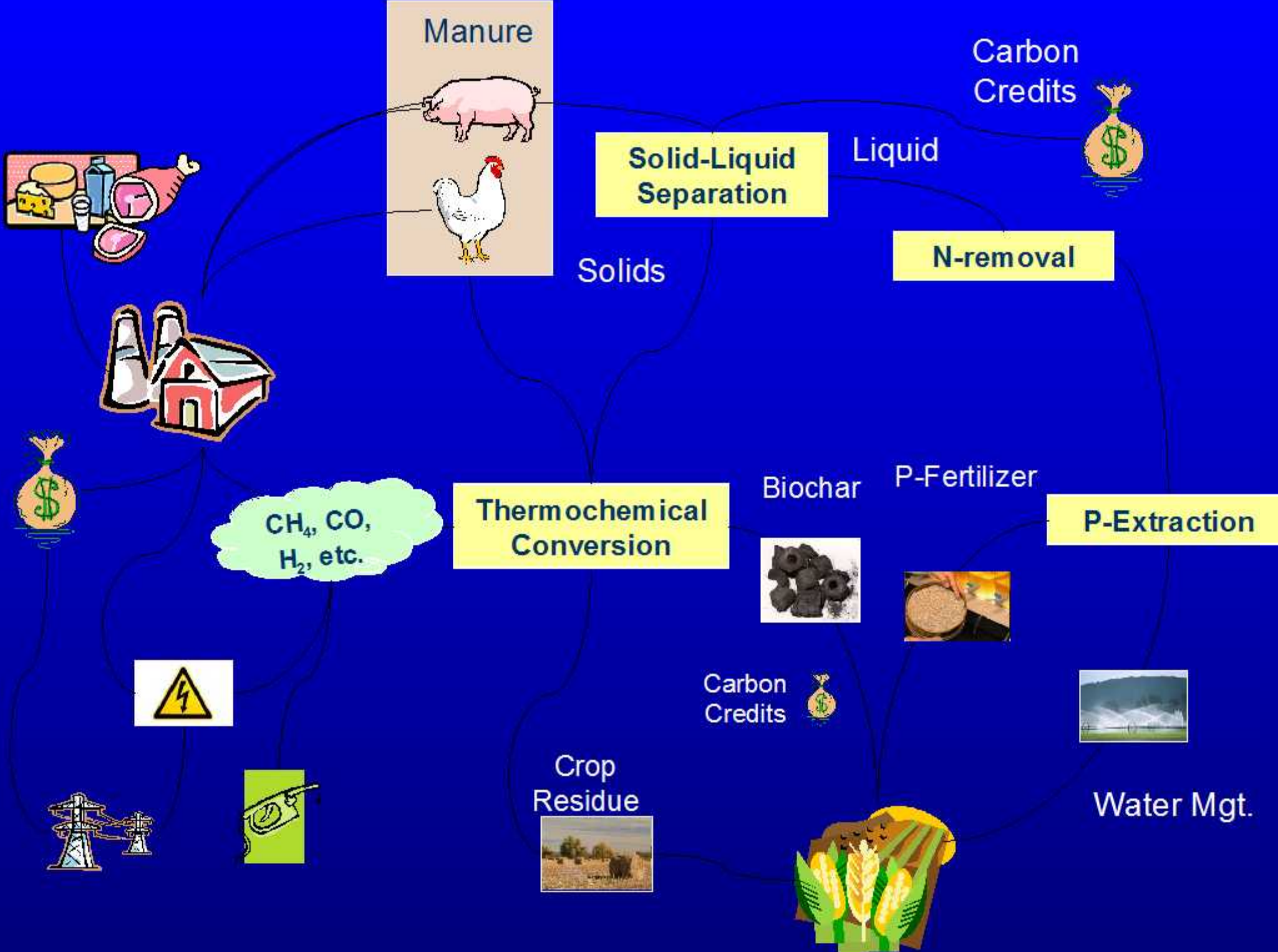
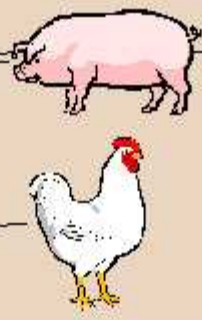


# **Green and Profitable Farming Systems for the Southeastern U.S.A.**



Manure



Solid-Liquid Separation

Liquid

Carbon Credits



N-removal

Solids

Thermochemical Conversion

Biochar

P-Fertilizer

P-Extraction

CH<sub>4</sub>, CO, H<sub>2</sub>, etc.



