Building American Beef Security in an Era of Imported Supply

The Case for Feed Security, Producer Resilience and Domestic Production Capacity

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ABSTRACT

The United States beef industry is facing a structural supply challenge. The national cattle inventory stood at 86.2 million head on January 1, 2026, the smallest inventory since 1951. Beef cow numbers declined another 1% year over year, while the 2025 calf crop declined 2% ("Cattle").

At the same time, imported beef has become an increasingly important component of the U.S. supply system. Argentine beef exports to the United States reached 42,445 metric tons in 2025, the highest level since 1999, while U.S. policy expanded Argentina's access to the American market in 2026 ("Livestock and Products Semi-annual").

Imported beef can provide short-term supply when domestic production is constrained. But imports do not eliminate the underlying challenge: rebuilding the American cattle herd is a biological process that takes years, and producers must have the economic and operational capacity to maintain breeding herds through changing weather, forage and input conditions ("Livestock Production Cycles").

This article examines the relationship between imported beef, domestic cattle production, herd rebuilding and feed security. It argues that long-term beef security depends not only on the availability of beef in the marketplace, but on the resilience of the domestic producers responsible for raising cattle. Feed availability is a critical component of that resilience.

Recent research on hydroponic forage suggests that controlled-environment feed production may provide a complementary source of forage under appropriate conditions. It is not a replacement for pasture or hay, but it may provide producers with another tool for diversifying feed supply and reducing exposure to weather-dependent forage production (Vastolo and Cutrignelli).

The central finding is straightforward: a resilient domestic beef supply requires resilient domestic producers, and resilient producers need greater control over critical inputs.

EXECUTIVE SUMMARY

THE U.S. CATTLE HERD IS HISTORICALLY SMALL

The American beef industry is facing a supply problem that cannot be solved overnight. The U.S. cattle herd has contracted for seven consecutive years, reaching 86.2 million head on January 1, 2026. USDA research indicates that cattle production operates on a long biological cycle, while imports become more important when domestic production is constrained ("Cattle"; "Livestock Production Cycles").

Argentina alone exported 42,445 metric tons of beef to the United States in 2025, the country's highest volume since 1999. In February 2026, the United States increased Argentina's tariff-rate quota access by 80,000 metric tons, specifically for certain lean beef trimmings and other products for industrial use ("Livestock and Products Semi-annual"; "Ensuring Affordable Beef").

In August 2026, the federal government authorized another 300,000 metric tons of imported lean beef trimmings under the U.S. beef tariff-rate quota. This additional quantity was allocated among supplying countries other than Argentina and was scheduled to enter under the temporary action beginning September 1, 2026 ("Further Ensuring Affordable Beef").

Imported beef can help address short-term supply and price pressure. But rebuilding the domestic cattle herd requires years. Cattle producers must retain breeding animals, maintain them through development and produce calves before additional beef can reach the market ("Livestock Production Cycles").

That makes producer resilience critical. Drought, declining forage availability and volatile feed markets can force producers to purchase expensive feed, alter grazing strategies or reduce herd numbers. Recent USDA research demonstrates how these pressures can directly influence ranch management decisions ("Helping Ranchers").

Feed security is therefore part of beef security. Diversifying feed sources can give producers additional options when conventional forage becomes constrained. Controlled-environment forage is one potential tool. Recent peer-reviewed research finds that hydroponic forage can provide nutritional and resource-efficiency benefits when appropriately incorporated into livestock diets, while also emphasizing that it should complement rather than replace conventional forage (Vastolo and Cutrignelli).

The objective is not to eliminate imported beef or replace the American ranch. It is to strengthen the domestic production system by giving producers more tools to withstand disruption.
A resilient beef supply requires resilient producers, and resilient producers need secure access to feed.

