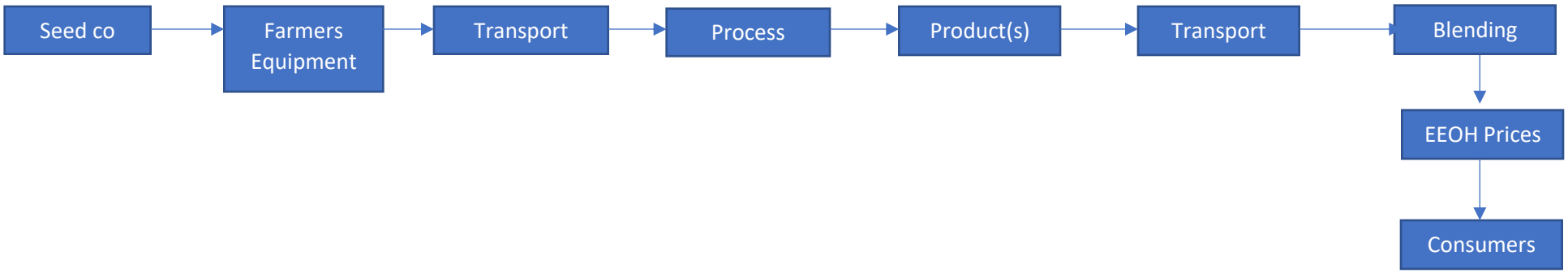
Information share by participants

1. Hans, Business director DSM



- Seed cos – Different types deliver different amount of biomass, current model is to be paid per ton, bales are secondary income stream only and minor to the corn yield, currently recycling.
- Equipment – Bailing itself
- Transport – Bale moving, bale stacking, finding labor, a lot of tonnage
- Process – Ash land apply, permitting Iowa, Planning of amount of bales, Net wrap removal & issues in the process
- Products – Need higher value products
- Blending – required to blend
- EEOH – Need cellulosic premium
- Consumer – need price on carbon emission, non food feedstock

POSITIVE - Benefit to community, job creation, good paying jobs, rotate 3-4 times, tax ; plant will only make money once it makes full scale operation

NEGATIVE – Baler depreciates (2 dollar/Bale), depreciation of equipment ; weather fall time, a lot to be done at the same time ; Netwrap, ash stones, capital required, working capital, planning of how much needed ; RTS policy being challenged, lack of consistent policy.

2. Kris & Kyle

POSITIVES:

- Economic benefit for the community / area
- Job creation – sustainable well-paying positions. Purchase of equipments / financing on those purchases.
- Improvements in manufacturing processing.
- Higher revenue stream for cellulosic ethanol.
- Reduced carbon emissions.
- Reduced residue (corn on corn)

NEGATIVES:

- Operators – Equipment costs/repairs/depreciation.
  - Finding the best process – trial & error
  - Abrasive – Stalks are hard on equipment/bales
  - Labor availability
  - Weather: number of passes needed when taking 1T/acre as opposed to 3T/acre
- Processors
  - Ash/Dirt/Rock – Landfill
  - Maintaining quality of bales in storage and overall
  - Bale wrap
- Producer
  - Lost fertilization
  - Timing efficiencies
- Overall
  - Investment required
- Other
  - Snow drifts in winter
  - Road hazards from parts of bale falling off

NO HEADING WAS PRESENT FOR THE FOLLOWING POINTS –

1. Seed – traits yield first
2. Payment – currently per ton
3. Combine heads
4. Nutrient value left in field for following years
5. Net value – 5 to 17 dollars per bushel
6. Production – “Rake” field 51 bales/acre; currently 1 to 1 and half per acre (one and a half to two bales) rotate once every 5 years?
   Reduction in operating expenses vs quality of stover for production.
7. Problem from production – ash reduce landfill costs
   By product high in potash (how to maximize)
8. Limitation – Labor availability: Stacking / hauling
9. Weather – always the unknown and affects production both positive and negative
10. Bale wrap challenge

3. Angi

NO LABEL

1. Higher corn production – more yield
2. Motivator – Rotate bale on the field and being able to rake before bale to get more bale.
3. By product for DSM – high in ash/dirt, possible to spread on land.
4. Create jobs
5. Time is a issues – find help
6. Set people to bale, stack and haul

