

ALFALFA INSIGHTS

VIRENXIA'S NEWSLETTER ON ALFALFA, THE QUEEN OF FORAGES

ALFALFA ACROSS THE GLOBE

GLOBAL MARKET TRENDS IN MARCH 2018

Alfalfa is the most cultivated forage legume in the world. Worldwide production was around 436 million tons in 2006. In 2009, Alfalfa was grown on approximately 30 million hectares worldwide; of this North America produced 41% (11.9 million ha), Europe produced 25% (7.12 million ha), South America produced 23% (7 million ha), Asia produced 8% (2.23 million ha), and Africa and Oceania produced the remainder. The US was the largest Alfalfa producer in the world by area in 2009, with 9 million hectares, but considerable production area is found in Argentina (6.9 million ha), Canada (2 million ha), Russia (1.8 million ha), Italy (1.3 million ha), and China (1.3 million ha).

This issue of Alfalfa Insights analyses the Alfalfa production, export trends and Alfalfa's expanding area across the globe.



U.S. FORAGE EXPORTS - 2018



Retaliatory tariffs are hampering U.S. forage sales to China.

In late 2018, the U.S. forage export industry remains on pace for over \$1 billion in sales, despite serious constraints. Until recently, China was a strong and growing market for U.S. alfalfa, approaching \$400 million in annual sales. Over the past five years, sales to China grew 183%, driven by dairies seeking high-quality feed to improve yield, and to supply 1.3 billion consumers with domestically-made milk, cheese and ice cream.

That market is in danger now. Retaliatory tariffs announced in July 2018 are hampering U.S. forage sales to China. Exporters report that forage sales are down 20-40%, with many Chinese customers “walking” from existing orders. Across China, dairies have been rationing U.S. alfalfa, mixing available inventories with lower-quality domestic forage and other imports. Necessity is driving these dairies to make short-term adjustments, but as these changes take hold there’s a risk that these new systems will solidify, impacting U.S. exports for years to come.

Unlike growers and seed suppliers, forage exporters are dependent on global markets. By the nature of their business models, they have invested in machinery, inventory and customer networks that are geared for overseas sales; selling domestically is not an option. By virtue of its size and market share, China has helped develop the infrastructure to source, inspect, store and sell product in all markets around the world. The loss of the Chinese market may have a destabilizing effect on the entire industry.

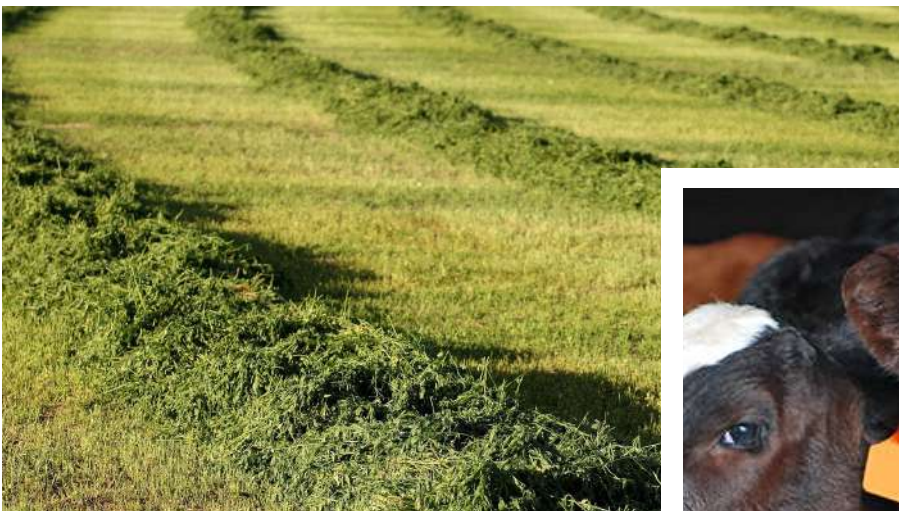
Forage shippers look to traditional markets to maintain sales. Japan and Korea remain dependable, representing half of all forage exports. The USDA characterizes as “other” all non-alfalfa forage, including Timothy, Sudan Grass, Rye Grass, Fescue and others. On pace to exceed \$400 million in sales this year, the “other” category is dominated by Japan (54% of the total) and Korea (29%). Given the importance of the Japanese market, growers are asked to pay particular attention to the chemical Clopyralid, a common herbicide featured in products like Stinger and Curtail. Clopyralid can pass through a cow’s digestive system and ultimately impact vegetable composting. Although not prohibited in Japan, this chemical is being closely monitored by industry and government, and growers are asked to strictly follow label instructions.

