China's Alfalfa Industry and Global Market: Challenges and Opportunities

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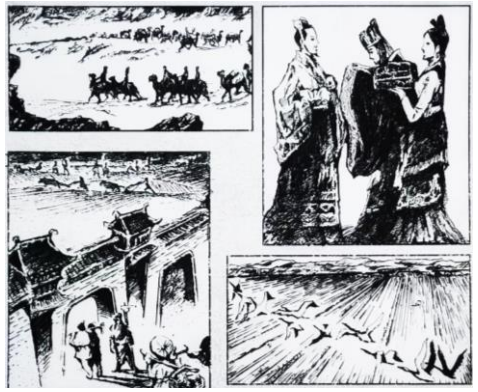
Outline

1. Development of China's Alfalfa Industry
2. Major Challenges
3. Strategic Approaches
4. China's Role and Opportunities

1. Development of China's Alfalfa Industry

Traditional Alfalfa Pracices



For >2000 yrs

- **Fragmented cultivation**
- **No merchandise**
- **Not counted as GDP**

vs. Modern Alfalfa Industry

Specialization

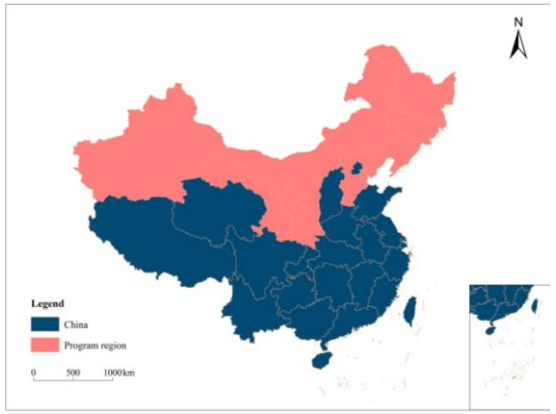
Commercialization

Clustering

1. Development of China's Alfalfa Industry

"Alfalfa Development Action for Dairy Industry" since 2012

- Supporting standardized and large-scale alfalfa planting in major production areas to enhance the supply of high-quality alfalfa
- **11 provinces** in north China supported by central gorvernment to develop the alfalfa production and processing
- **300 companies** supported by the national program in the first batch

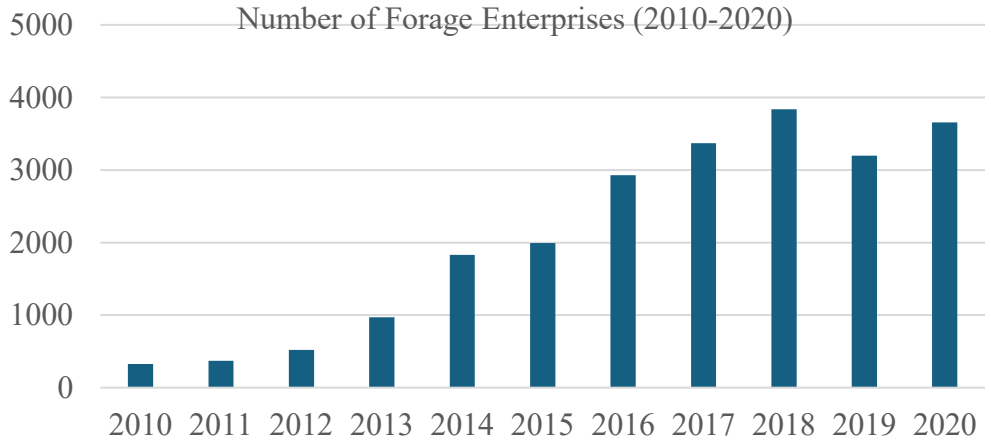


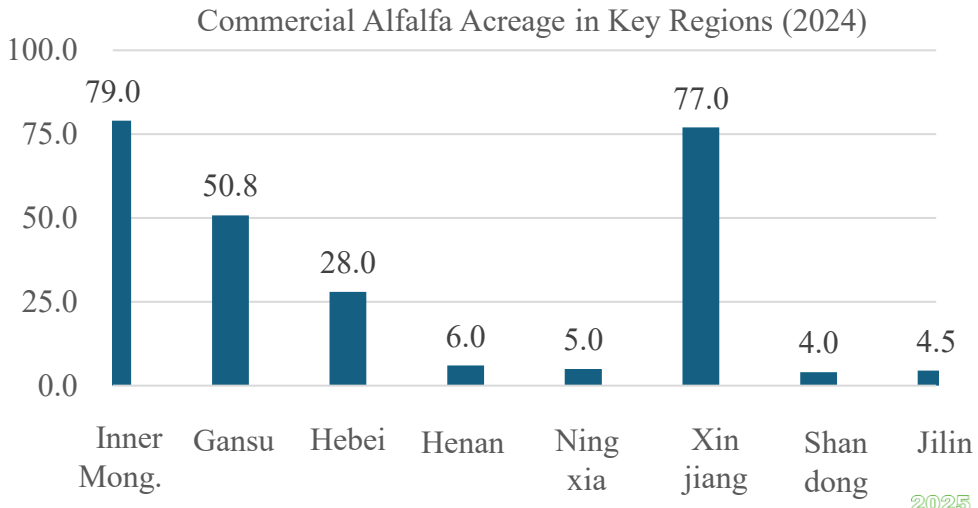
1. Development of China's Alfalfa Industry

