

Hemp Seed Meal for Dogs

Economic Impact Analysis

Prepared by the Hemp Feed Coalition | August 2026 | CONFIDENTIAL — Contact the Hemp Feed Coalition regarding distribution or citation.

Executive Summary

Legalizing hemp seed meal as an ingredient in commercial dog food would create a domestic offtake market for U.S. hemp farmers and processors while giving pet food manufacturers a differentiated plant protein and fiber ingredient. Applying the Coalition's assumption library to 89.7 million pet dogs, at 5 percent adoption and the inclusion rate used in the only canine feeding trial with a stated rate, the market would require roughly 44,263 acres of hemp and generate an estimated \$72.4 million to \$82.7 million in combined annual revenue across the supply chain, supporting 214 to 299 direct agricultural jobs.

U.S. farmers harvested 7,515 acres of hemp for grain in 2025. A single approved pet food market at modest adoption would require roughly six times that acreage at the research-anchored rate, and eight times at the modeling cap.

1. The inclusion rate, and a correction

The Coalition's July 2026 analysis of this market modeled hemp seed meal at 10 percent of the diet. On review that rate is not supported by canine research and it has been reduced.

Vastolo et al. (2021) conducted a double-blind trial at a municipal kennel affiliated with the University of Naples Federico II, comparing hemp seed cake against swine tallow as a lipid source in a canned commercial diet over thirty days. Hemp seed cake was supplemented at 3.5 percent as-fed. All hematological and biochemical values remained within the physiological range for the species, no adverse effects were observed, and the hemp group showed significantly lower cholesterol, AST, ALT, creatinine and creatine kinase, which the authors attributed to the more favorable fatty acid profile.

That 3.5 percent is the highest inclusion rate in any published canine hemp seed feeding trial. The Coalition anchors this analysis there and caps the upper scenario at 5 percent, the nearest 5 percent increment above the evidence.

The modelled rate against rates actually fed to dogs

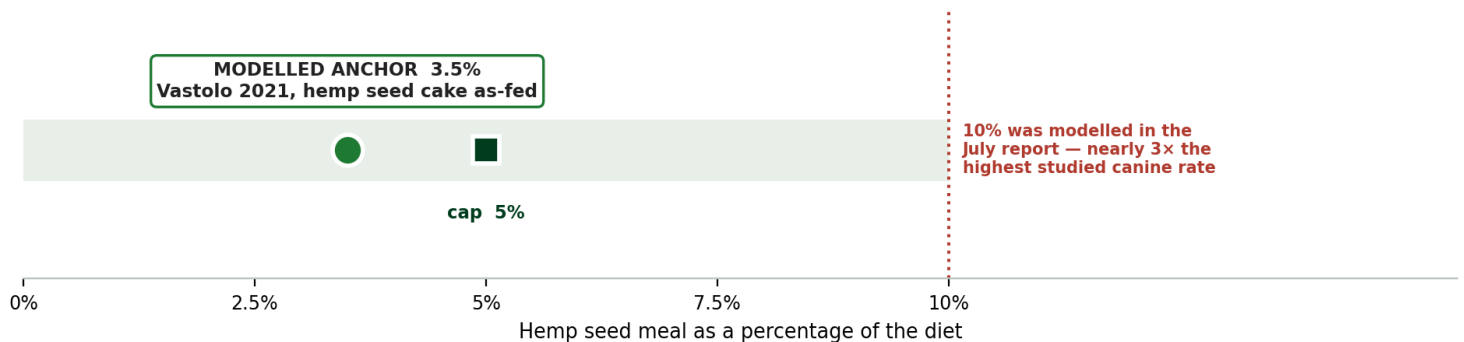


Figure 1. The modeled rate against rates actually fed to dogs.

2. Economic calculations

Acreage required by the dog food market, 5% adoption

Inclusion expressed against 0.50 lb of feed per dog per day. The Coalition models the rate fed in the only canine hemp trial with a stated inclusion.