Carbon Credits



Crop Residue



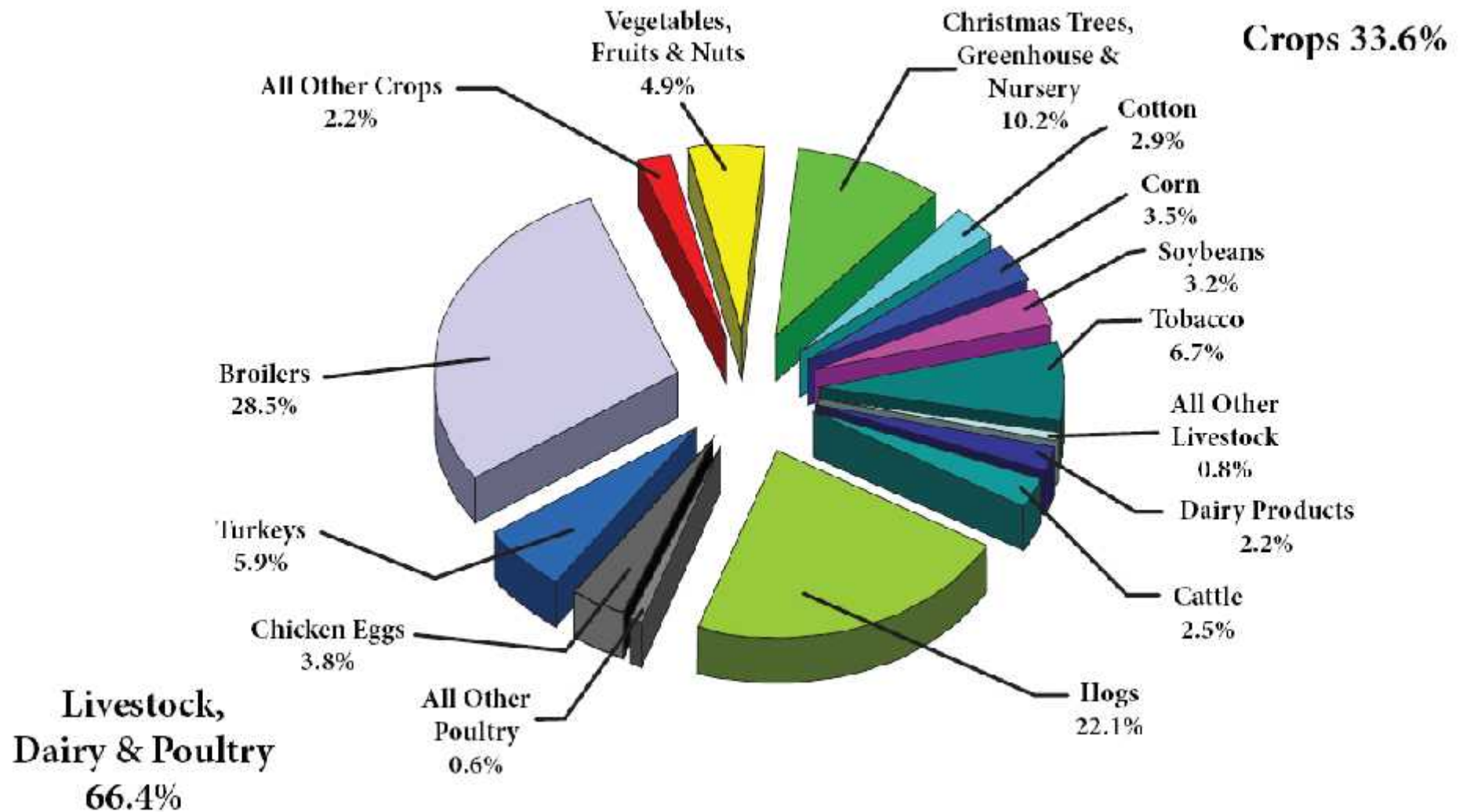
Water Mgt.



Livestock particularly poultry and swine are large contributors to economies of all Southern U.S. states.