Improvement in Scale and Efficiency

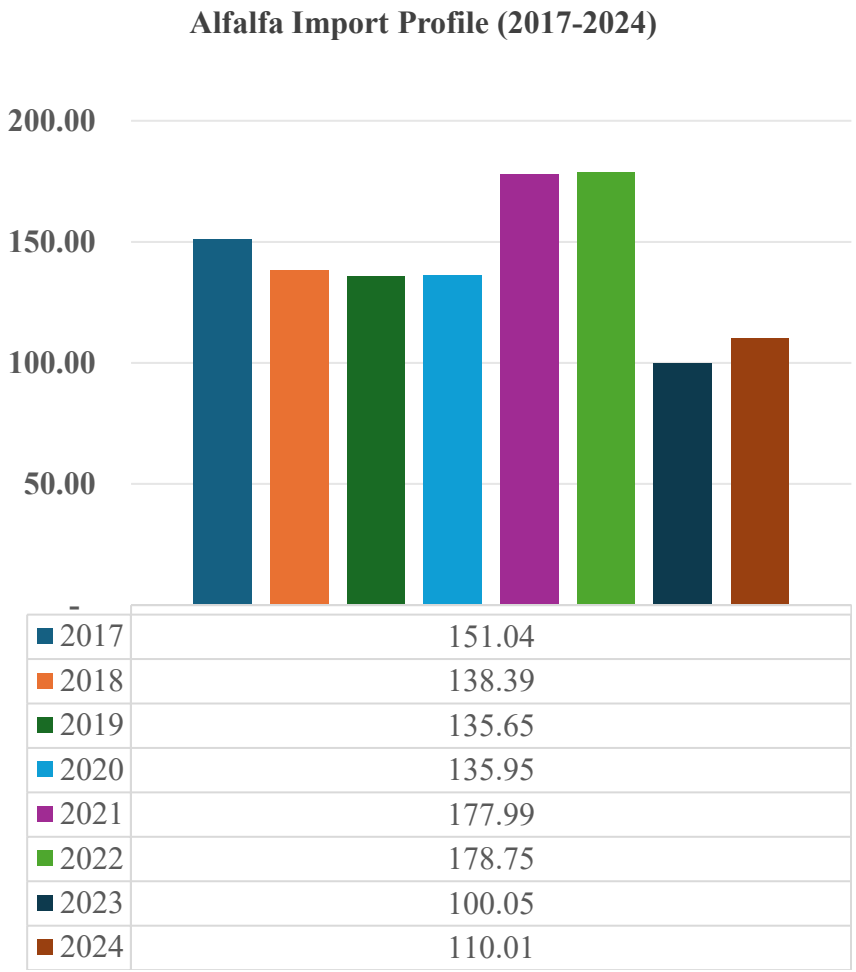
Since 2012:

- China's alfalfa production capacity has increased **6.3-fold** in cultivated area and **5.8-fold** in yield.
- Commercial alfalfa production has seen a dramatic **37-fold** increase
- China as the second-largest alfalfa producer globally with over **6 million mu (0.4 million ha)**.





2. Major Challenges



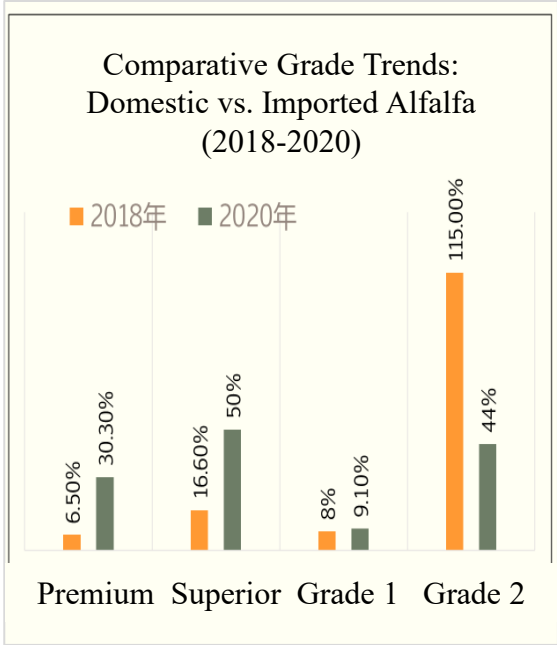
- Domestically produced alfalfa meets only **1/2 to 2/3** of the country's requirements.
- Current annual production reaches approximately **6 m.t**, while projected demand is expected to reach **10-13 m.t.**

2024 Forage Consumption in China's Cattle & Sheep Industry				
Category	Premium Forage (10 kt)			
	Corn Silage	Alfalfa	Other Forage	Total
Milk	2,180	470	1,450	4,100
Beef	1,980	-	980	2,960
Mutton	620	-	660	1,280
Total	4,780	470	3,090	8,340
Scientifically Calculated Demand	6,270	610	6,450	13,330
Premium Forage Gap	1,490	140	3,360	4,990
Yield per Mu (kg/mu)	1,150	750	860	
Land Requirement (10k mu)	1,300	190	3,900	5,390
Fully meeting the premium forage demand for cattle and sheep farming could save 13 million mu of cultivated land.				