THE U.S. CATTLE HERD IS HISTORICALLY SMALL

KEY FINDINGS

- 86.2 MILLION
  U.S. cattle and calves on January 1, 2026, the lowest inventory since 1951 ("Cattle").
- 42,445 MT
  Argentine beef exports to the United States in 2025, the highest level since 1999 ("Livestock and Products Semi-annual").
- 80,000 MT
  Additional Argentine tariff-rate quota authorized in February 2026 ("Ensuring Affordable Beef").
- 300,000 MT
  Additional imported lean beef trimmings authorized under the U.S. beef tariff-rate quota beginning September 1, 2026 ("Further Ensuring Affordable Beef").
- 7 YEARS
  Consecutive years of U.S. cattle inventory contraction reported by USDA ("Livestock, Dairy, and Poultry Outlook").

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INTRODUCTION

The American beef industry is being asked to solve two problems at once: consumers need an adequate and affordable supply of beef, and American cattle producers need the conditions necessary to remain in business and rebuild a historically depleted herd.

Those objectives are not necessarily incompatible, but they operate on different timelines. Imported beef can enter the market relatively quickly. Increasing domestic cattle production cannot.

The cattle herd must first be rebuilt. That requires producers to retain breeding animals, maintain adequate nutrition, manage weather risk and carry the financial cost of those animals until they contribute additional cattle to the market ("Livestock Production Cycles").

The current debate over Argentine beef imports therefore provides an opportunity to examine a larger question: what does it take to build a resilient American beef supply?

The answer begins before the feedlot and before the processing plant.

It begins with the producer's ability to raise cattle, and that begins with feed.

WHY HERD REBUILDING TAKES YEARS

Cattle production is fundamentally different from industries capable of rapidly increasing output. A poultry producer can increase production on a relatively short biological cycle.

A cattle producer cannot.

USDA Economic Research Service research describes cattle production cycles as typically lasting approximately 8 to 12 years. Once a producer decides to expand the breeding herd, the process begins with retaining females that might otherwise have been sold. Those replacement heifers must be raised and maintained until they reach breeding age. After breeding, they produce a calf. That calf then requires additional time to enter the beef supply ("Livestock Production Cycles").

The result is a long delay between the initial decision to rebuild and the resulting increase in beef production.

This creates a fundamental constraint:

The domestic cattle supply cannot be rebuilt on the same timeline as consumer demand.

THE U.S. CATTLE HERD REMAINS HISTORICALLY CONSTRAINED

USDA's January 2026 Cattle report placed total U.S. cattle and calf inventory at 86.2 million head. That represents a decline from the previous year and continues a seven-year contraction in the national herd. The beef cow herd, the foundation of future domestic beef production, stood at 27.6 million head. The 2025 calf crop also declined, falling to 32.9 million head ("Cattle").

These numbers matter because today's cattle inventory determines tomorrow's beef production capacity. A smaller breeding herd means fewer calves entering the production system. Fewer calves ultimately mean fewer cattle available for slaughter.

The market can respond to the resulting shortage through imports, inventory changes, consumer substitution or higher prices.

But none of those mechanisms immediately creates more American cows.

ARGENTINE BEEF AND THE U.S. SUPPLY EQUATION

Argentina has historically been a relatively small supplier of beef to the United States.

That changed significantly in 2025. USDA Foreign Agricultural Service data shows that Argentine beef exports to the United States reached 42,445 metric tons in 2025, the highest level since 1999 ("Livestock and Products Semi-annual").

In February 2026, the United States added 80,000 metric tons of tariff-rate quota access for Argentine beef, specifically including lean beef trimmings, block and cuts for industrial use. The policy expanded access to a type of beef that is particularly relevant to the ground-beef supply chain ("Ensuring Affordable Beef").

In August 2026, the federal government authorized another 300,000 metric tons of imported lean beef trimmings under the U.S. beef tariff-rate quota beginning September 1. This additional 300,000 metric tons was separate from the February action involving Argentina and was authorized as a broader increase in the aggregate in-quota quantity for supplying countries ("Further Ensuring Affordable Beef").

