

Dr. Scott Hutchins

Under Secretary, Research, Education & Economics

U.S. Department of Agriculture

SUBJECT: Industrial Hemp — Federal Coordination & Investment Strategy

EXECUTIVE SUMMARY

Industrial hemp grain and fiber have moved beyond proof-of-concept. Commercial acreage, interstate commerce, and primary processing capacity are established. The limiting factor is no longer agronomic viability—it is federal coordination.

Unlike established commodities, industrial hemp lacks synchronized institutional architecture across genetics, mechanization, regulatory alignment, standards, and midstream infrastructure. This fragmentation creates acreage volatility, slows private capital deployment, and weakens U.S. competitiveness.

INDUSTRIAL HEMP PRESENTS A TIMELY OPPORTUNITY TO:

- Provide a viable rotational crop across diverse U.S. growing regions
- Strengthen domestic manufacturing inputs: food, feed, textiles, construction, composites
- Support rural and tribal economic development
- Position the United States as a leader in a modern natural materials economy

The window for disciplined scale is finite. Coordinated federal alignment is required within 120 days to prevent structural inefficiency and accelerate responsible commercialization.

STRUCTURAL GAP

To transition hemp into a competitive American commodity, four priorities must advance in parallel:

1. Competitive domestic genetics and seed commercialization
2. Scalable mechanized production and hemp specific processing systems

Market-expanding research in high-volume applications such as animal feed, building materials, and carbon-based products, improved manufacturing and refining technologies that better capture hemp's unique protein, fiber, and material characteristics

The objective is not broad exploratory research. It is targeted investment that reduces cost of production, improves yield reliability, unlocks demand, and builds institutional confidence.

IMMEDIATE ACTION!

Convene a National Industrial Hemp Systems Workshop

0 – 120 DAYS

Lead Agency:
USDA

Timeline:
Within 90–120 days

Participants:
AMS, NRCS, Rural Development, FDA-CVM (coordination), Key institutions, Industry stakeholders, and other relevant parties

Purpose:
Align research, regulatory guidance, mechanization systems, and market development into a unified federal advancement framework.

Deliverables (within 120 days):

- Unified Federal Industrial Hemp Advancement Roadmap
- Interagency Alignment Matrix
- Budget-Informed Regional Hub Proposal

Cross-agency workshops have historically helped advance administration priorities. Industrial hemp aligns with goals emphasized by President Trump, Secretary Kennedy, and Secretary Rollins—including healthier soils, stronger food and fiber systems, and competitive American manufacturing. We encourage USDA to convene a whole-of-government workshop to coordinate a unified strategy.

NEAR-TERM PRIORITIES

▶ 3 – 24 MONTHS

Following workshop alignment and federal roadmap adoption:

- Align competitive grants and funding mechanisms to the federal roadmap
- Fund pilot projects supporting primary processing and value-added manufacturing
- Expand multistate grain and fiber research trials, including value-added genetic traits
- Launch voluntary standards formalizing grading, testing metrics, and specifications
- Clarify industrial hemp as an approved food ingredient within federal nutrition and food aid programs (like Food for Peace and McGovern Dole)
- Prioritize targeted animal feed research aligned with FDA-CVM data requirements

These actions reduce market friction and establish measurable performance benchmarks that support private capital deployment and long-term supply chain confidence.

MID-TERM STRUCTURAL ACCELERATION

▶ 2 – 5 YEARS

Establish Regional Hemp Validation Hubs Modeled after early 2000s USDA-supported biofuels innovation hubs.

Each regional hub would integrate:

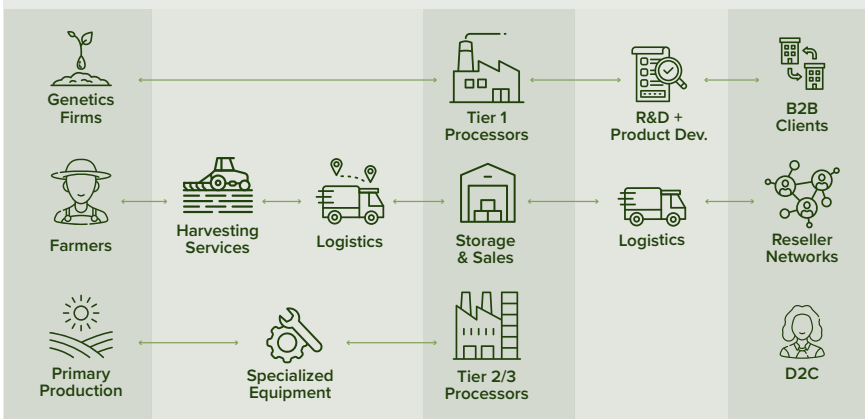
- Genetics and breeding acceleration
- Mechanized harvest and decortication optimization
- Primary processing & refining pilots
- Standards and grading validation
- Regulatory-aligned feed and material research
- Industry commercialization partnerships

Purpose:

- Deliver cost-reduction benchmarks
- Certify competitive cultivars
- De-risk private infrastructure investment
- Anchor domestic manufacturing ecosystems

Infrastructure signals commodity permanence. Validation hubs accelerate private capital leverage and structured scale in a way that dispersed grant programs alone cannot achieve.

Region Hub Framework:



LONG-TERM OUTCOME

▶ 5 – 10 YEARS

With coordinated REE leadership:

Industrial hemp stabilizes as a domestically competitive oilseed and fiber commodity

- Grain markets expand (food, beverages, feed)
- Fiber markets mature (textiles, industrial materials, strategic composites)
- Rural and tribal economies benefit from vertically integrated manufacturing
- Industrial hemp grain and fiber are clearly differentiated from floral/cannabinoid regulatory frameworks
- Regulatory approval of hemp feed ingredients across the majority of livestock species.

The objective is disciplined, performance-driven scale — not speculative expansion.



DECISION REQUESTED

The National Hemp Association respectfully requests the following actions from USDA REE:

1. Direct REE agencies to coordinate hemp research priorities under existing authorities.
2. Authorize a National Industrial Hemp Systems Workshop within 120 days.
3. Develop a budget-informed proposal for Regional Hemp Validation Hubs aligned with Farm Bill deliberations.
4. Report findings, funding scenarios, and implementation pathways within 120 days.

CLOSING NOTE

Industrial hemp is at an institutional inflection point comparable to early biofuels development. Coordinated federal action now determines whether the United States leads in the emerging natural materials economy or cedes structural advantage to global competitors.

Appendix A: 2026 Industrial Hemp – Research and Market Alignment Priorities

I. U.S. Genetics & Seed Commercialization (Foundation for Competitiveness)

Core Issue: Yield competitiveness, seed scalability, and cost-of-production remain structural constraints relative to established oilseed crops such as soy and canola.

Priority Actions:

- ARS/NIFA funded multi-location trials + trait benchmarking (public datasets)
- Breeding grants focused explicitly on industrial hemp traits (in coordination with market demand)
 - Targets including: disease resistance, drought tolerance, harvestability, nutrient-use efficiency, and improved protein and oil composition to increase yield reliability and commercial value.
- Region-specific cultivation roadmaps (fiber, grain, dual-purpose)
- Public-private acceleration of hybrid breeding programs

Commercialization Gap

- Long timelines
- Capital intensity
- Limited domestic seed multiplication capacity

Strategic Framing

Without domestic genetic advancement, pricing pressure remains structural and acreage expansion remains constrained.

II. Production Optimization & Mainstream Agricultural Adoption

Core Issue: Hemp is agronomically valuable but under-utilized in existing commodity production systems.

Research & Integration Needs

- Integrate hemp into ARS long-term agroecosystem research sites
- Long-term soil carbon sequestration datasets
- Nitrogen cycling and nutrient recovery modeling
- Water-use efficiency in dryland systems
- Yield effects on subsequent rotation crops
- NRCS conservation practice modeling alignment
- CSP/EQIP eligibility clarity for hemp growers
- OREI grants targeted toward hemp in organic rotations

Strategic Framing:

Industrial hemp should be measured by its ability to improve farm profitability, production efficiency, and resource stewardship. Focused investment in accelerated breeding and agronomic optimization will allow hemp to more quickly deliver meaningful rotational value and compete alongside established crops.