2. Major Challenges

- Quality disparities between domestic and imported alfalfa remain a critical issue.
- While high-quality standards have improved, Chinese alfalfa production continues to be constrained by several key factors

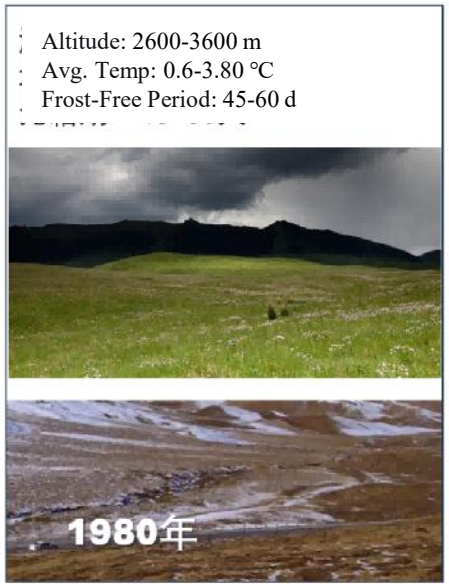
Year	Origin	Volume (10k t)	Premium	Superior	Grade 1	Grade 2	Grade 3
2018	Domestic	110	1%	5%	40%	44%	10%
	Imported	139	15.40%	30.80%	50%	3.80%	0.00%
2022	Domestic	120	3%	15%	50%	22%	10%
	Imported	124	10%	30%	55%	5%	0%