Square bale	Round bale
Better stacking	Less time
More labor	Hard to transport
	Storage space
	Net wrap

POSITIVES:

Producers

- Community: Jobs created, economic benefit
- Development of POET – 2 to 3 gallons
- Able to do corn on corn by bailing, much in residue
- Limiting deep tillage
- Silage instead of bale

NEGATIVES:

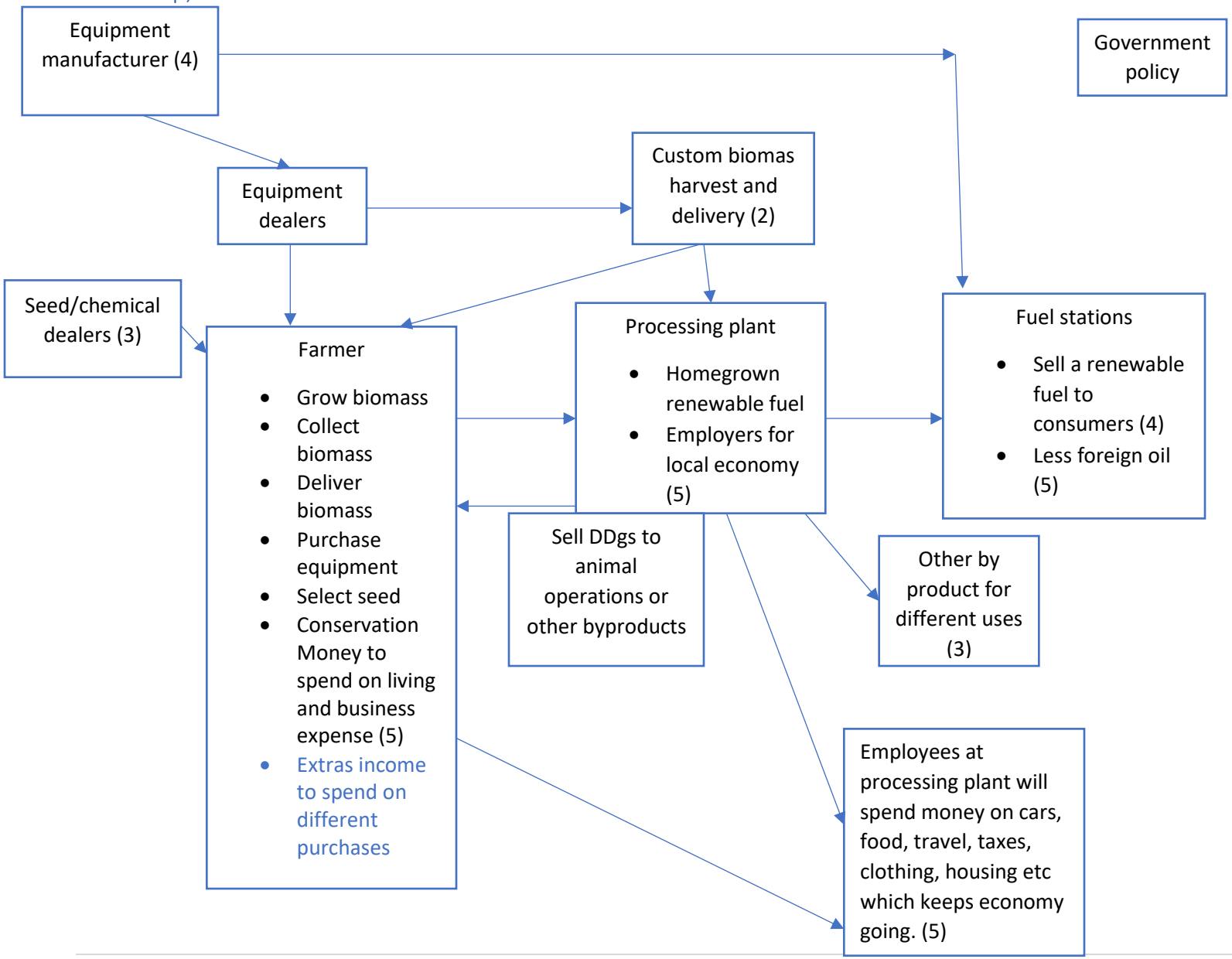
- Carbon footprint – producer fertilizer
- Equipment development
- Labor – weather
- Learning the process
- Process – wrap, quality of bale and storage of bale
- Field – organic matter nutrients
- Investments – working capital
- Number of passes in field – time invested per ton
- Policy government

4. Eric Woodford

Note – Conserve natural resources for generations to come and moderate climate change.