III. Market Expansion for high-value and high-volume manufactured products like animal feed.

Core Issue: Access to feed markets is essential for acreage expansion, yet hemp faces disproportionate safety and efficacy burdens—particularly around naturally occurring cannabinoids—making feed approvals costly, prolonged, and a barrier to scale..

Research Priorities

- University-led competitive feed trials
- Complementarity modeling with soy, corn, pea and/or other meals
- Gut microbiome and methane reduction studies
- ARS-led metabolite and residue safety research
- Cannabinoid residue tolerance clarification
- Coordinated study design with FDA-CVM and AAFCO aligned for ingredient approval
- Focus on co-product utilization (hulls, screenings, meal, etc)

Strategic Framing:

Feed is a demand multiplier. Coordinated regulatory-aligned research avoids wasted dollars and accelerates market acceptance.

IV. Mechanized Harvest and Handling (Scale Constraint)

Core Issue: Mechanization inefficiencies increase per-acre production costs and constrain acreage expansion, exacerbated by quality control variability that limits consistent, market-grade products.

ARS-Led Systems Research

- End-to-end system modeling (field → storage → processing)
- Regional mechanization testbeds (dryland + irrigated)
- Dual-purpose harvest optimization
- No/low-till planting system refinement
- Weed management toolchains compatible with canopy closure

Engineering Priorities

- Grain harvest optimization (loss, dockage, header systems)
- Fiber harvest consistency (cut/windrow/retting/bale)
- Bale spec standardization

- Material handling densification
- Traceability systems (field lot → bale → processor)

Deliverables:

- Regional harvest playbooks
- Standardized grain and fiber test protocols
- Cost models (\$/acre and \$/ton by system)
- Fire mitigation templates for storage

Strategic Framing:

Mechanization is the key structural barrier to commodity-level acreage.

V. Processing Infrastructure

Core Issue: Without mature midstream infrastructure, industrial hemp cannot deliver consistent volume, quality, and logistics performance at commodity scale.

Centralized Infrastructure Needs

- Large-scale grain and fiber primary processing following a regionalized structure
- Further fiber refining and degumming capacity (value add)
- Warehousing and export-ready logistics
 - Standardized bale density & freight optimization
- Shelf-life optimization research

Known USDA Mechanisms:

- Rural Development B&I loan guarantees
- Value-Added Producer Grants – High capital requirements for industrial hemp processing infrastructure often exceed current award limits, making it difficult for individual producers to utilize the program to develop necessary facilities.
- REAP for energy-intensive processing upgrades

Strategic Framing:

Infrastructure investment signals commodity permanence.

VI. Fiber and Materials Quality Standards and Grading

Core Issue: Market maturity requires standardized quality testing and grading systems that provide consistent specifications, pricing transparency, and supply chain confidence.

Near-Term Actions:

- Develop voluntary USDA industrial hemp fiber grading standards modeled on established natural fiber systems
- Establish bale specs and testing metrics
- Create a joint working group with USDA Cotton laboratories and industry stakeholders to identify integration pathways

- Position hemp as complementary to cotton—not competitive displacement
- Explore blended textile economic modeling

Strategic Framing:

Industrial hemp requires comparable quality systems to operate at commodity scale, integrate seamlessly into domestic natural fiber markets, and unlock its full economic and agronomic value for producers and processors.

VII. **Industrial Hemp Market Reporting and Commodity Alignment**

Core Issue: Industrial hemp (grain and fiber) is aggregated with floral/cannabinoid production in federal reporting and market perception, obscuring its true economic profile and limiting appropriate commodity-level engagement.

Immediate Needs and AMS Alignment:

- Improved segmentation of acreage (grain vs fiber vs floral)
- Strengthened USDA hemp economic reporting
- Regional production modeling
- Market value confidence data
- Evaluate practical acreage and production benchmarks required to access additional AMS services, and identify pathways to responsibly accelerate or streamline engagement without waiting for traditional commodity maturation timelines.
 - Targeted mechanisms like Federal Marketing Orders, Research & Promotion Programs, Federal Marketing Agreements, Industry Task Forces, and Standards Committees

Strategic Framing:

Industrial hemp grain and fiber are transitioning from emerging crop to structured commodity. AMS relevance is no longer theoretical—it is imminent. The role of REE is pivotal: by strengthening the research, data, and performance benchmarks that underpin commodity systems, USDA can guide this transition deliberately and strategically, rather than allowing market growth to outpace institutional alignment

Appendix B: 2024 USDA National Hemp Research Needs Roadmap

Purpose

This memorandum provides a decision framework for prioritizing federal research investments that enable industrial hemp to transition from early commercialization to commodity-scale competitiveness. The recommendations synthesize the March 2024 *USDA National Hemp Research Needs Roadmap* with subsequent domestic and international industry workshop findings and align them with existing authorities across the USDA Research, Education, and Economics mission area.