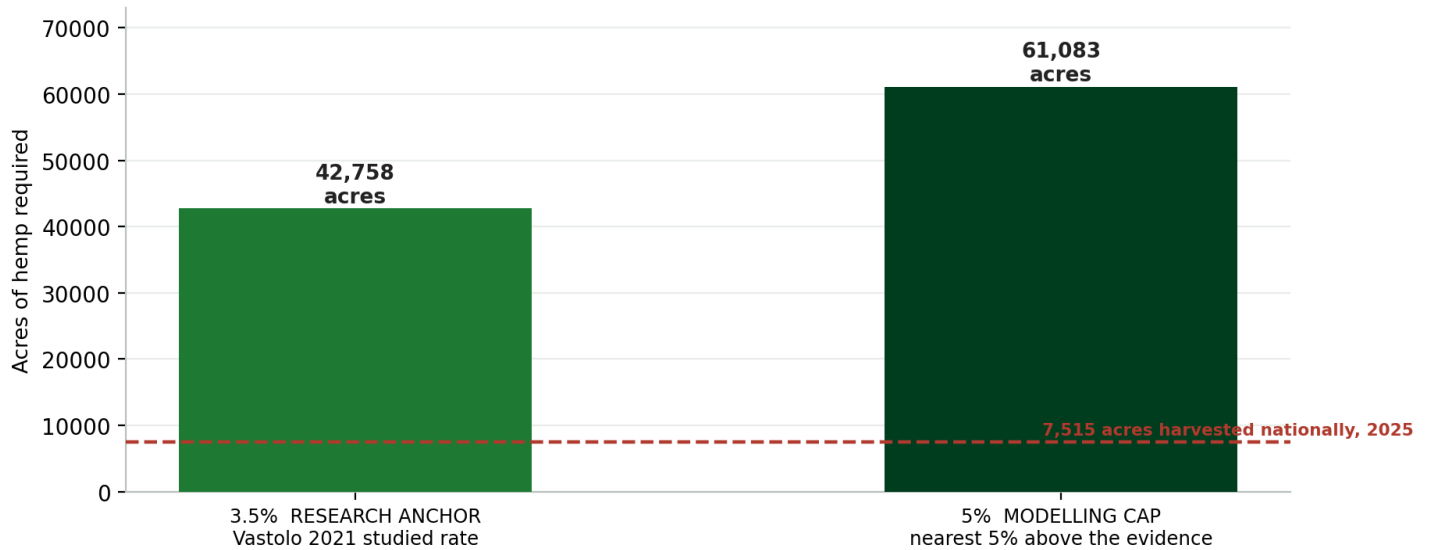


Figure 2. Acreage required at each scenario, 5 percent adoption.

At the research anchor, 3.5 percent of the diet

Step	Calculation	Result
1. HSM demand	$89,700,000 \times 5\% \times 0.50 \text{ lb/day} \times 3.5\% \times 365$	28,647,938 lb
2. Grain required	$28,647,938 \div 0.67$	42,758,116 lb
3. Acres required	$42,758,116 \div 966 \text{ lb/acre}$	44,263 acres
4. Farmer revenue	$\text{grain} \times \$0.60 / \times \0.70	\$25,654,870 / \$29,930,681
5. HSM processor revenue	$28,647,938 \times \$0.275$	\$7,878,183
6. Oil co-product	$(\text{grain} \times 0.25 \text{ or } 0.30 \div 7.5) \times \28.75	\$40,976,361 / \$49,171,633
7. Jobs	$\text{acres} \times 5 \text{ to } 7 \div 1,000 \text{ (directional)}$	214 to 299

Revenue summary, both scenarios

Revenue stream	3.5% anchor, low	3.5% anchor, high	5% cap, low	5% cap, high
Hemp grain, to farmers	\$25,654,870	\$29,930,681	\$36,649,813	\$42,758,115
Hemp seed meal, processor	\$7,878,183	\$7,878,183	\$11,254,547	\$11,254,547
Hemp seed oil, co-product	\$40,976,361	\$49,171,633	\$58,537,896	\$70,245,476
TOTAL	\$74,509,414	\$86,980,497	\$106,442,256	\$124,258,138
Acres required	42,758	42,758	61,083	61,083

Revenue stream	3.5% anchor, low	3.5% anchor, high	5% cap, low	5% cap, high
Jobs	214	299	305	428

Oil revenue is the largest single line and depends on a parallel approved market for hemp seed oil. The grain and meal revenue, \$31.4 million to \$33.5 million at the research anchor, is the portion that flows to farmers and primary processing and does not depend on the oil market. Oil is recovered from the same grain pressed for meal, so it is not double-counted.

3. Why pet food

Pet food is a favorable first market. Americans spend over \$58 billion annually on pet food and treats, with dog food the largest single segment, and premium and functional formulations are the fastest-growing tier. A differentiated ingredient can command a price that supports the whole supply chain rather than competing purely on lowest-cost protein.