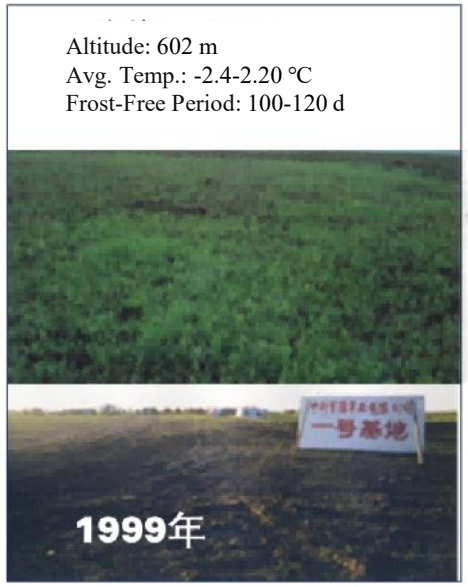
2. Major Challenges

(1) Lack of high-yielding and stress-resistant domeatic seeds

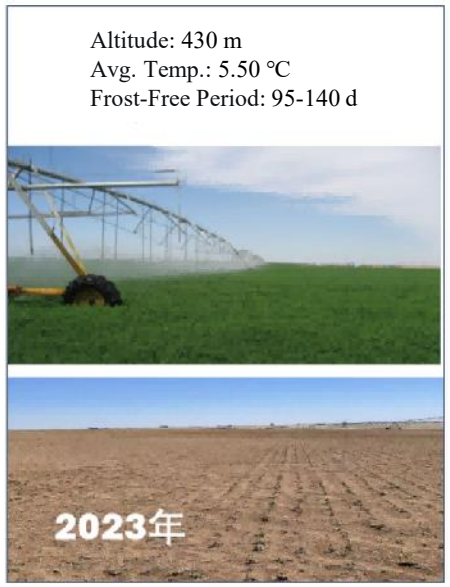
1980s, Huangcheng, Gansu



1999, Hulunbuir, Inner Mongolia



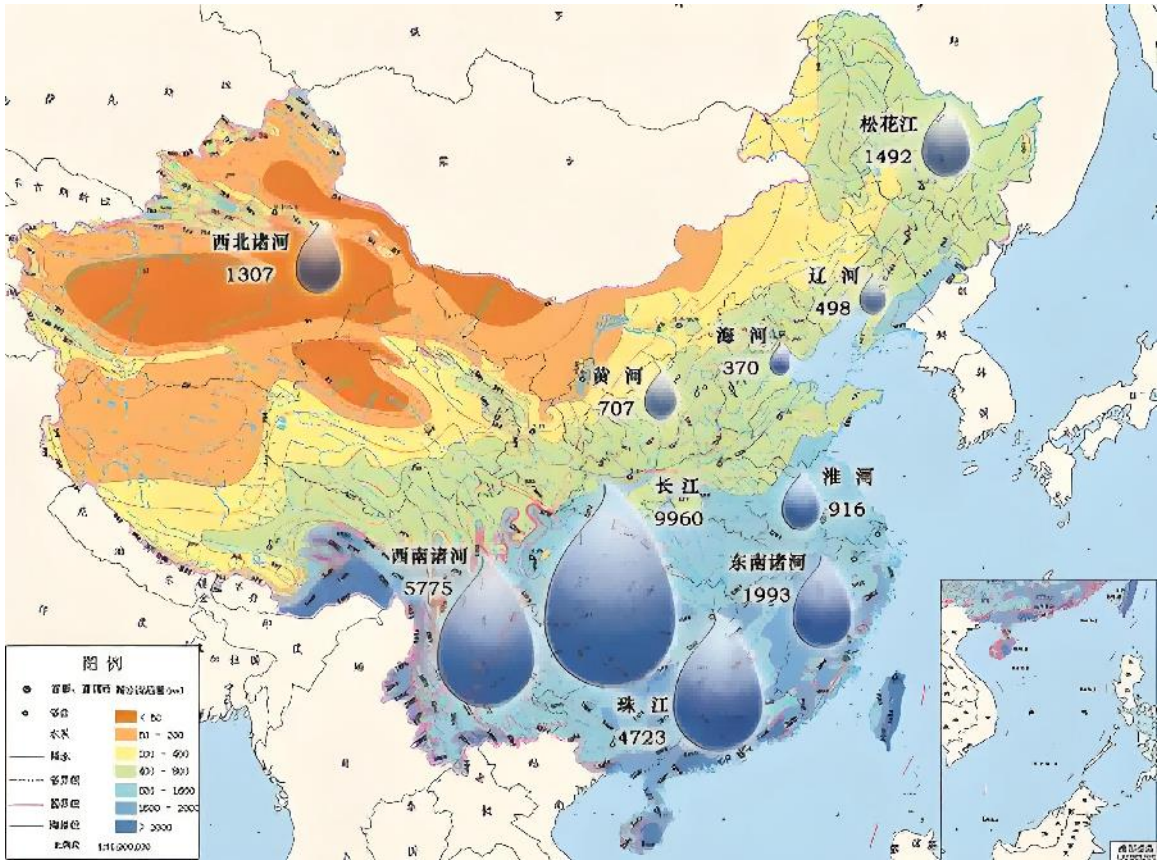
2023, Ar Horqin, Inner Mongolia



- A lack of domeatic varieties that are high-yielding and stress-resistant, suited for arid, semi-arid, alpine or high-latitude regions.
- Lack of domestic seed production, approximately 80% of the seeds used in high-quality domestic alfalfa bases are still imported.

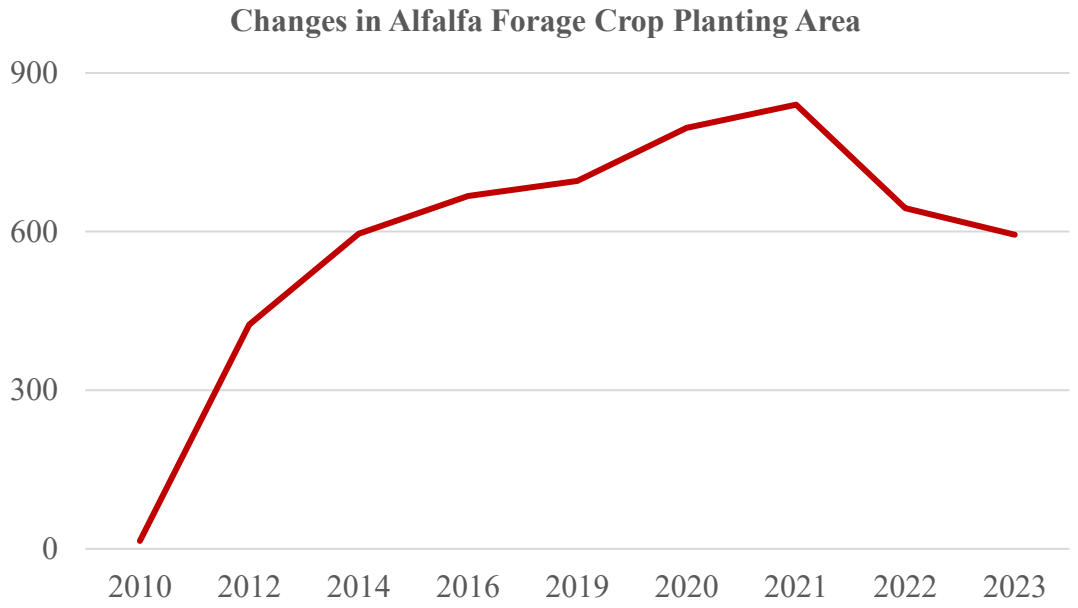
2. Major Challenges

(2) Water constraints



2. Major Challenges

(3) Policy restrictions on land use for non-grain crops



2. Major Challenges

(4) High production costs

Comparative Alfalfa Production Economics

U.S.	China
Cost: $80-100/t	Production Cost: ¥ 600-800
Field Price: $160/t	Land Cost: ¥ 300-600
Landed Price: $400/t	Logistics Cost: ¥ 200-300

¥ 1100-1700

U.S. Farm: 180,000 mu | 4 workers

China Farm: 100,000 mu | 20-30 workers

Sources of High Cost:

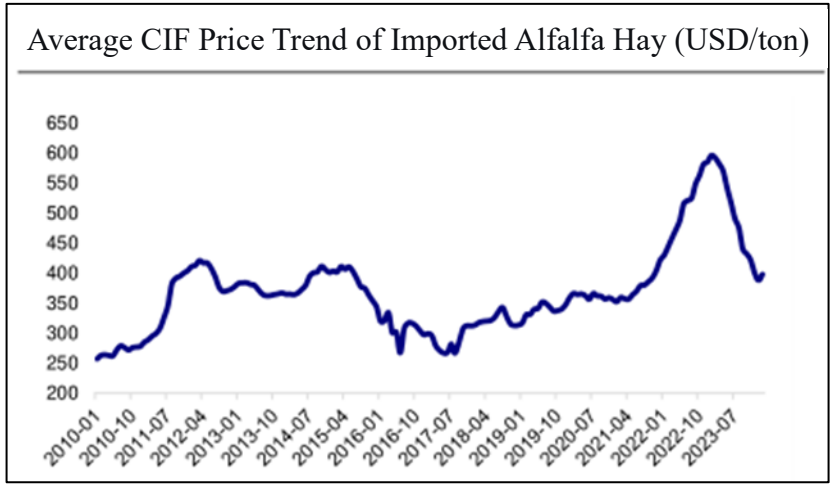
- Land Leasing
- Logistics Expenses
- Machinery Inefficiency
- Quality Deficits