The policy is intended to increase supply and address elevated consumer prices.

That makes sense from a short-term market perspective, but the existence of imported supply does not change the biological reality facing American cattle producers.

The domestic herd still has to be rebuilt.

THE SHORT-TERM SUPPLY PROBLEM VS. THE LONG-TERM PRODUCTION PROBLEM

Imported beef can increase the amount of beef available to American consumers without requiring additional cattle to be raised domestically. That provides an important short-term supply mechanism, but domestic production requires something different: it requires producers to maintain cattle.

A cow that is sold today cannot produce a calf next year. A replacement heifer that is never retained cannot become part of the breeding herd. A producer who liquidates cattle because feed becomes unavailable cannot rebuild those animals immediately when conditions improve.

This is why supply security and production capacity should be considered separately.

Imports can supplement supply.

They cannot substitute for domestic production capacity indefinitely.

A resilient beef system needs both.

THE PRODUCER'S RISK EQUATION

Cattle producers make decisions based on a combination of cattle prices, input costs, weather, forage availability, financing, land costs and expectations about future market conditions.

Feed is one of the most important variable inputs.

When forage is abundant, producers may rely heavily on pasture and stored hay.

When drought reduces forage production, that equation changes.

Producers may need to purchase additional hay or alternative feed.

They may need to transport feed from farther away.

They may need to reduce stocking rates.

Or they may decide that maintaining the current herd size is no longer economically sustainable.

These decisions occur at the individual operation level, but collectively they affect the national cattle inventory.

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DROUGHT TURNS FEED INTO A SECURITY ISSUE

Drought is commonly discussed as a water problem.

For cattle producers, it is also a feed problem.

Reduced precipitation can decrease pasture productivity and hay production at the same time that cattle continue to require nutrition.

Recent USDA Agricultural Research Service work in the Western Great Plains documented the decisions ranchers face when drought leaves insufficient forage for grazing. Producers may delay turnout, purchase additional hay, change grazing strategies or reduce herd numbers ("Helping Ranchers").

The timing matters.

A producer does not need to experience a complete feed shortage for feed insecurity to affect the operation.

Higher prices, reduced availability, increased transportation distances and uncertainty about future supplies can all change the economics of maintaining cattle.

This creates a critical distinction:
Feed availability is not the same as feed security.

BUILDING FEED SECURITY

Feed security does not mean producing every pound of feed on the ranch.

It means developing enough flexibility that a disruption to one source does not immediately threaten the entire operation.

That may involve combining:

- Pasture
- Stored hay
- Silage
- Purchased feed
- Alternative feeds
- Irrigated forage
- Drought-management strategies
- Controlled-environment forage

The appropriate combination will vary by operation.

The objective is the same:
Create options before they are needed.

For producers facing drought, those options can provide additional time to make deliberate decisions rather than reacting to a feed shortage after it has already developed.

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CONTROLLED-ENVIRONMENT FORAGE

Hydroponic forage production offers one potential method of diversifying feed supply.

Instead of relying exclusively on outdoor growing conditions, controlled-environment systems grow cereal grains in a managed environment with controlled water, temperature, humidity and production cycles.

The approach has attracted increasing scientific attention.

A 2025 systematic review examined 28 peer-reviewed studies of hydroponic forage in ruminant nutrition. The review found potential benefits in digestibility, animal performance, feed efficiency and selected production outcomes when hydroponic forage was appropriately incorporated into diets, but the research also identified important limitations (Vastolo and Cutrignelli).

Hydroponic forage has high moisture content and therefore relatively low dry-matter concentration. Results vary by crop, animal, inclusion level and production system. Higher inclusion levels can negatively affect dry-matter intake and performance in some circumstances (Vastolo and Cutrignelli).

These findings establish an important principle:

Hydroponic forage is a feed resource, not a replacement for sound nutrition.