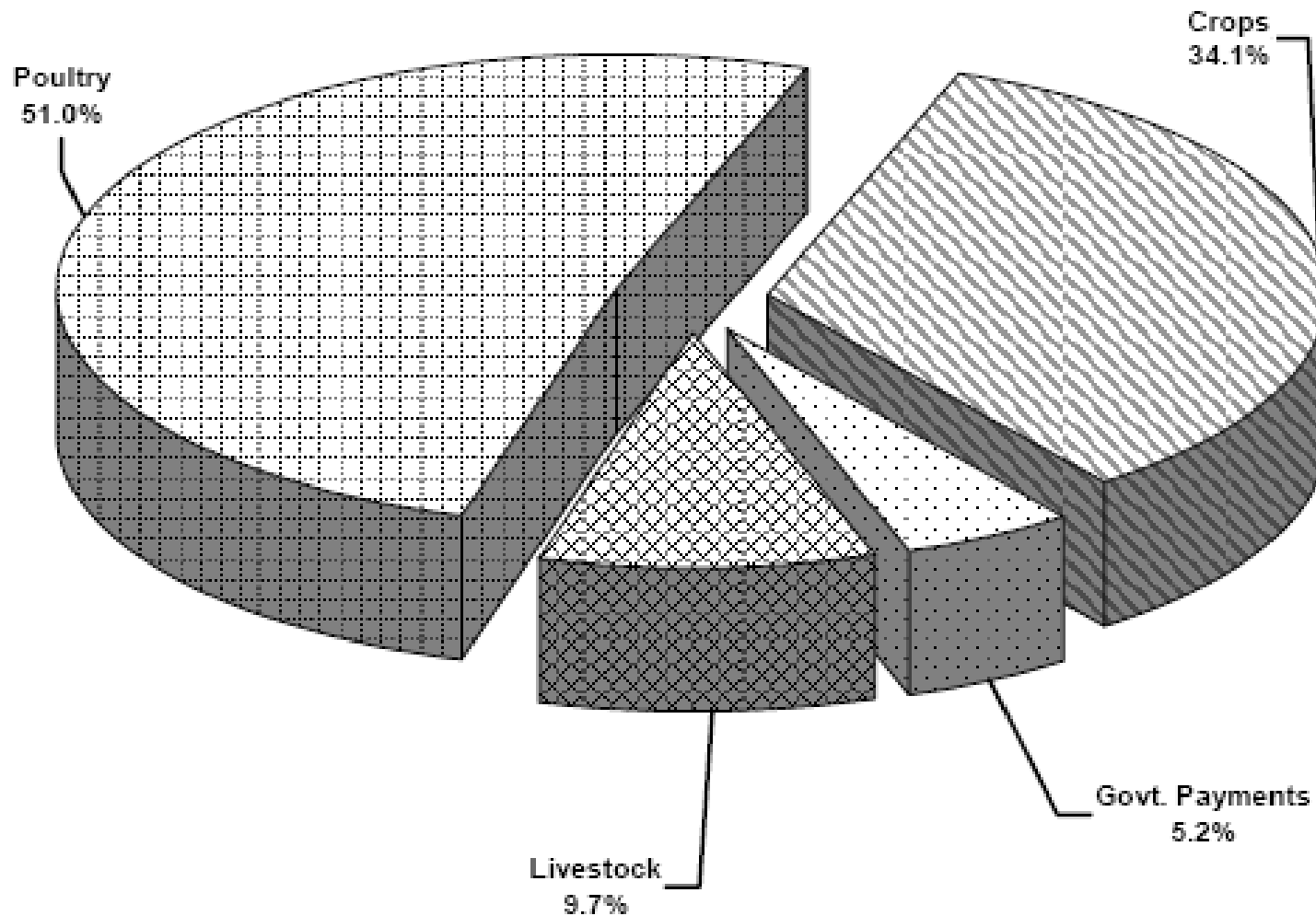


# NC Commodity Cash Receipts



# GA Commodity Cash Receipts

CASH RECEIPTS and GOVERNMENT PAYMENTS  
Georgia, 2007 - \$7.2 Billion



# Livestock Waste Treatment

# Full-scale treatment of 5,600 finishing pigs in North Carolina



**Super Soils Systems USA, Inc**

# Solid-liquid Separation - Flocculation



High-capacity **rotary press**

Drier cake (26% solids)



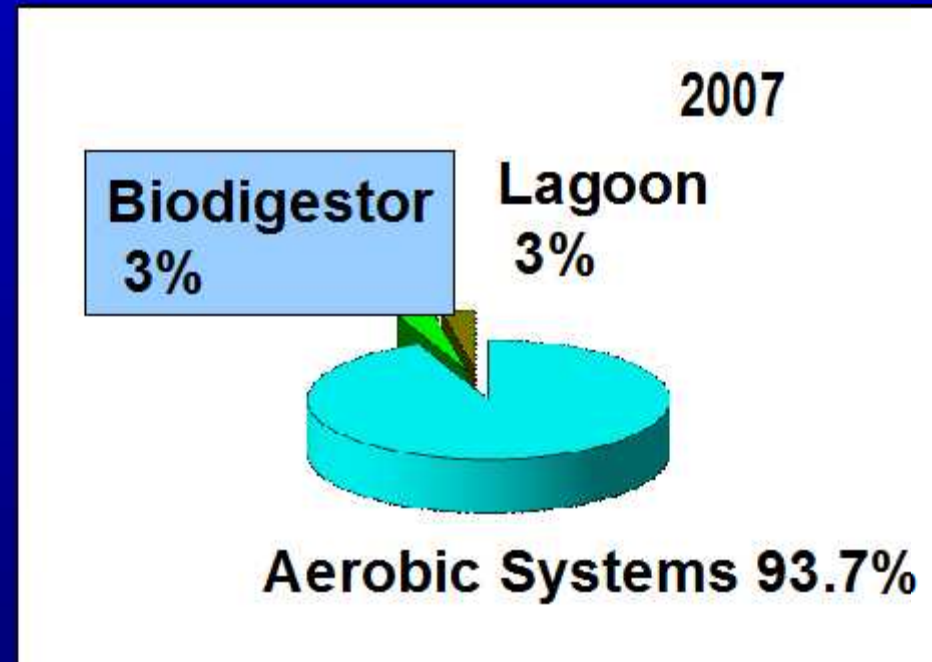
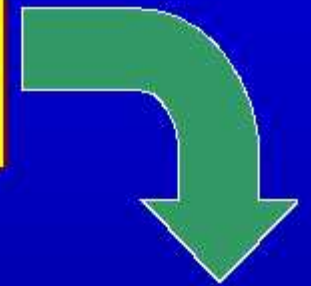
# Granulated Phosphorus Fertilizer