5 – Policy 4 – Economy 3 – Equipment transformation	Biomass harvest equipment (Engineering, manufacturing, service, education) 5 – Conserve natural resources 4 – Economic returns + developments
5 – policy 4 – Weather at harvest	Producers/Custom harvestors (Use machinery, Supply biomas to biorefinery) 4- Agronomic advantages 5- Economic value added
5 – Policy 4 – Feedstock quality	Biorefinery (Acquire biomass, process biomass, suggest better methods) 3- Conserve natural resources 5- Economic returns 4 – synergies with grain ethanol
4 – Elected officials change and so does opinion 5 – long term energy policy	Policy makers (Environmental concerns, change economic drivers) 3 – policy drivers best motivators 5 – climate change stabilization 4 – stability economics
5 - stable policy 4 - stable economy	Lending & Banking (Provide funds) 5 – Economic 3 – Community 4 – Stability
5 – cheaper than petroleum	Consumers (use energy) – at the end of the day 4 – environment 5 – economic

5. Kip, Farmer


Equipment manufacturer (4)
Government policy
Equipment dealers
Custom biomas harvest and delivery (2)
Seed/chemical dealers (3)
Farmer
Grow biomass
Collect biomass
Deliver biomass
Purchase equipment
Select seed
Conservation Money to spend on living and business expense (5)
Extras income to spend on different purchases
Processing plant
Homegrown renewable fuel
Employers for local economy (5)
Fuel stations
Sell a renewable fuel to consumers (4)
Less foreign oil (5)
Sell DDgs to animal operations or other byproducts
Other by product for different uses (3)
Employees at processing plant will spend money on cars, food, travel, taxes, clothing, housing etc which keeps economy going. (5)

NEGATIVES:

Farmers/Landowners

- Removal of organic matter and nutrients
- Extra equipment cost and time to collect biomass.
- Transportation of biomass

Processing

- Trial & error: Learning process of how to best make things work.
- Transportation of biomass to facility
- Changing government regulations.