2. Major Challenges

(5) Unstable quality weakens market competitiveness

Average CIF Price Trend of Imported Alfalfa (2010-2024)

Year	Key Events	Price Range (USD/t)	Trend	Schematic
2010-2014	Dairy modernization initiated, demand emerged	**270-380**	Steady Increase	
2014-2018	Supply-demand adjustments, trade friction expectations	**380-320**	Adjustment Phase	
2018-2020	Tariff imposition, cost rigidification	**320-370**	Tariff-Driven Rise	
2021-2022	Tariff exemptions, US drought, Ukraine conflict, soaring shipping costs	**370-480**	Peak Surge	
2023-2024	Low domestic milk prices, herd reduction, cost decline	**480-350**	Rapid Decline	

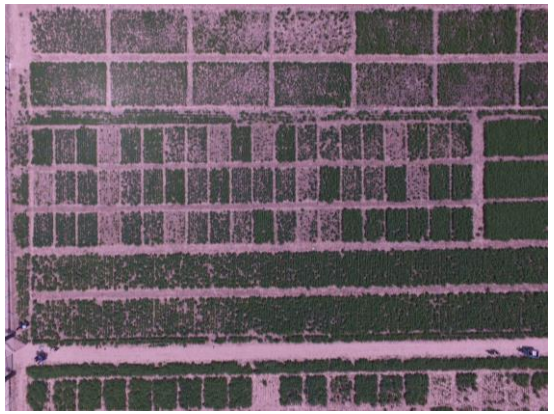


3. Strategic Approaches to Meet the Challenges

(1) Strengthening conventional breeding programs through science-enterprise collaboration

Breeding Objectives: High yield, superior quality, strong stress tolerance.

Achieve a 75% self-sufficiency rate for forage seeds by 2030.



Cold-Tolerant

Drought-Tolerant

Insect-Resistant

Disease-Resistant

3. Strategic Approaches to Meet the Challenges

(2) Implementing sustainable water management through precision irrigation technologies

- Promote water-saving irrigation techniques in drylands
- Convert flood irrigation to sprinkler irrigation in croplands
- Upgrade from sprinkler to drip irrigation in forage fields
- Ecological benefits should be taken into account when accounting for the water used in forage cultivation

½ Production Water Use

½ Ecological Water Use

3. Strategic Approaches to Meet the Challenges

(3) Expanding the land available for growing alfalfa

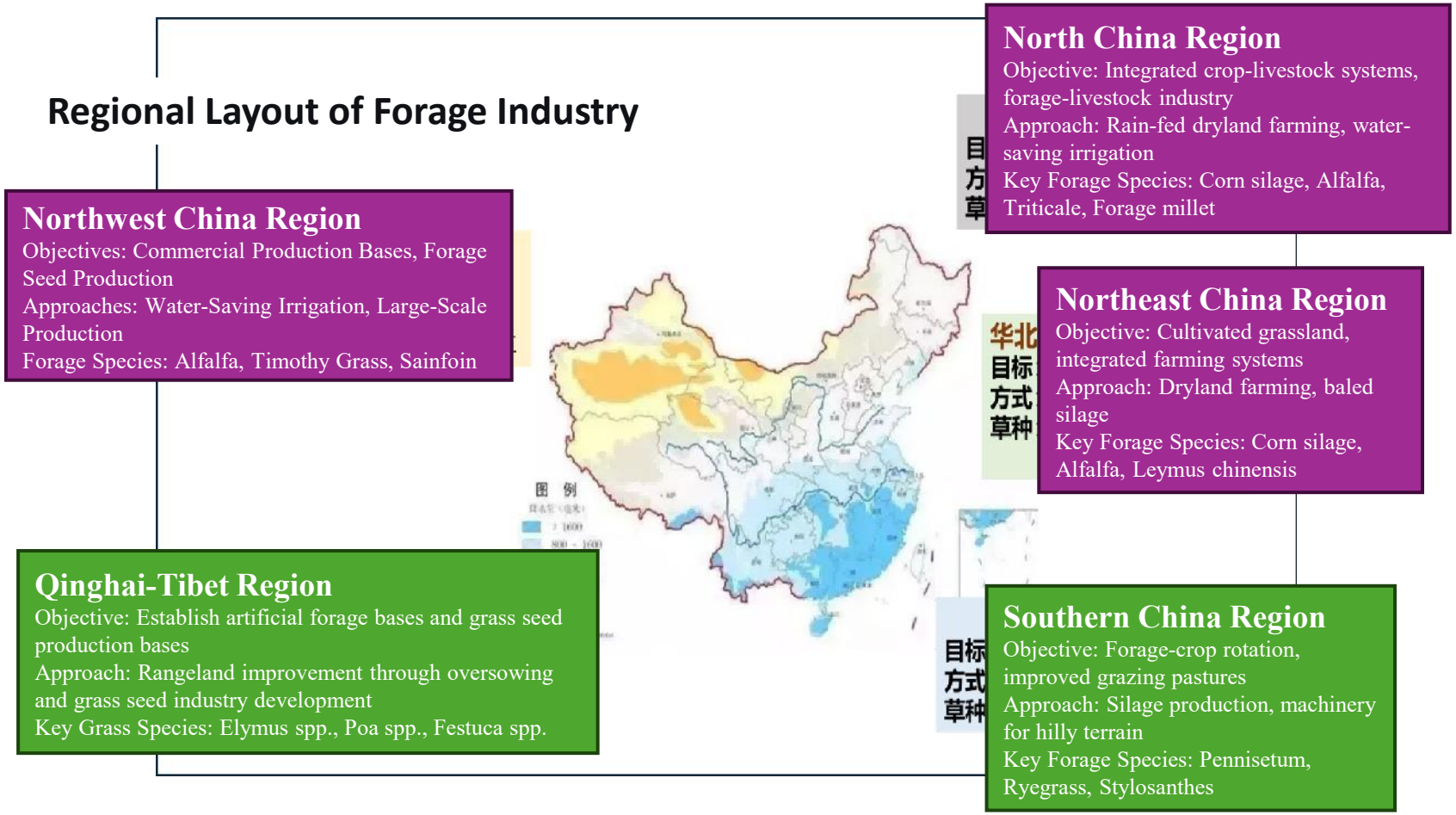
- Grasslands as reserves for croplands
- Implement forage-crop rotation to enhance grain output and soil health
- Incorporate forage into the cropping system