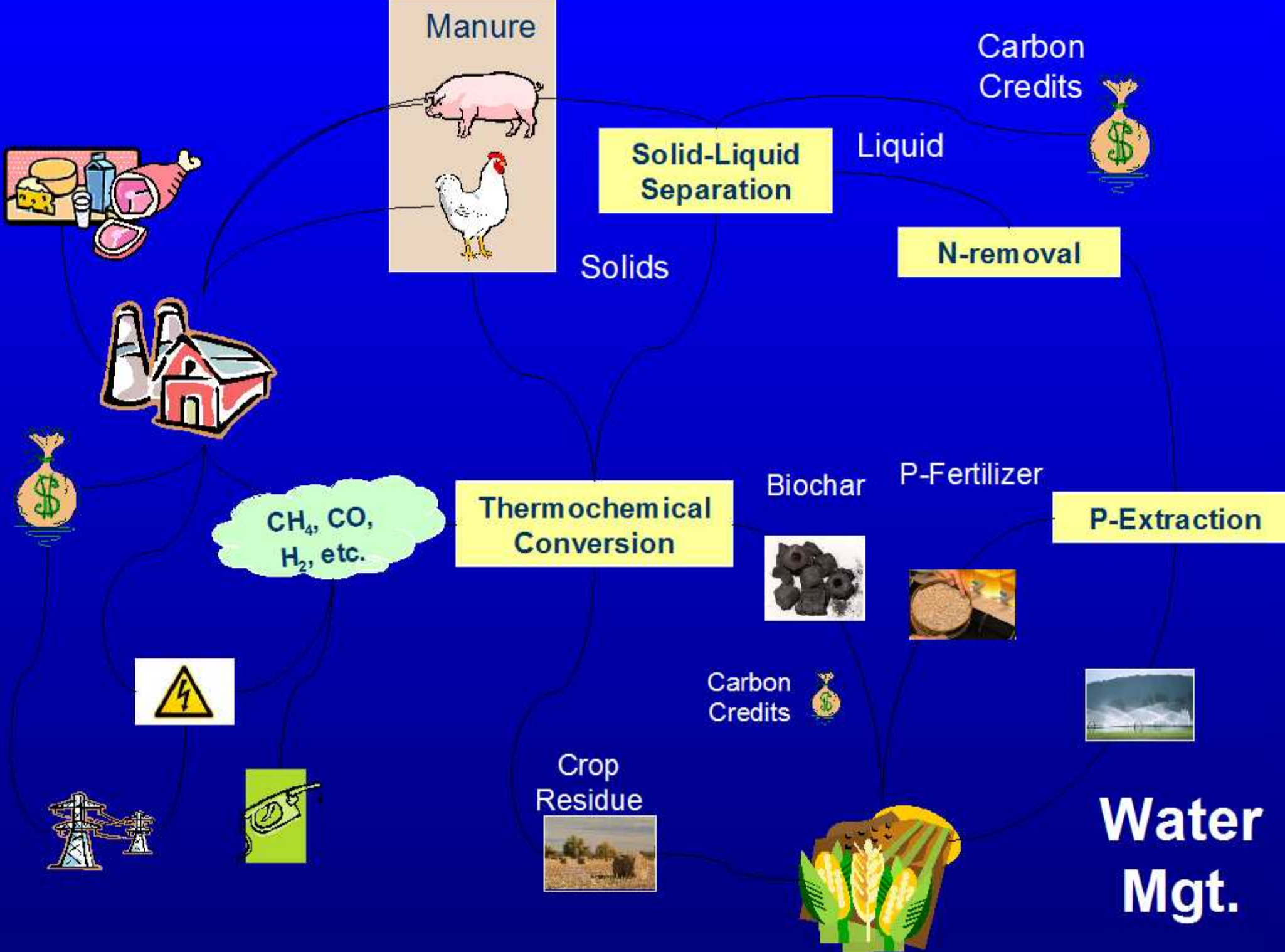


# Conversion of swine lagoons to clean technology in Chile



2001 Kyoto Protocol: Chile's Central Region, 1.3 million pigs



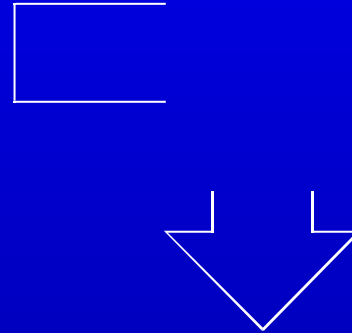


# Transformation

Anaerobic Lagoon → Aerobic Pond