The regulatory argument is also structurally simpler here than for food-producing species. Hemp seed meal holds an official AAFCO ingredient definition for laying hens, adopted under the more demanding standard that applies when the resulting eggs enter the human food supply. Dogs are companion animals entirely outside the human food chain, which means the central regulatory concern, cannabinoid transfer into human food, does not arise.

4. The state of the evidence

Established

- Hemp seed meal holds an official AAFCO ingredient definition. A tentative definition for laying hen feed was adopted at the AAFCO Annual Meeting on 7 August 2024, where 48 states voted to approve and 2 abstained. It was moved to official at the Annual Meeting on 4 August 2025 and first printed as definition 71.5 in the 2026 Official Publication.
- Two published feeding trials have fed hemp seed products to dogs. Vastolo (2021) fed hemp seed cake at 3.5 percent as-fed for thirty days with all values in physiological range and no adverse effects. Frazzini (2023) evaluated hulled hemp seed in a homemade diet.
- FDA issued no-questions responses to three GRAS notices covering hemp seed ingredients for human food in December 2018.
- Dogs do not enter the human food supply in the United States.

Open

- No canine trial has fed hemp seed meal above 3.5 percent of the diet, which is why the model caps at 5 percent.
- Apparent total tract digestibility coefficients for hemp seed meal have not been published in dogs. This informs formulation and labeling rather than safety or legal status.

Neither open item concerns cannabinoid exposure, and for dogs the human food-safety rationale behind the strict tissue standard does not apply at all.

5. What this means on the farm

Acreage is set by demand, not by yield. The acres in the calculations above are what an approved market would call for. What yield determines is whether those acres pay the grower who plants them, and that is the question a farmer asks first.

The Coalition's farm work models return above total cost per acre, the figure that decides planting, rather than gross revenue. Two things drive it: yield, and the cost of the ground. At the USDA NASS national average of 966 lb per acre and \$0.70 per lb, hemp grain returns roughly \$172 per acre on Montana dryland, \$127 in New York, and \$49 on average-cost land, while losing money on high-rent irrigated ground in Kansas and Nebraska, at about negative \$60 and negative \$145. At today's average genetics, hemp grain is a viable rotation on moderate-cost land and a poor fit on expensive irrigated acres. That is the honest picture, and it is why the yield question matters.