1 mu of Whole-Plant Corn Silage = 1.3 mu of Grain Corn

1 mu of Alfalfa Protein = 2 mu of Soybean Protein

3. Strategic Approaches to Meet the Challenges

(4) Developing regional production clusters in areas such as Xinjiang, Inner Mongolia, and Yellow River basin



3. Strategic Approaches to Meet the Challenges

(5) Establishing standardized quality criteria aligned with international markets

Country/Entity	Grading System Indicators						
	Crude Protein	NDF	ADF	Moisture	Ash	WSC	Other
China (Legume Forage)	✓	✓	✓	✓	✓		Carotene, Foreign Material
China (Alfalfa)	✓	✓	✓	✓			RFV, Foreign Material, etc.
China (Grass)	✓	✓	✓	✓			
China (Leymus Chinensis)	✓			✓			
China (Sun-cured Hay)	✓	✓	✓	✓	✓		
China (Forage, Mandatory Label - Forage)	✓	✓					
China (Forage, Mandatory Label - Straw)		✓			✓		Nitrogen Source Type
China (Enterprise A)		✓	✓			✓	
China (Enterprise B)		✓	✓	✓		✓	
China (Enterprise C)	✓	✓	✓	✓	✓		Pesticide Residues, Toxic & Harmful Weeds
Australia (AFG)	✓	✓	✓	✓		✓	Digestibility, Appearance
Australia (ARGT)	✓	✓	✓	✓		✓	Digestibility, Appearance, Weather Damage
US Forage Association	✓	✓	✓				DDM, DMI, RFV

4. China's Role and Opportunities

Global Market Position:

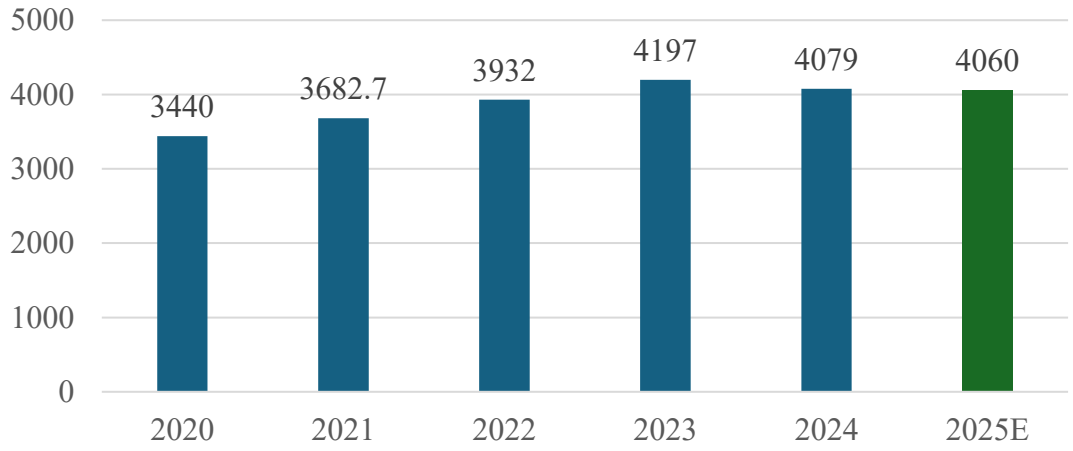
China is the world’s largest alfalfa importer, holding a significant share of international trade