Start: December, 2006



September, 2008

# Blending Feedstocks: Grasses, Stover & Legumes







# Solid-liquid Separation - Flocculation

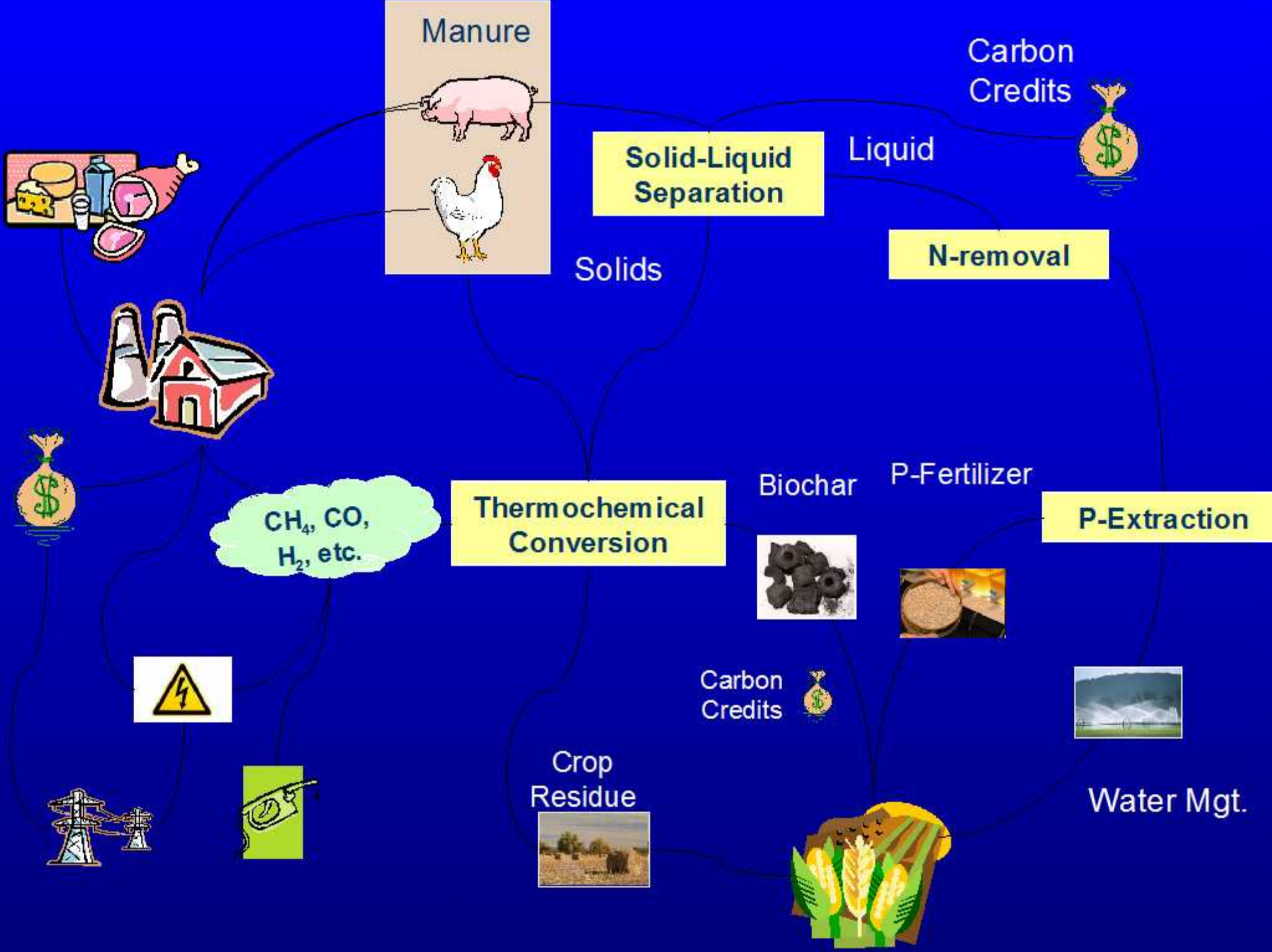


High-capacity **rotary press**

Drier cake (26% solids)