Its value must be evaluated within the complete ration and the economics of the individual operation.

WATER AND PRODUCTION CONSISTENCY

One potential advantage of controlled-environment forage is the ability to produce forage with substantially less land than conventional forage production. Recent research has also investigated methods of reducing freshwater requirements in hydroponic forage systems.

A 2024 study examining atmospheric water generation for hydroponic green forage investigated whether atmospheric water generation could supplement irrigation requirements. Under the study conditions, the atmospheric water generator supplied between 16% and 55% of the irrigation water required to produce one kilogram of hydroponic green fodder. The researchers emphasized that performance depended on environmental conditions and the specific system used (Casallas, Fajardo, and Paez-Rueda).

The exact water and energy requirements of a commercial system will depend on system design, environmental conditions, crop selection, recycling and operating practices.
The broader opportunity is control.

Instead of relying entirely on precipitation during a particular growing season, controlled-environment production can provide another source of forage that operates independently of many outdoor production variables.

That does not eliminate drought.

It can reduce the degree to which drought determines the availability of every feed resource on the operation.

WHERE HYDROPONIC FODDER FITS

The strongest case for hydroponic forage is not that it replaces hay.
It is that it can provide another layer of feed security.

For some livestock operations, that may mean:

- Supplemental forage during drought
- Fresh feed production throughout the year
- Reduced dependence on distant forage markets
- Greater control over a portion of feed production
- A predictable production cycle
- Additional flexibility during forage shortages

The economics must still be evaluated carefully. Capital costs, seed, labor, energy, water, equipment maintenance, nutritional value, dry-matter production and animal requirements all affect the return on investment. A system that works well for one operation may not make economic sense for another.

Research also continues to explore the energy and environmental performance of controlled-environment forage systems. A 2025 study found that photovoltaic shading and hybrid renewable-energy systems could improve cooling efficiency, water-use efficiency and fodder productivity under the study conditions (El-Kolaly et al.).

That is why the appropriate question is not:
"Can hydroponic fodder replace hay?"

The better question is:
"Can controlled-environment forage strengthen this operation's feed strategy?"

FROM FEED SECURITY TO BEEF SECURITY

The current beef market demonstrates how interconnected the production system is. Consumers respond to beef prices. Processors respond to available cattle.
Feedlots respond to cattle prices and feed economics. Cow-calf producers respond to forage, weather, operating costs, and expectations about future markets. Trade policy interacts with all of these variables.

No single policy can eliminate the risks. No single technology can eliminate them either. Resilience comes from having options. A domestic beef industry with more producers capable of maintaining cattle through drought, forage shortages and market volatility is more resilient than one in which producers are forced to liquidate whenever a single input becomes unavailable or unaffordable.

That makes feed security more than an operational consideration.

It is part of domestic production security.

CONCLUSION

The debate over imported Argentine beef is ultimately about more than Argentina.
It is about what the United States wants its beef production system to look like over the next decade. Imported beef can provide additional supply when domestic production is constrained. But rebuilding domestic production requires American cattle producers to remain capable of maintaining and expanding their herds. That requires reliable access to feed.

The U.S. cattle herd cannot rebuild without cows. Cows cannot remain productive without adequate nutrition, and producers cannot maintain cattle indefinitely if the feed required to support them becomes unavailable or economically unsustainable. Feed security therefore deserves a place in the broader conversation about American beef security.

Hydroponic forage is not a replacement for the American ranch. It is one potential tool for helping producers diversify where and how they obtain feed. The goal is not to eliminate conventional forage. The goal is to create more options when conventional forage is constrained. The United States cannot control every factor affecting the beef market.
American producers cannot control international trade policy, consumer demand, or the weather, but they can evaluate where their operations remain vulnerable and where additional control may be possible.

A resilient beef supply starts with resilient producers.

Resilient producers need secure access to feed.

Beef security starts with feed security.

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FREQUENTLY ASKED QUESTIONS

Is Argentine beef replacing American beef?