Forage exports to Saudi Arabia have increased significantly. For 2018, KSA is expected to represent 20% of all alfalfa sales, an increase from 1% in 2014. More than matching gains to Saudi Arabia, sales to the United Arab Emirates have fallen, demonstrating changing dynamics in the Middle East as customers adjust inventories and seek supply from other countries.

**Sales to the
United Arab Emirates
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seek supply from
other countries.**

Forage suppliers are based on every continent today, improving quality standards that compete well with U.S. product. Among other countries, Spain has been increasing sales of alfalfa to China, which recently granted market access to Bulgaria as it widens its supply base. By producing high-quality forage, the U.S. has earned its position on the world's premier supplier, but in today's marketplace it is no longer alone. While high standards of safety and quality cannot be compromised, U.S. exporters need to develop new markets and more than ever rely on transportation system that is efficient and reliable.

India presents a long-term but challenging opportunity for U.S. forage exporters. As noted by Mitsui & Co. Global Strategic Studies Institute, "At 150 million tons (2016), India's milk consumption is the highest in the world and accounts for 26% of world consumption." Despite its overall size, the Indian market is characterized by small farms and weak infrastructure. The University of Delhi sums up the need for quality forage: "India has approximately 600 million livestock, which requires almost 1000 million tons of hay or green fodder to sustain present level of productivity. However, nearly 230 million tons of green fodder is available, and the livestock has to struggle with the devastating scarcity of approximately 800 million tons of green fodder."

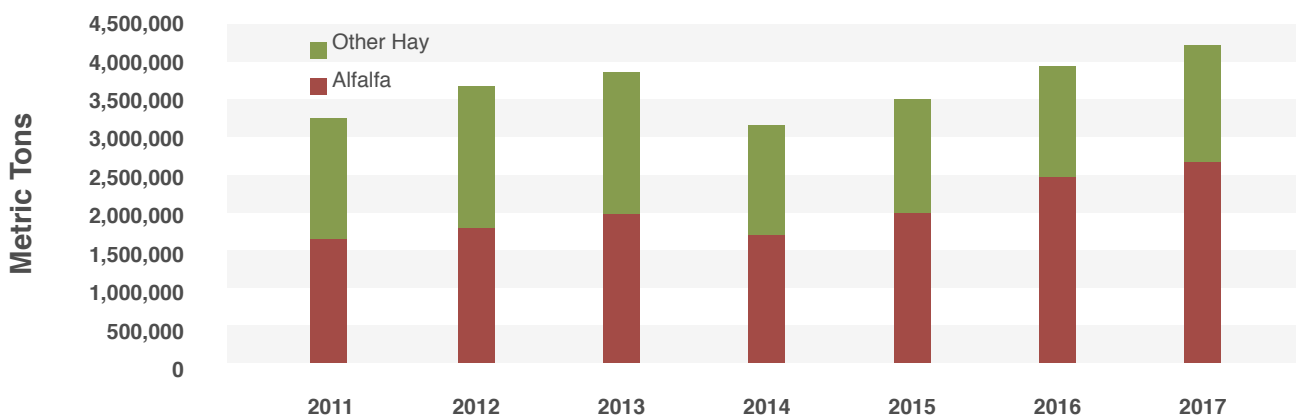


*Source: John Szczepanski, Director,
U.S. Forage Export Council, National Hay Association*

U.S. HAY EXPORTS HIT RECORD HIGH IN 2017

The USDA Foreign Agricultural Service (FAS) has posted U.S. hay export totals for 2017 and the news on the export front continues to be largely positive. Total exports of alfalfa and other hay hit 4.2 million metric tons (MT). That exceeds 2016's exports by 6.3 percent and marks the first time that the total of alfalfa and other hay exports have exceeded 4 million MT, based on USDA-FAS data.

U.S. Hay Exports, 2011-2017 (Source: USDA-FAS)



Alfalfa

Alfalfa hay exports in 2017 totaled a record 2.7 million MT, up 7.2 percent from 2016 and the third consecutive year of alfalfa export year-over-year growth.