# Energy and Biochar

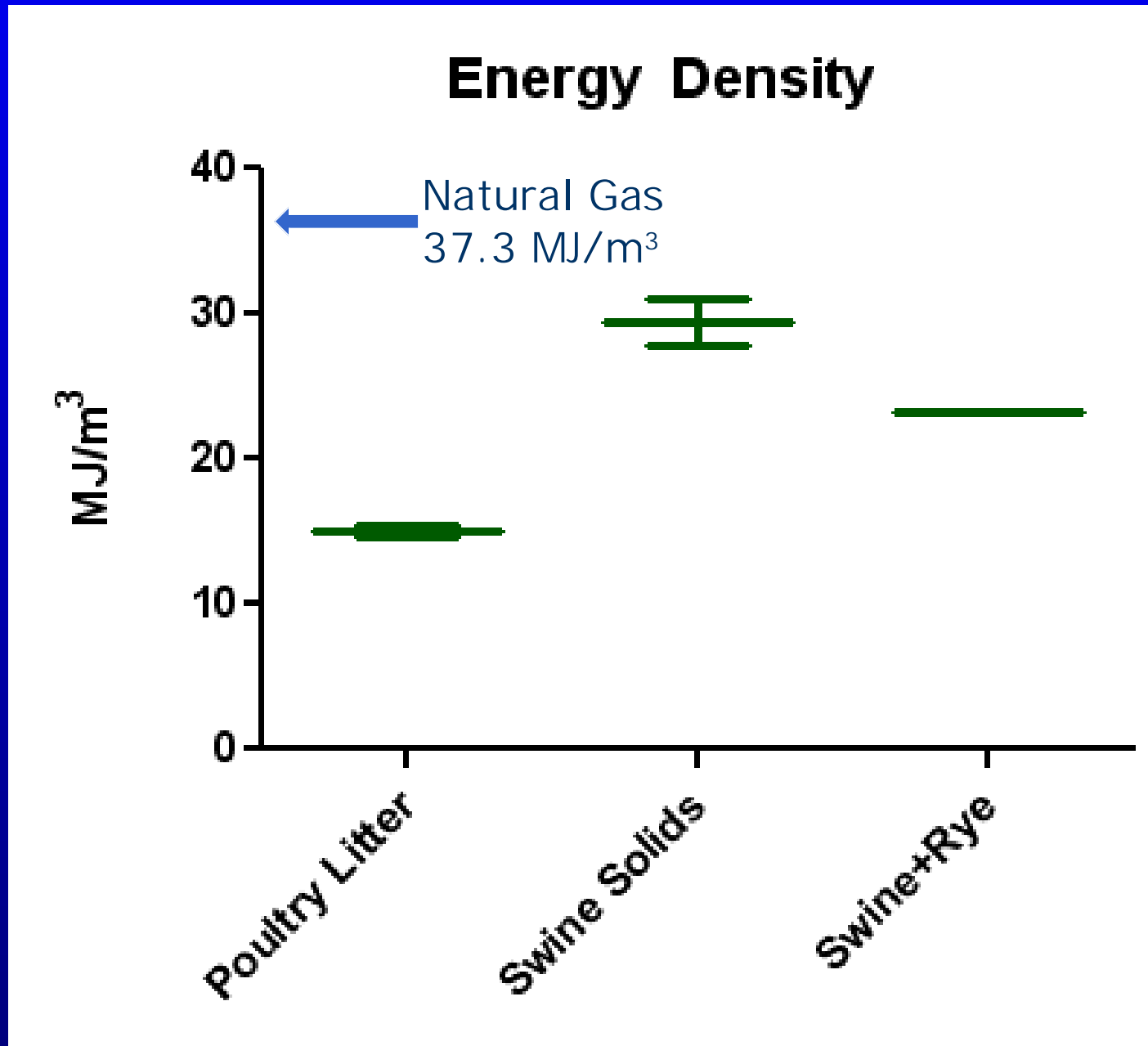


# Pyrolysis



**US Innovation Group, Inc.**

# Heating Value of Produced Gas



# Electrical Generation via Biogas

## I Power ENI Units

ENI 20



ENI 25



ENI 50



ENI 65



ENI 85



ENI 280