Consumers

- Confusion from misinformation/education.
- Food vs Fuel debate

Policy

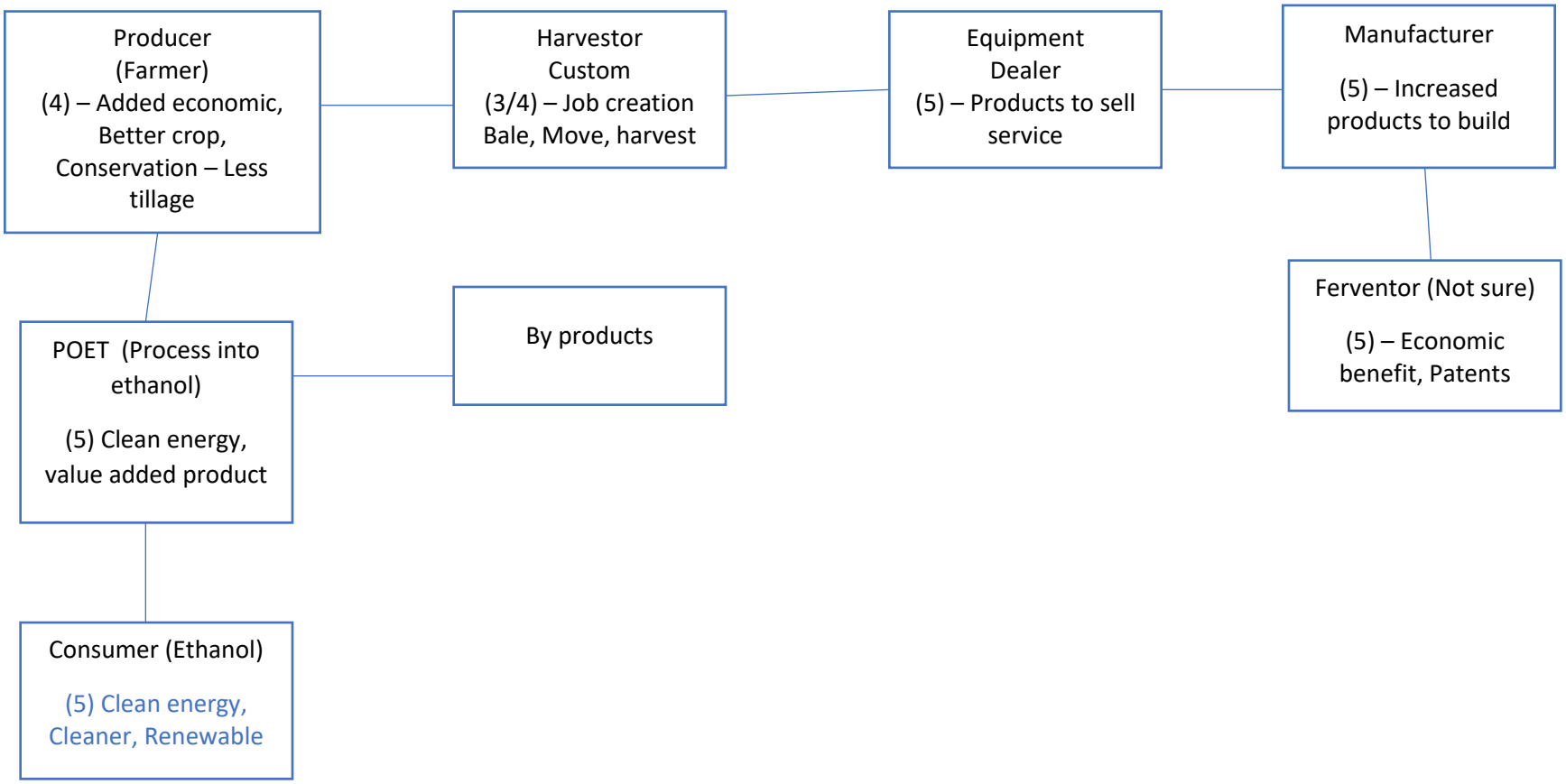
- Mandates
- Waivers of biofuel mandates to oil refineries.

6. Gary Wright, ISU extension

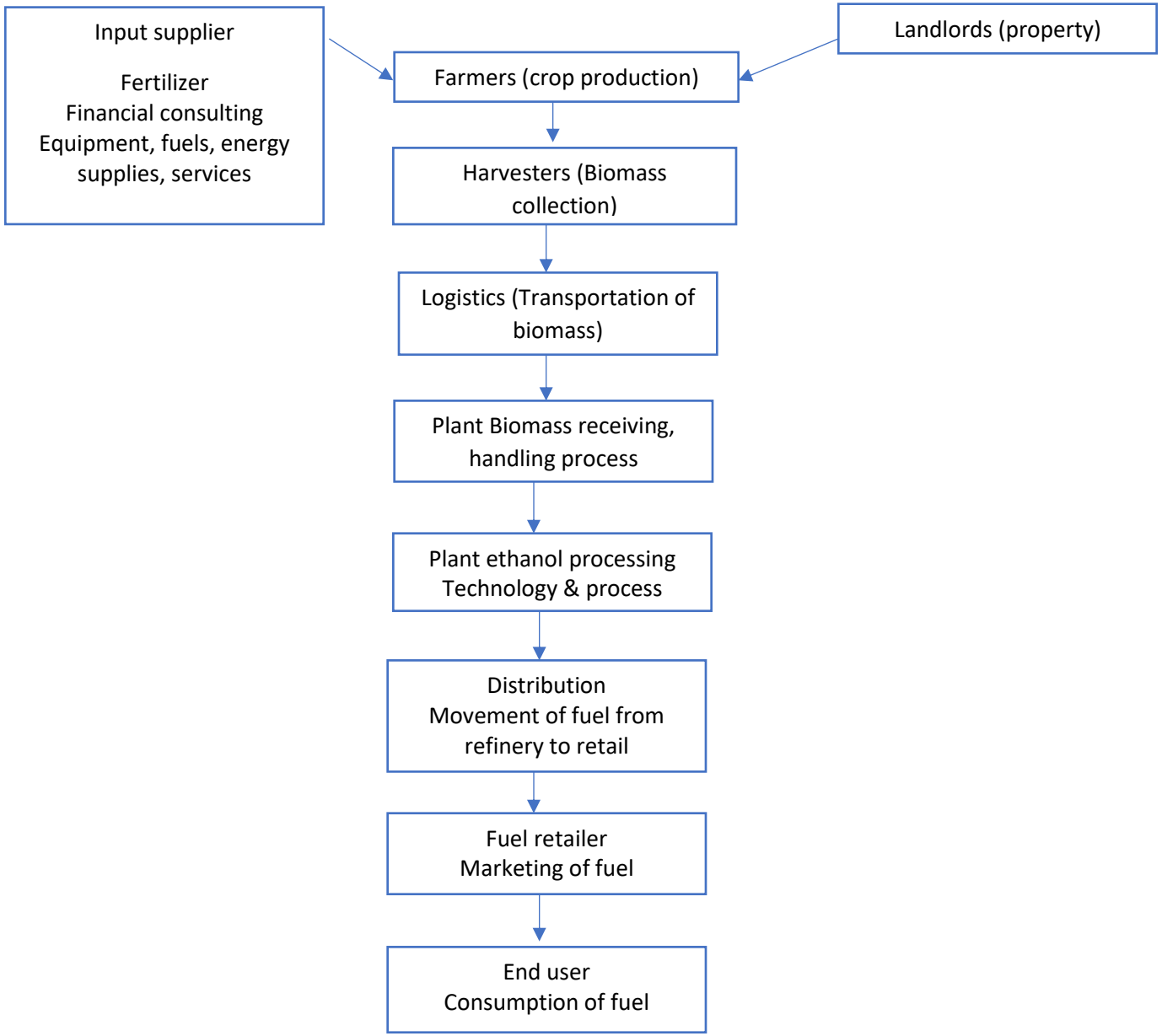
Actor	Activities	Motivation	
Landlord/tenet	Utilization of land	Water quality Cover crops	Land