When speaking of alfalfa hay exports, China remains the 800-pound gorilla in the room. They purchased 1.17 million MT of U.S. Alfalfa during 2017, more than double the amount bought by Japan, the second-place importer of U.S. alfalfa (see graph on the next page).

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Exports to China were 6.8% more than 2016. This percentage bump was less than during the previous two years, perhaps indicating that we're moving toward the end of the huge growth in that export market. During the past five years, alfalfa hay exports to China have risen a whopping 226%.

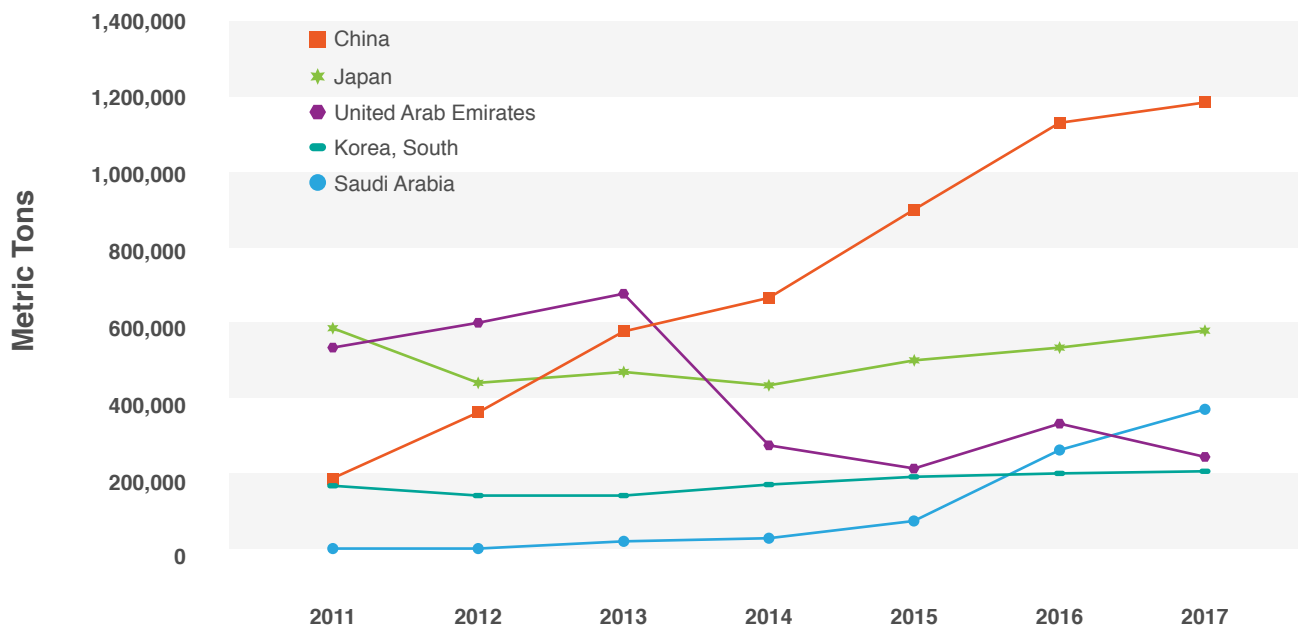
Japan's alfalfa hay import total of 0.56 million MT was 14.6% higher than 2016 and was that country's largest amount of U.S. alfalfa purchased since 2011. The past year marked the third consecutive year of higher U.S. alfalfa exports to Japan.

Vaulting into third place as an export partner for U.S. alfalfa was Saudi Arabia. The Saudi Arabia imported 0.36 million MT in 2017, 40% more than the previous year's total. As recently as 2014, Saudi Arabia was essentially a nonplayer in the export market. The reasons for their meteoric rise as an alfalfa buyer relates to that country's well-documented phase out of domestic alfalfa production to conserve water while still sustaining their domestic dairy industry.

Of the top five leading alfalfa hay-trade partners in 2017, United Arab Emirates (UAE) was the only one that imported less U.S. alfalfa than in 2016. Their import total of 0.25 million MT was down 22% from the previous year. In 2013, the UAE had imported 0.66 million MT, which is their historical high-water mark.