ENI 365

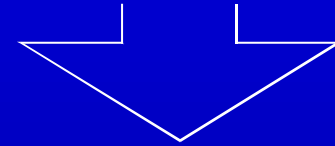


Blue = natural gas  
or propane

Green = biogas

# Green Coal

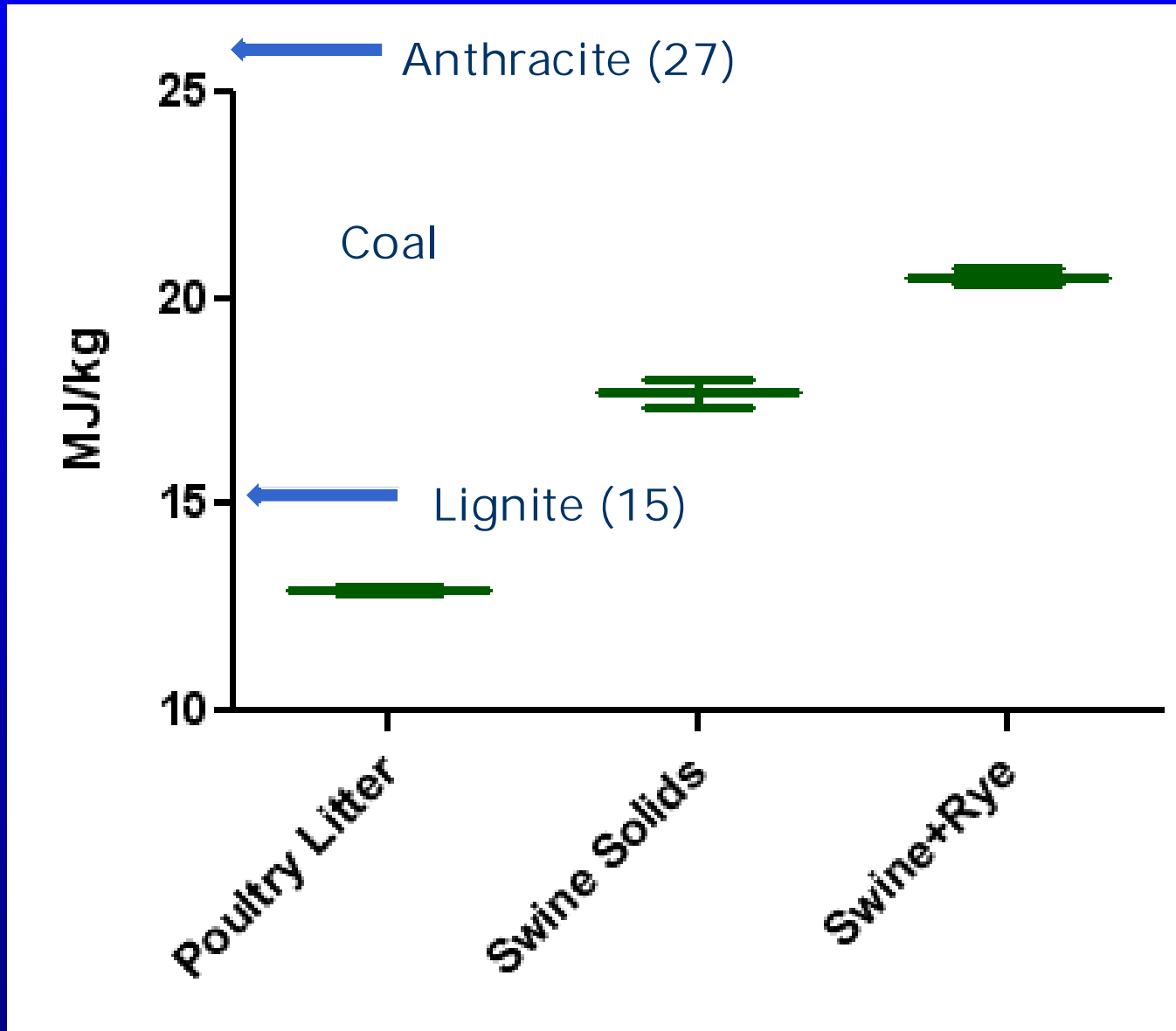
**Raw pecan shells**



**Pecan shell biochar**



# Energy Content of Biochar



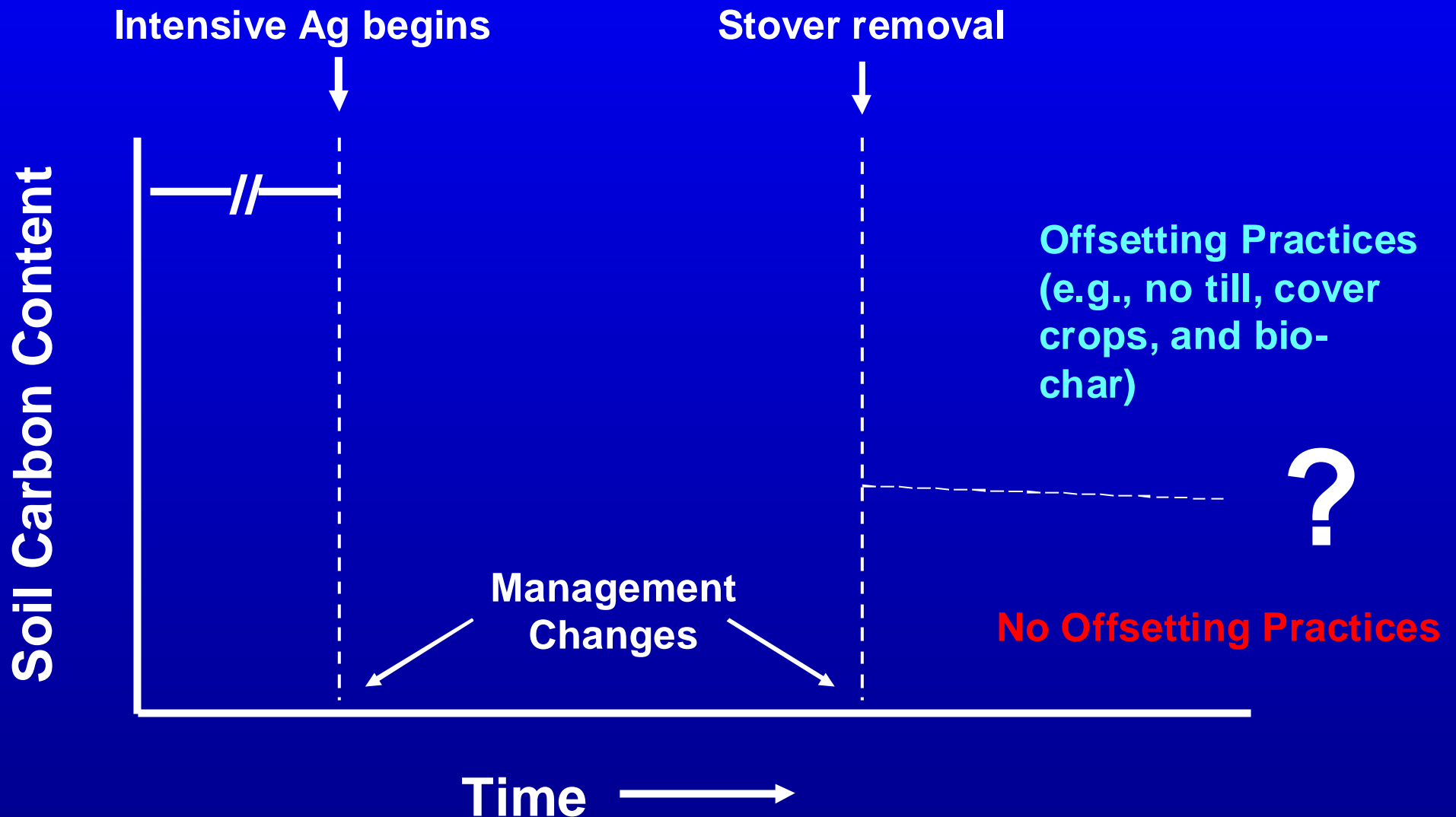