		Conservation Corn turn vs soya turn decision (NOT SURE)	God's gift, limited land/productivity
Producer of crop (harvester)	Manage, grow Livestock Attentive use	Conservation Long term vs short term decisions	Making living
Process of biomass	Take product, biomass Plant operations	Employees Demand of product Community	
Logistic/value added intermediary (xyz upon product)	Logistics Plant Grinding, filtering Adding value	Technology Δ's to meet end user Δ? Perfect product to end user What will sell What can be done economically ($)	
Selling agent/Liaison	Steps to adjoining parties	Above	
Purchaser/user of product Value added steps	Product to market next demand	$, Right type, right time, right place	
Final end user	Use for energy, food (hungry livestock)	Meeting need Energy vs food	(Purpose) Was need met e.g. energy, food value

7. Bruce Nelson



8. Alan Keller



	Motivation	Positive	Negative
Input supplier	Profit Knowledge sharing Conservation Education	Market opportunities	
Landlord	Income Conservation/soil health Family heritage	$	
Farmer	Profit 5 Yield 3 Less tillage 3 Near technology 2 First of its kind 2	Income 5 Sustainable 3	Nutrient removal 3 Landlord relationships 4 Small harvest window 4 Busy time of year 5
Harvestors	Profit 5 Capacity 4 Cost 4 Efficiency 3 Ease of operation 2	Income 5 Equity 3	Financial risk 5 Consistency 4 Small window for harvest 4
Logistics	Profit 5 Capacity 4 Safety 3 Efficiency 3	Income 5 Equity 3	Financial risk 4 Consistency 3
Plant biomass receiving	Cost 4 Quality 5 Efficiency 4 Volume 3 Netwrap/ twine removal 5	Production 5 Down time 4 Reduce cost 4	Down time 4 Manpower requirement 4
Plant ethanol processing (The most risk with the most reward potential)	Cost 3 Quality 4 Consistency 5	Production 5 Downtime 4 Reduce cost 4	5 Large investment 4 Govt policy 5 Feedstock supply risk 5 Difficult technology

Distribution	Profit 4 Efficiency 3 Government regulations 5	Policy satisfaction 4	4 Gallon replacement not an increase
Fuel retailer	Profit 5 Streamline – no hassle 4	Income 3	4 replacement gallons
End user	Cost 5 Environmentally friendly 4 Mechanically safe 3	Income 3 Green friendly 3	4 confusion of quality/performance

Note: My opinion is that most value of supply chain will change. Original with farmer will transition to refinery as technology is perfected.