South Korea imported 3.2% more U.S. alfalfa in 2017 than 2016. Exports to the current Winter Olympics host country have remained rather stable in recent years, nearing 0.2 million MT.

U.S. Alfalfa Exports, 2011-2017 (Source: USDA-FAS)



Total U.S. hay exports continued to rise in 2017, eclipsing 4 million MT. Hay exports still remain a small portion of total U.S. hay production. Based on USDA production data for 2017, only 3.5% of all hay produced enters the export market and about 5.3% of U.S. alfalfa does the same.

In the seven Western states of Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington, hay exports play a much larger role in impacting markets and prices. According to Dan Putnam, University of California forage extension specialist, hay exports make up about 51% of the grass hay production and 15% of the total alfalfa production in those Western states.

Source: The USDA Foreign Agricultural Service, USA

GROWING AREA OF ALFALFA IN SUDAN

The production of alfalfa was 1,424,205.5 metric ton in 2017 and is expected to register a CAGR of 5.5% during the forecast period (2018-2023). Currently, there are no imports of alfalfa into the country. However, the country imports the seeds for cultivating alfalfa from countries, such as Australia, United States, and UAE.

There are substantial problems in getting hay from the field to the port.

There are a lot of transport-related challenges that are faced by importing countries. Several GCC countries and companies own high quality agricultural lands in Sudan, but there are substantial problems in getting hay from the field to the port. Pelleting transforms alfalfa into a form that is more economical to transport from areas of surplus hay production to areas where there is a deficit of feed. The opportunity may exist for marketing alfalfa production, in the form of pellets, to states with increasing numbers of dairy and slaughter cattle.

Total Alfalfa Production in Sudan

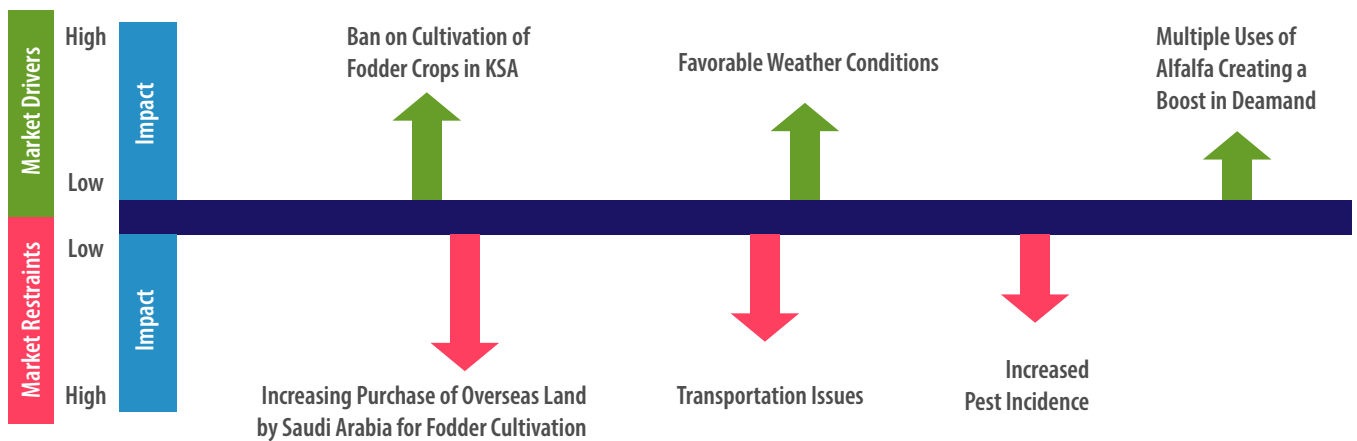
The production of alfalfa in Sudan is showcasing a consistently increasing trend since 2012. One of the main reasons being the increasing investments in the country by various foreign firms, especially from the GCC countries. Khartoum is one of the major state in Sudan, with a share of more than 50% of total forage crops cultivation in the country. UAE based companies, such as Amtaar Investment and GLB, started investing in Sudanese land toward forage production from 2011, and the companies are widely adopting center pivots toward increasing productivity through improvement in water usage efficiency. The yield in terms of alfalfa fodder greens production in Sudan ranges from 7.2 – 11.1 metric ton per hectare and the average dry matter yield is around 1.8 metric ton per hectare.