No. Argentine beef is one component of the U.S. beef supply, not a replacement for domestic production. Argentina exported 42,445 metric tons of beef to the United States in 2025, its highest export volume to the U.S. since 1999 (U.S. Department of Agriculture, Foreign Agricultural Service).

Why is the United States importing more beef?

U.S. cattle inventories remain historically low, limiting domestic beef production. USDA research indicates that imports become increasingly important when domestic production is constrained and consumer demand remains strong (U.S. Department of Agriculture, Economic Research Service).

Why can't American ranchers simply increase production?

Cattle production operates on a long biological cycle. USDA Economic Research Service research estimates that the cattle cycle generally lasts 8–12 years. When producers retain heifers to rebuild their herds, those animals require approximately two years before producing a calf, followed by additional time for that calf to reach market weight (U.S. Department of Agriculture, Economic Research Service).

Does imported beef cause American cattle prices to fall?

Not necessarily. Cattle and beef prices are influenced by multiple factors, including domestic inventories, consumer demand, feed costs, production, imports, exports and market expectations. USDA's current outlook identifies tight cattle supplies as an important factor supporting cattle prices (U.S. Department of Agriculture, Economic Research Service).

Why does feed security matter to beef production?

Cattle producers depend heavily on forage. USDA Agricultural Research Service research on the Western Great Plains describes ranchers as particularly vulnerable to drought because their herds depend on available soil moisture and forage. During severe drought, producers may need to change grazing strategies, purchase additional feed or reduce herd numbers (U.S. Department of Agriculture, Agricultural Research Service).

Why does feed security matter to American beef security?

Rebuilding the domestic cattle herd requires producers to maintain breeding animals and raise additional calves over multiple years. If drought or feed shortages force producers to reduce herd numbers, domestic production capacity can be affected. Strengthening feed resilience is therefore one potential component of strengthening domestic beef-production resilience (U.S. Department of Agriculture, Economic Research Service; U.S. Department of Agriculture, Agricultural Research Service).

Works Cited

Casallas, Ingrid, Arturo Fajardo, and Carlos-Ivan Paez-Rueda. “Towards Indoor Hydroponic Fodder Sustainability with a Low-Cost Atmospheric Water Generator.” Computers and Electronics in Agriculture, vol. 218, 2024, article 108666. Elsevier, doi:10.1016/j.compag.2024.108666.

El-Kolaly, Wael, et al. “Optimal Hybrid Renewable Energy System for Hydroponic Fodder Greenhouses under PV Shading.” Solar Energy, vol. 302, 2025, article 114040. Elsevier, doi:10.1016/j.solener.2025.114040.

“Ensuring Affordable Beef for the American Consumer.” The White House, 6 Feb. 2026.

“Further Ensuring Affordable Beef for the American Consumer.” The White House, 26 Aug. 2026.

“Helping Ranchers in the Western Great Plains Survive a Record Drought.” Agricultural Research Service, U.S. Department of Agriculture, 8 June 2026.

“Livestock and Products Semi-annual: Argentina.” Foreign Agricultural Service, U.S. Department of Agriculture, 9 Mar. 2026.

“Livestock Production Cycles Affect Long-Term Price Outlook for Cattle, Hogs, and Chickens.” Economic Research Service, U.S. Department of Agriculture, 17 Mar. 2025.

“Livestock, Dairy, and Poultry Outlook.” Economic Research Service, U.S. Department of Agriculture, 2026.

“Cattle.” National Agricultural Statistics Service, U.S. Department of Agriculture, 30 Jan. 2026.

Vastolo, Alessandro, and Monica Isabella Cutrignelli. “Hydroponic Forage in Ruminant Nutrition: A Systematic Review of Nutritional Value, Performance Outcomes, and Sustainability.” Animals, vol. 15, no. 24, 2025, article 3544. MDPI, doi:10.3390/ani15243544.