Definition of Industrial Hemp

For USDA research and commodity development, **industrial hemp is defined** as:

1. **Hemp Grain** – seeds and derived products used for food, beverages, and livestock feed, including whole seeds, oil, protein powders, and co-products such as hulls and meal. Intended for human and animal nutrition, with clear regulatory alignment for safety and residue tolerance.
2. **Hemp Fiber** – stalks, bast, and hurd used for industrial applications, including:
 - Textiles – apparel, home goods, nonwoven materials
 - Electronics / Electrical Storage Devices – biocomposites for batteries, insulation, and conductive substrates
 - Armaments / Defense Materials – lightweight composites, ballistic panels, and propellents
 - Packaging – bioplastics, paper, and fiberboard
 - Construction Materials – insulation, fiberboard, hempcrete, and fiber-reinforced road materials

Biobased & Strategic Materials. Hemp fiber and grain support products sourced from U.S. farms and forests, providing renewable, domestically produced alternatives for strategic materials, defense, energy storage, and industrial manufacturing.

Background. Industrial hemp acreage, processing pilots, and interstate commerce are now established in the U.S. The principal constraint is system maturity, including genetics, mechanization, midstream processing and manufacture, standards, and high-volume market formation.

The national USDA Research Roadmap identifies four cross-cutting research priorities:

1. Breeding and genetics
2. Best production practices

3. Biobased product manufacturing (sourced from U.S. farms and forest materials)
4. Transparency and consistency

Strategic Approaches

1. Genetics and Seed Systems (Hemp Grain & Fiber)

Needs:

- Grain: high yield, protein/oil content, regulatory compliance for food/feed safety
- Fiber: consistent stalk and bast traits, dual-purpose cultivars, fiber quality for textiles, composites, and strategic materials
- Value-Added Focus: breeding programs should prioritize genetic traits aligned with end-use performance, including biocomposites, textiles, strategic materials, construction, and food/feed quality

Implication: Without accelerated varietal development and value-added genetics adapted to U.S. growing conditions that downstream processing efficiencies and market-oriented performance remain high-risk.

2. Production Systems & Regenerative Integration

Needs:

- Grain: nutrient cycling, water use, yield stability
- Fiber: fiber strength, stalk uniformity, decortication readiness
- Pest management, rotation benefits, soil health, conservation program integration

Implication: Evidence-based production packages unlock sustainable acreage expansion and ecosystem-service benefits.

3. Improved mechanical primarily handling and processing systems.

Needs:

- Efficient harvest and decortication systems with end-product manufacturing in mind
- Standardized bale density, moisture, and fiber/hurd separation
- Traceability from field to processor to manufactured products
- Regional pilot infrastructure hubs connection production to value-added products manufacturing

Implication: Mechanization inefficiency is the **primary structural barrier** to commodity-scale adoption of industrial hemp fiber and strategic material production.

4. Biobased Products & High-Volume End Uses

Grain Applications: food, beverages, animal feed, and no-waste co-product utilization

Fiber Applications: textiles, electronics/energy storage, armaments, packaging, and construction materials for building and transportation

Implication: Coordinated supply chains linking production to product performance to realize scalable, high-volume product markets to meet increasing demand for biobased products and strategic material security.

5. Standards, Data Transparency, and Economic Reporting

Needs:

- Voluntary grading for grain, fiber, and other produced materials streams
- Lifecycle productivity assessment, carbon accounting, and systems resilience metrics
- Segmented acreage and production reporting for food/feed vs fiber vs floral markets

Implication: Transparent, science-based metrics reduce market friction, enable contracting, and prepare hemp for commodity-level USDA engagement.