The green mass yield in Sudan ranges from 7.2 - 11.1 MT per hectare.

Ban on Cultivation of Fodder Crops in Saudi Arabia

The Saudi government announced to ban cultivation of green fodder i.e., forage crops and replace them with imported sources by 2019. As a result of the decision to stop issuing licenses to cultivate green fodder, the number of fodder farmers have already declined 12.6% yearly in Saudi Arabia, therefore, the country is mainly importing alfalfa and other fodder crops from Sudan and despite the growing prices of imported fodder, it rests as the best solution to warrant water security for the Kingdom.



Source: Mordor Intelligence, Hyderabad, India

CHINA'S PLANS TO EXPAND ALFALFA PRODUCTION

China's objective is to produce 5.4 million metric tons of alfalfa hay by 2020.

With a growing need for alfalfa, the People's Republic of China aims to significantly ramp up domestic production, according to a recent GAIN Report published by USDA's Foreign Agricultural Service.

China's Ministry of Agriculture issued its "National Alfalfa Industry Development Plan (2016-2020)" that sets a goal for the country to produce 5.4 million metric tons (MT) of alfalfa hay by 2020. In 2015, China's annual production was only about 1 million tons.

Recently, the Chinese have shifted agricultural policies to encourage more plantings of hay and oilseed crops at the expense of grains such as corn. There are four major planting regions that were noted in China's alfalfa development plan. They are:

- Northeast China and Inner Mongolia: The focus of this region will be on having hay and grain planted in a rotation, and with hay used for local cattle and sheep feeding.
- Northwest China: As this is the traditional hay planting area, the focus will be to strengthen commercial hay processing and production.
- North China: The focus in North China will be to develop areas of commercial alfalfa and oilseed production and reduce the amount of grain production.
- South China: The focus in South China is to develop alfalfa silage.

The development plan also identified four key tasks or goals to boost domestic production:

- Develop new and improved alfalfa varieties.
- Enlarge the production base to 988,000 acres for high-quality alfalfa hay.
- Improve mechanization for hay planting and harvesting.
- Build 500 dairy/hay integrated farms.

Currently, the Chinese government is providing \$44 million annually to support the growth of the domestic alfalfa industry.

The need for additional alfalfa in China is largely being driven by a growing dairy industry. Though there are 15 million dairy cows in the country, only 1.5 million produce 18,000 pounds of milk or more annually. China's goal is to grow the number of high-producing dairy cows, which will prompt the need for more high-quality alfalfa hay.

USDA's *GAIN* Report notes that industry analysts estimate China's dairy feed sector needs 5 million tons of high-quality hay and 10 to 20 tons of lesser quality hay annually. The need for high-quality hay may bump to 8 million tons by 2020 if the country's dairy industry grows as planned.

\$44 million are provided annually by the government to support the growth of the domestic alfalfa industry.

Impact on U.S. exports



Shipments to China account for 45% of all U.S. alfalfa hay exports. Of the total amount of all hay types imported by China, 78% comes from the United States, so how China moves forward will largely dictate the state of U.S. alfalfa hay exports.

In 2016, the U.S. exported 1.29 million MT of alfalfa hay to China, up 23% from 2015. Alfalfa hay exports to China during the first four months in 2017 are up another 19% from 2016.

Even with the expected growth in the number of dairy cows and alfalfa acres in China, the projected need of 8 million MT of high-quality alfalfa hay by 2020 should still leave plenty of room for U.S. product. This is especially true in the short term. If dairy growth outpaces alfalfa production in China, the need for high-quality U.S. alfalfa may actually rise.

Source: GAIN Report - The USDA Foreign Agricultural Service, USA

ALFALFA HAY MARKET INSIGHTS

Demand from Japan boosts export sales



U.S. alfalfa hay exports improved in November, 2018 despite continued downward pressure from China. Overall sales totaled 212,429 metric tons (MT), up nearly 15,000 MT from October and the eighth month sales topped 200,000 MT in 2018.

Japan was the top destination for U.S. alfalfa hay in November at 56,377 MT, the highest volume of alfalfa hay shipped there in at least five years. At 47,904 metric tons, alfalfa exports to China were up slightly from October but still the second-lowest monthly total since January 2016.