# Green/Black Fertilizers



# Black fertilizer pellets



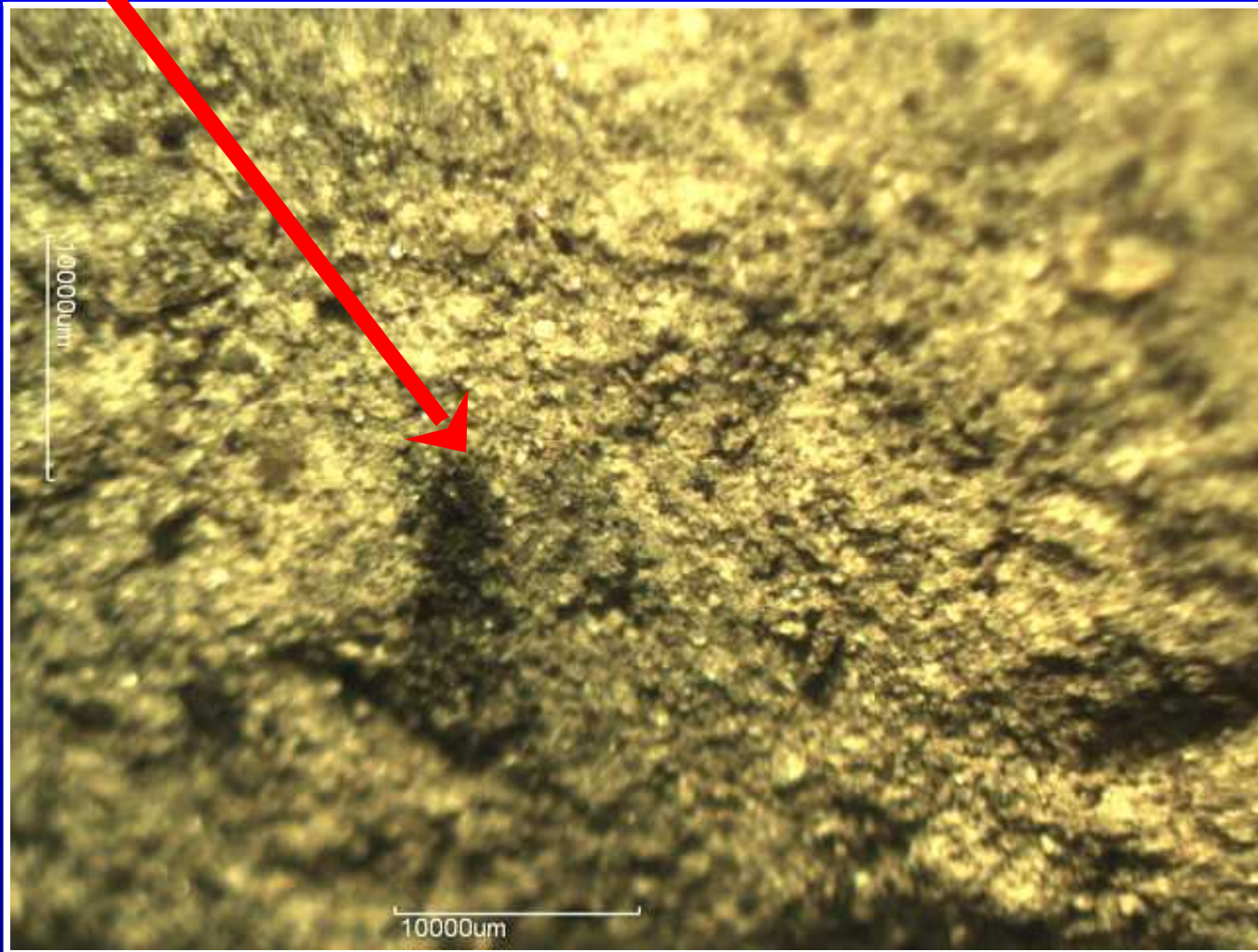
# Soil C Change with Management



# Terra Preta



# A nodule of pecan biochar in the Ap horizon



# Granulated Phosphorus Fertilizer