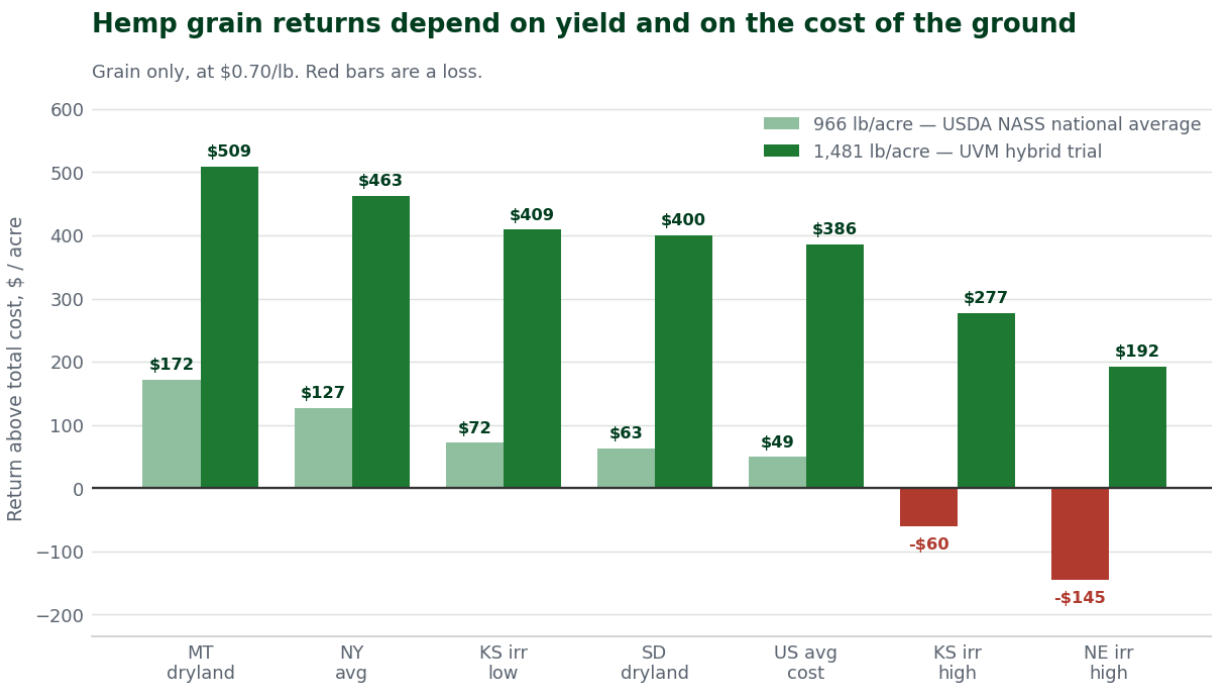


Figure. Return above total cost per acre by land class, grain only at \$0.70/lb. Source: HFC Farm Return Matrix, Master Model v5, 08-03-26.

Genetics change it. At the 1,481 lb per acre recorded in University of Vermont hybrid trials, the same \$0.70 price returns roughly \$509 per acre on Montana dryland, \$386 on average-cost land, and stays positive on every land class in the register, including Nebraska irrigated at about \$192. Hybrid development for the U.S. market is underway at several companies, one of which, New West Genetics, is represented on the Coalition's board.

Harvesting the stalk changes it again. A grain crop whose stalks are also taken yields roughly one to one and a half tons, sold conventionally at about \$300 per ton for hurd and short fiber. On the national average yield that dual-purpose return runs from roughly \$339 to \$489 per acre on average-cost land and stays positive across every land class, including the highest-rent irrigated ground.

Harvesting the stalk lifts every land class above break-even

At the 966 lb national average yield, \$0.70/lb grain and \$300/ton conventional stalk.



Figure. Effect of harvesting the stalk, at the 966 lb national average yield. Source: as above.

No pesticides are currently labeled for hemp across most of the United States, so the crop carries no pesticide cost and needs fewer field passes than the row crops it would rotate with. Growers also commonly report yield gains in the crop that follows hemp, consistent with the benefits of added rotational diversity, though hemp is not a nitrogen fixer and that effect is anecdotal rather than measured.

The binding constraint has never been agronomic. It is offtake. Without an approved end market processors cannot commit to volume, and without processor commitments growers will not plant. The acreage and farm-gate figures above describe what becomes possible once that constraint is removed.

Figures are given as a range across land classes rather than as a single per-acre number, because the spread between a Montana dryland acre and a Nebraska irrigated acre is wider than the difference between the crops being compared. Full derivation, the land cost register and every cost assumption are set out in The Farm Economics of Hemp Grain.

Appendix: assumptions

Assumption	Value	Source
U.S. pet dog population	89,700,000	APPA National Pet Owners Survey
Market adoption	5%	HFC standard
Daily feed intake per dog	0.50 lb/day	Derived: ~50 lb dog at maintenance, 700-900 kcal/day, kibble at 3,500-4,000 kcal/kg
Inclusion, research anchor	3.5% of diet	Vastolo et al. 2021, hemp seed cake as-fed
Inclusion cap	5% of diet	Nearest 5% increment above published canine feeding

Assumption	Value	Source
Feeding days per year	365	HFC standard
HSM yield / price	0.67 lb per lb grain · \$0.275/lb	HFC Master Model v4, 08-01-26
Grain yield / farmgate price	966 lb/acre · \$0.60-0.70/lb	HFC Master Model v4; cf. USDA NASS 966 lb (2025)
Oil yield / conversion / price	25-30% · 7.5 lb per gallon · \$28.75/gal	HFC Master Model v4
Jobs per 1,000 acres	5 to 7 direct	HFC Master Model v4. Post-farm processing basis; multiplier not independently sourced.

Sources: APPA National Pet Owners Survey. · HFC HSM Economic Impact Master Model, Version 4, 08-01-26. · USDA NASS National Hemp Report. · Vastolo, A. et al. (2021), Front. Vet. Sci. · Frazzini, S. et al. (2023), Ital. J. Anim. Sci. · Godglueck, A. et al. (2025), Animals 15(22):3279. · Mohamed, N. et al. (2024), ACS Food Sci. Technol. 4(1):88-103. · AAFCO Official Publication (2026), definition 71.5.

Economic projections are estimates built on documented assumptions and do not constitute financial advice or a guarantee of market outcomes. Regulatory framing is to be confirmed by counsel before external use.

Andrew Bish, President, Hemp Feed Coalition · Andrew.Bish@Bishcom.com · hempfeedcoalition.org