Shipments to the United Arab Emirates hit 43,850 MT, the highest total since December 2013. Sales to Saudi Arabia were also up compared to October.

Year-to-date alfalfa hay exports now total about 2.3 million MT, behind last year's record-high pace, but ahead of 2016.

November 2018 exports of other hay also showed some improvement, with volumes the highest since November 2017. Pacing the increased sales were shipments to Japan at 67,249 MT, the highest since April 2017. At 48,772 MT, sales to South Korea were the highest in 12 months.

Despite the resurgence in November, exports of other hay through 11 months of the year are still the smallest for that period in more than a decade.

Catching up on price reports

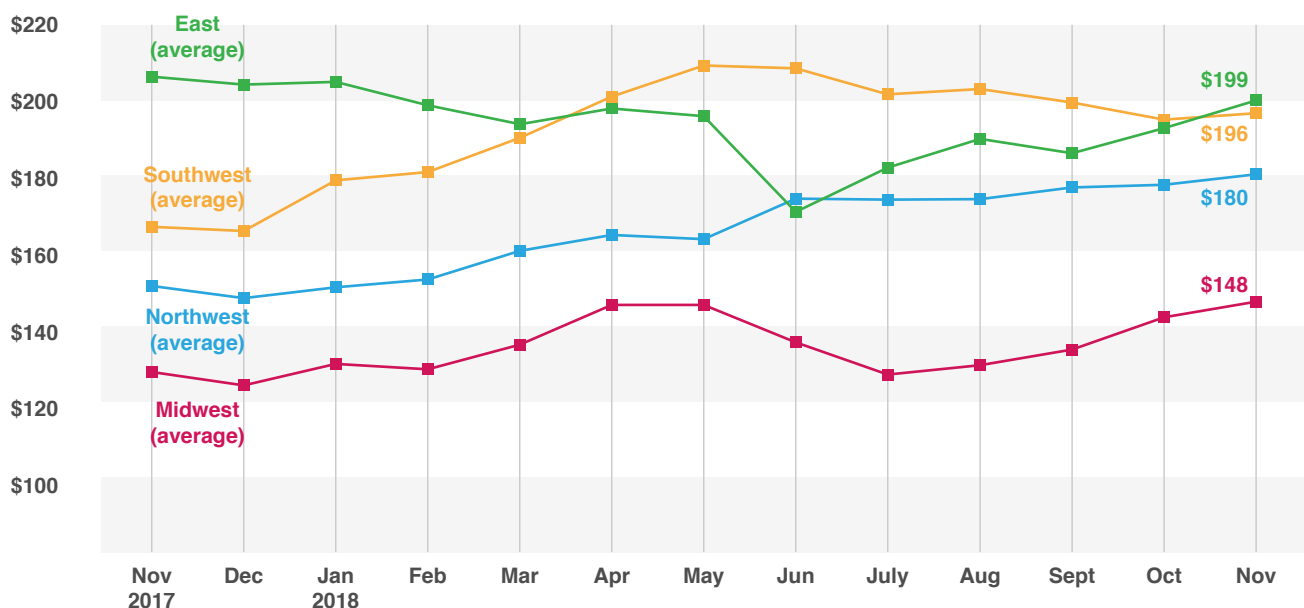
At \$175 per ton in November, 2018 the national average alfalfa hay price was down \$3 from October and the lowest since March 2018. Although the national average was lower, regional averages for states highlighted here were all slightly higher.

High monthly alfalfa hay prices were in New Mexico (\$250) and Colorado (\$225); the low price for the month, at \$92 per ton, was in North Dakota.

Organic Hay Prices

According to the USDA's Organic Hay report, released Jan. 30, free on board (f.o.b.) farm gate prices paid for Premium alfalfa small square bales averaged \$250 per ton.

Fig. 3: Alfalfa hay market trends (dollars per ton)



The global winds are changing

Government policies on both sides of the globe have altered the U.S. hay export picture. But despite the substantial decline in alfalfa hay shipments to China, September exports were the highest since June, totaling more than 229,250 metric tons (MT).

