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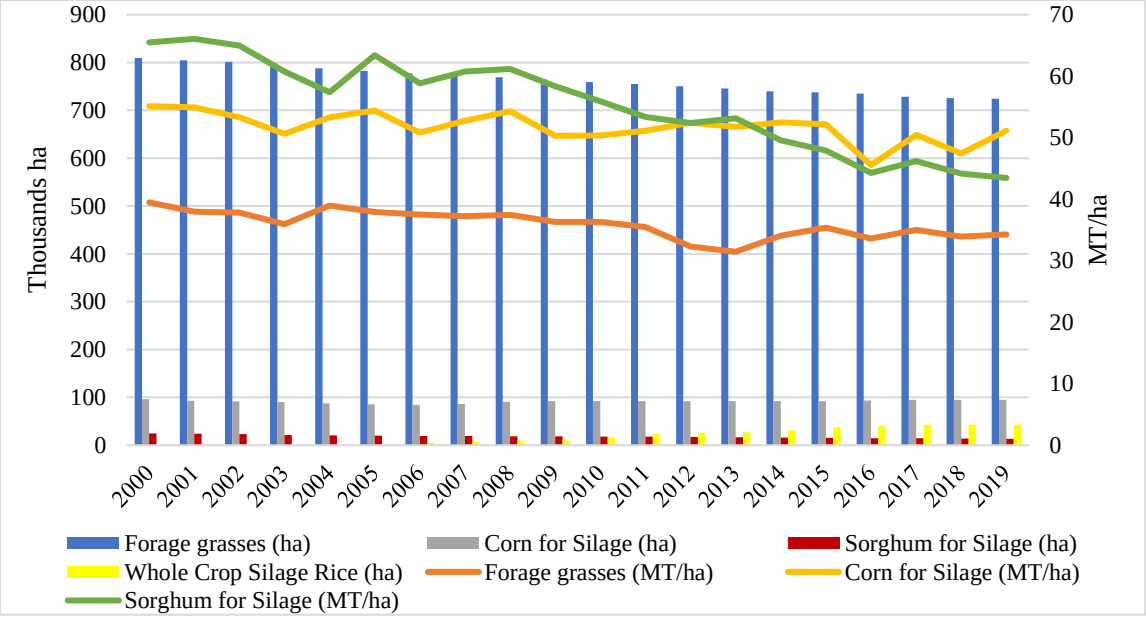
Report Highlights:

In 2019, Japanese production of forage crops accounted for 77 percent of demand. Japan imports approximately 2.5 million tons of hay and straw annually to supplement domestic production, which is constrained by labor shortages and suitable climate conditions. The United States is the leading supplier of hay and straw products to Japan and accounted for approximately 63 percent of imports in 2019. Japanese demand for hay and straw imports is forecast to remain stable.

Production

In 2019, the Ministry of Agriculture, Forestry, and Fisheries (MAFF) estimates domestic production of forage products accounted for 77 percent of demand in Japan. In contrast, Japan produced 12 percent of feed concentrates, largely grains and oilseeds, consumed domestically in 2019. Forage grasses and corn, rice, and sorghum silages are the main forage crops produced in Japan (Chart 1).

Chart 1. Planted Areas and Yields of Major Forage Crops



Source: MAFF (No yield data available for Whole Crop Silage Rice)

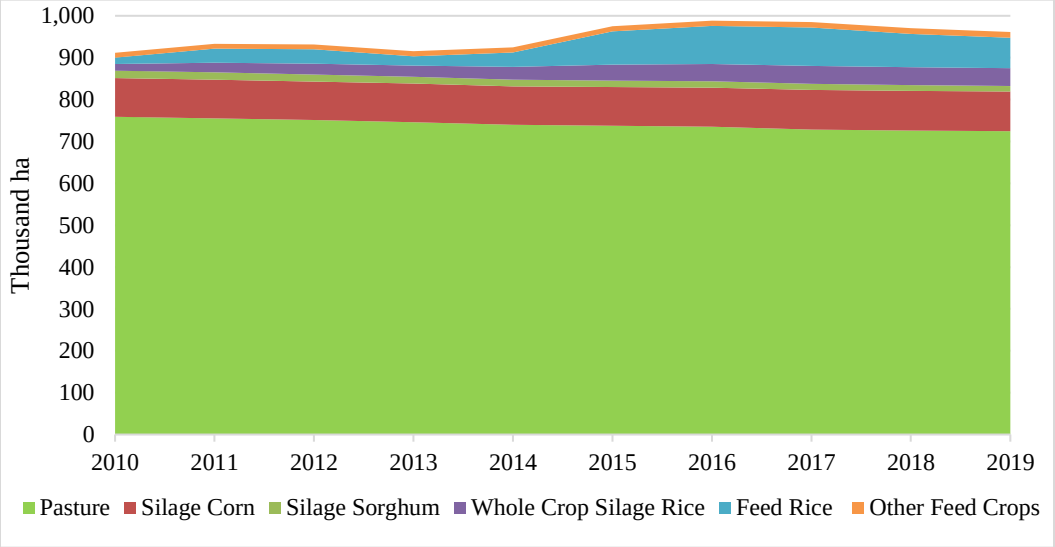
MAFF has a goal to increase feed self-sufficiency from 26 to 34 percent by 2030 by increasing forage self-sufficiency from 77 to 100 percent and increasing self-sufficiency of concentrates from 12 to 15 percent. To facilitate a shift in production to feed, MAFF provides support payments to producers who plant feed crops, both forage and concentrates, in paddy fields. From 2010 to 2019, harvested areas of feed crops increased 5.5 percent overall, including increases of whole crop silage rice and feed rice by 166 percent and 387 percent respectively (Chart 2). For more on the support payments, see JA2020-0058. Despite an increase in forage production in paddy fields, the total planted areas of forage crops decreased 1.2 percent over the last decade. The decline in forage production has largely been of grasses, which account for approximately 80 percent of Japan's forage production. These losses have been somewhat offset by a 2.8 percent increase in corn for silage production on a planted area basis.