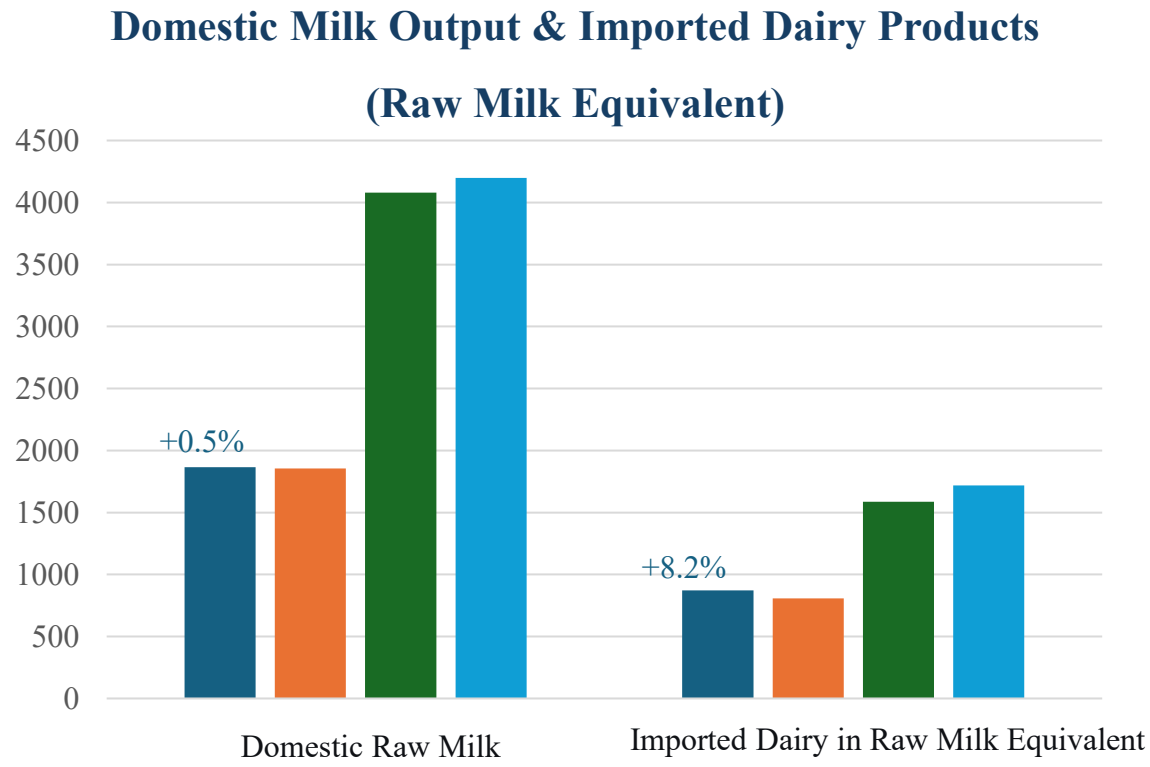
Alfalfa Importing Countries/Regions	2024	Market Share
Japan	1,855,807	22%
China	1,344,424	16%
South Korea	1,195,665	14%
Saudi Arabia	838,673	10%
United Arab Emirates	529,295	6%
United States	353,610	4%
Netherlands	276,991	3%
Taiwan, China	274,198	3%
Switzerland	192,375	2%

4. China's Role and Opportunities

Demand Growth:

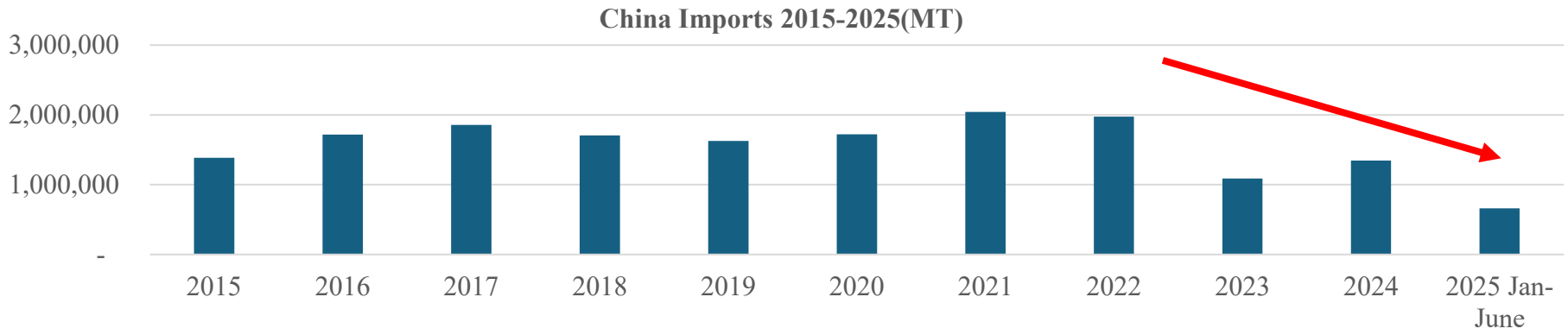
Rising dairy consumption will continue to drive alfalfa demand