Impacted by tariffs, September shipments to China totaled 53,032 MT, the smallest volume since January 2016. On an annual basis, China has been the leading U.S. alfalfa hay market since 2014, but maintaining markets there is not getting any easier, said Christy Mastin with Eckenberg Farms Inc., Mattawa, Washington. A somewhat stronger Chinese dairy industry has boosted hay demand, but the window of opportunity is small. Any shipments must depart the U.S. in December to reach destinations before the Chinese New Year, Feb. 5, 2019. There are also fears that escalating trade war rhetoric could result in additional tariffs, cancelled orders and demands for price reductions.

Competitors for the Chinese hay market have their own challenges, Mastin said. Canada and Spain do not have adequate alfalfa quantities to supply all of that market, and the drought in Australia has diminished oaten and wheat hay supplies for export.

On the flip side, Saudi Arabia continues its phaseout of water use for domestic forage production, a program initiated in 2016. To fulfill its growing forage needs, Saudi Arabia has been aggressive in buying hay and hay-producing land in the southwest U.S. As a result, Saudi Arabia imported a record 62,341 MT of U.S. alfalfa hay in September, surpassing China as the leading market for U.S. alfalfa for the first time ever.

In addition, the United Arab Emirates imported 42,160 MT of alfalfa hay during the month, its highest total since December 2013. Despite those larger shipments to the Middle East, however, year-to-date U.S. alfalfa exports remained behind the record pace set in 2017.



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Source: Dave Natzke, Editor, Progressive Forage

Kazakhstan eyes to export Alfalfa hay to China



Kazakhstan plans to export more than 100,000 tons of alfalfa hay per year to China, the Kazakh media reported in 2018.

The appropriate protocol was signed between the General Administration of Customs of China and the Ministry of Agriculture of Kazakhstan.

“The main phytosanitary requirements were stipulated in the protocol: for today, the requirements are absence of quarantine objects, pests and diseases,” said Mars Almabek, deputy

chairman of the State Inspection Committee. “This list is also stipulated in the protocol and consists of 17 quarantine objects. The ways of haulage in bales and rolls have been defined, while alfalfa hay should be transported in containers, and this was agreed upon with the Chinese side. One of the requirements is the absence of insects and remains of vegetation.”

Similar agreements for the transportation of alfalfa hay are also being conducted with other interested countries, he added.

Source: Trend news agency, Baku, Azerbaijan

Spanish Alfalfa exports to China continue to rise in 2018

An increase of 173% in quantity and 199% in value compared to the same period last year.

According to the statistics by Spanish Custom, in January - September 2018, Spain exported to China 155,000 MT worth EUR 31.4 million, which represents an increase of 173% in quantity and 199% in value compared to the same period last year. Because of the rising demand and good export growth performance, the planted area to alfalfa in Spain is expected to increase by 15% next year.

The extraordinary growth of the Spanish alfalfa consumption in China is partially driven by the promotional campaign implemented by Eibens Consulting with the support of AEFA - Spanish Association of Manufacturers of Dehydrated Alfalfa and ICEX - the Spanish Institute for Foreign Trade. We are also working to improve the dehydrated alfalfa perception among Chinese consumers and help them understand its differences from alfalfa hay and learn how to use it correctly. Although this year campaign is coming to an end, we will continue informing about the sector performance and posting upcoming events and activities for next year's campaign.

Source: EIBENS Consulting, Madrid

Alfalfa Hay prices in USA at a glance (March 5, 2019)

Alfalfa hay prices reported to USDA from selected states.			
Location	Forage Quality Grade		
	Premium+	Good	Fair
-----\$ per ton-----			
California	200-279	170-215(d)	140-195(d)
Colorado	280	180-235	165-170(d)
Idaho	175	160	N.A.
Iowa	160-400	135-158	125-132
Kansas	170-300	160-175	100-165
Minnesota	195-230	140-200	135-195
Missouri	175-250	120-160	100-120
Montana	110-250	110-135	85-140
Nebraska	135-180	100-180	100-125
New Mexico	200-300	180-250(d)	N.A.
Oklahoma	200-230	180-230(d)	140-170
Oregon	175-200	140-170	N.A.
Pennsylvania	280-450	225-300	180-215
South Dakota	130-235	110-150	107-130
Texas	270-360(d)	220-250	210-220
Utah	130-200	80-145	60-90
Washington	220-285	200-210	N.A.
Wisconsin	255-280	185-245	N.A.
Wyoming	200-215	130-165	140

Source: USDA Hay market prices

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