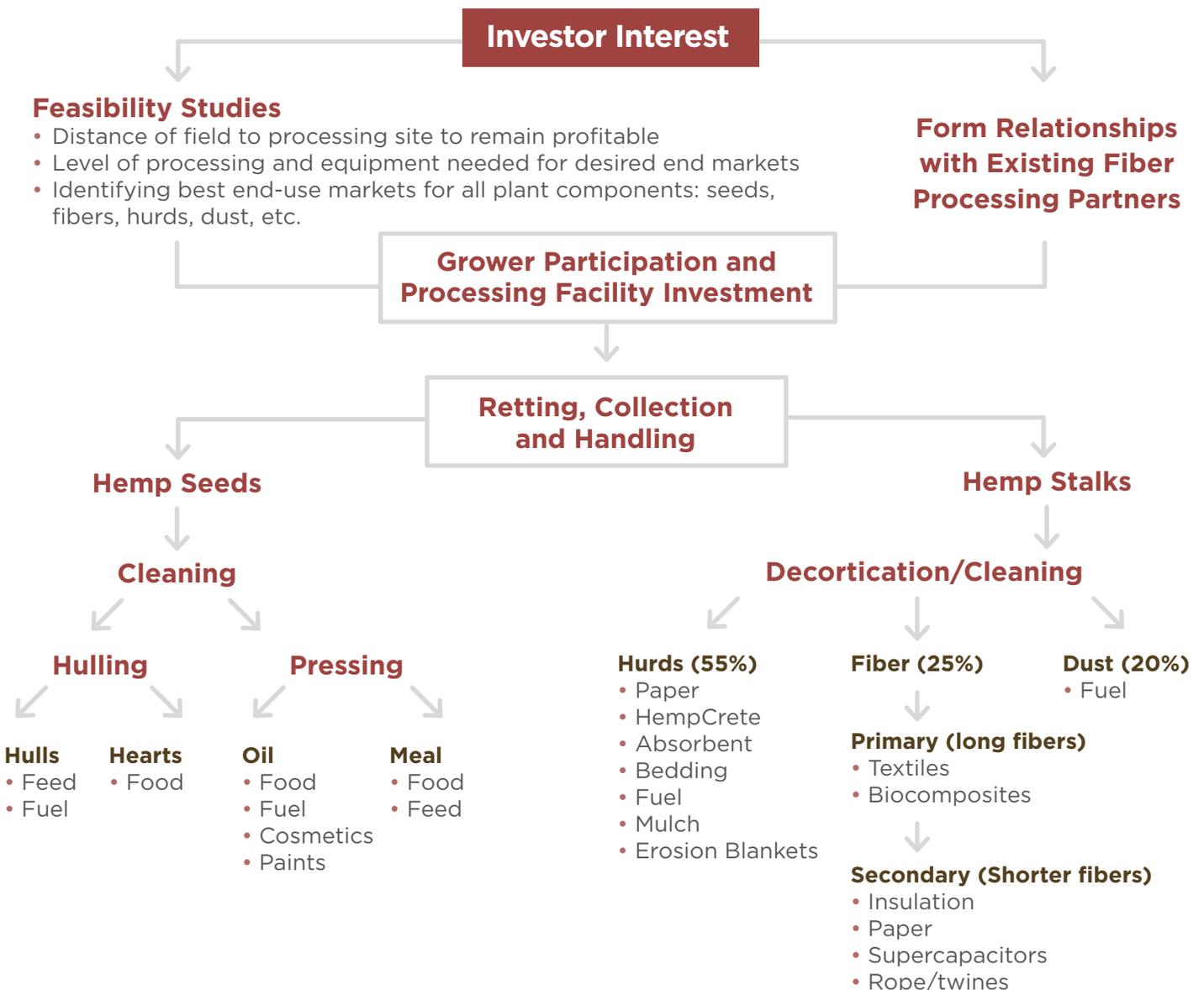
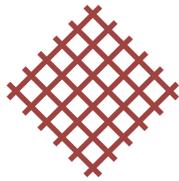


OPPORTUNITY FOR HEMP FIBER

One of AURI's core objectives is to find new, reliable, biobased products. Hemp fiber's low weight and high tensile strength can provide increased performance in products including composites, textiles, insulations and more. Hemp hurd is the inner core of the hemp stalk and can be likened to an absorbent wood chip after processing. It can serve as a substitute or additive in building materials, composites, paper pulp, animal bedding and more. Additionally, hemp fiber and hurd are biobased materials which can improve performance when utilized in new and existing products. These raw materials come from the hemp stalk, where the bast fiber length and quality depend on the variety of hemp grown and processing method. Long fiber stalks can yield fibers for textiles and high-quality bio-composites, while the shorter fibers are better suited for insulations, paper, supercapacitors and lower quality bio-composites.





FIBER

Hurdles

- Lack of processing
- Feasibility studies on market potential
- Product development research for hemp fiber inclusions
- Lack of weed control in hemp fiber variety crops

Forecasted Market Potential

The market potential of hemp fiber remains unknown. End-user market assessments are currently underway and will set a path for fiber processing infrastructure. Minnesota is well suited to be a market player in this sector.

Existing Infrastructure

Hemp hurds and fibers are unique raw materials that have hundreds of potential applications. Many existing businesses and industries in the state could benefit from the use of these biobased materials as alternatives to their existing materials.

- Window companies
- Cabinet manufacturers
- Composite manufacturers
- Building companies
- Fiber in concrete applications
- Hurd and fiber in insulations
- Textile manufacturers
- Automobile companies

Product Opportunities

- Textiles (fiber)
- Bio-composites – automobiles, furniture, panels, etc. (fiber)
- Rope/Twine (fiber)
- Supercapacitors (carbon-based hemp fiber nanosheets)
- Batt Insulation (fiber)
- Animal Bedding (hurd)
- HempCrete Insulation (hurd)
- Fuel (hurd)
- Mulch (hurd)
- Paper (hurd/fiber)
- Erosion Blankets (hurd)

AURI Involvement

- Coproducts facility in Waseca is a unique value-added facility in the Midwest.
- Coproducts lab is uniquely positioned to aid in product development involving hemp fibers or hurds.
- Capabilities include but are not limited to:
 - Pelleting
 - Milling
 - Aspiration
 - Mechanical separating
 - Mechanical and thermal dewatering
 - Cold oil pressing and filtration
 - Blending/mixing ingredients
 - Bedding development/ammonia testing
- The coproducts lab also plans to house decortication equipment in the future to do R&D work on the fiber from retting to utilization.
- Reach out to Harold Stanislawski, Al Doering or Riley Gordon at AURI to learn more about how AURI can help move your hemp fiber or hurd idea forward.

Sources:

Fiber - A modified graphic from: North Dakota StateCite Source: *Industrial Hemp as an Alternative Crop in North Dakota*, NDSU, 1998
Feed (Table 1) - *Crude Protein/TDN of Corn*: www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/400/400-230/400-230_pdf.pdf
Crude Protein/TDN of Alfalfa Hay - www.uaex.edu/publications/pdf/FSA-4000.pdf
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