4. China's Role and Opportunities

China's Forage Import Volume



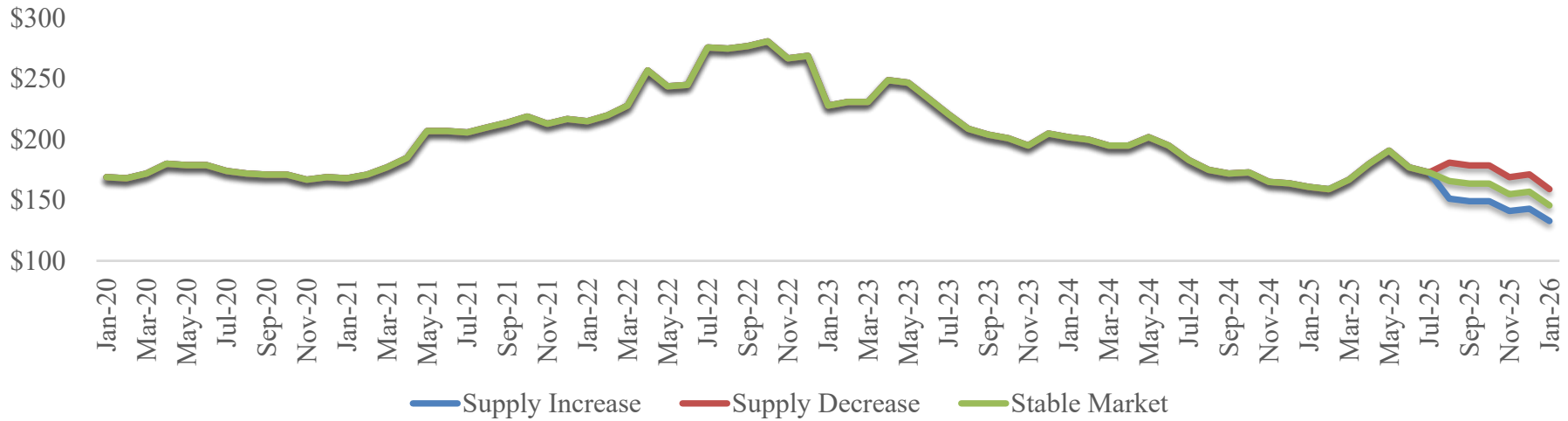
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025 Jan-Jul
United States	1,044,802	1,288,306	1,306,926	1,158,955	1,014,725	1,185,351	1,434,030	1,401,716	898,186	929,952	443,107
Australia	151,490	222,688	307,922	293,641	240,901	334,158	212,156	152,352	72,029	225,605	133,362
Spain	158,325	71,813	62,648	201,401	276,189	122,582	274,366	258,554	37,226	105,080	42,479
South Africa					15,102	34,436	51,887	87,788	44,427	32,598	12,476
Romania								9,006	1,944	30,412	17,297
Canada	23,716	56,471	65,460	39,838	36,246	10,912	46,717	14,604	6,734	7,035	6,939
Italy					18,663	6,975	3,900	19,137	10,916	5,730	3,600
Sudan				8,710	17,021	15,522	14,542	12,822	7,789	3,741	2,234

4. China's Role and Opportunities

China's Alfalfa Price Trend

Following market dynamics, prices may fluctuate under different circumstances. In the long run, prices are likely to rise due to any disruptions, especially amid Sino-US geopolitical tensions.

Month	Stable Market	Supply Decrease	Demand Correction
Aug-25	$151	$181	$166
Sep-25	$149	$179	$164
Oct-25	$149	$179	$164
Nov-25	$141	$169	$155
Dec-25	$143	$171	$157
Jan-26	$133	$159	$146



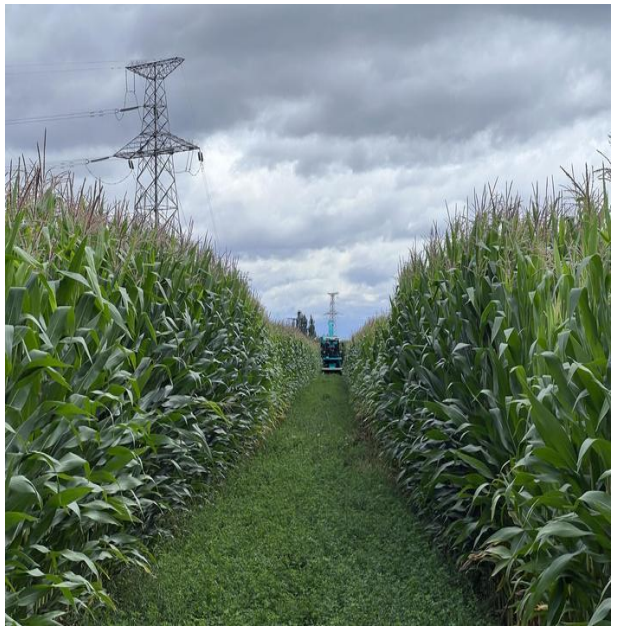
4. China's Role and Opportunities

International Cooperation Opportunities:

Sustainable and More Efficient Technologies

Integrated Water and Fertilizer System

Forage-Crop Rotation System



Integrated Planting-Breeding Organic Recycling System

4. China's Role and Opportunities

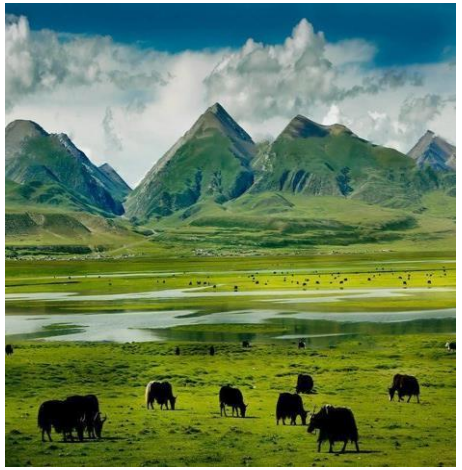
International Cooperation Opportunities:

Variety Improvement, Trade Diversification

Summary and Outlook

- China's Alfalfa Industry: Achievements & Challenges
- Balancing Food Security and Agricultural Modernization
- Significance for Global Alfalfa Industry Stakeholders



Thanks !

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