Production of nutrient rich, high yield forage grasses is a challenge for many regions in Japan. Producers have difficulty establishing perennial warm season grasses as they do not survive through the rainy and hot summers. Therefore, cool season grasses such as orchard grass, Italian ryegrass, perennial ryegrass, and tall fescue are cultivated throughout Japan. Hokkaido, in northern Japan, accounts for 70 percent of forage production on a planted area basis, where cool season grasses and legumes such as red clover and alfalfa are cultivated. As average annual temperatures increase, the areas where cool season grasses are

adopted has moved north. Italian ryegrass, which is moisture resistant and adaptable to a range of climates, is widely cultivated in paddy fields in the winter after harvesting rice and silage crops.

Increasing livestock farm size, labor shortages, and the cost of agricultural machinery are primary drivers for the decrease in forage production. Consolidation and specialization within the livestock industry have driven producers to grow less of their own feed and to rely more on contracted forage production. Livestock operation growth has outpaced the ability for individual producers to harvest enough of their own forage with the land, labor, and equipment typically at their disposal. The number of forage production contractors and total mixed ration (TMR) centers are on the rise throughout Japan.[1] Forage producers see contract forage production as critical to maintaining and increasing forage production in Japan.

Chart 2. Planted Area of Major Feed Crops



Source: MAFF

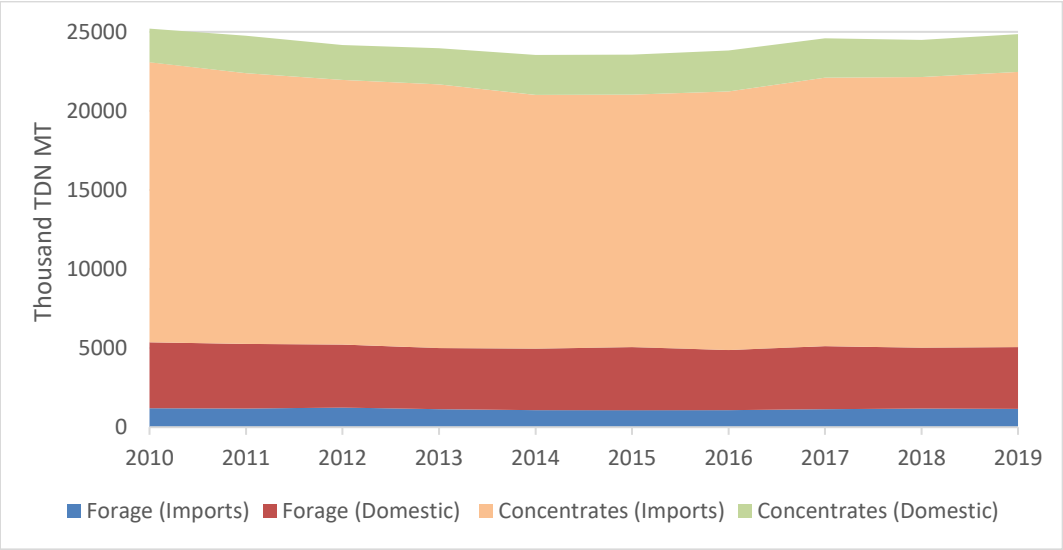
Consumption

Total feed demand was 24.9 million Total Digestible Nutrients (TDN) in 2019, of which forage accounted for 20 percent and concentrates accounted for 80 percent. For more on feed concentrate consumption in Japan see JA2020-0058. On a TDN basis, total feed consumption declined a 1.4 percent over the last decade (Chart 3), with consumption of forage and concentrates decreasing 5.8 percent and 0.2 percent respectively (Annex-Table 2). Forage demand in Japan closely tracks with beef and dairy cattle inventories (Annex- Table 3) as cattle consume essentially all forage in Japan (Annex- Table 4). Forage demand has rebounded in recent years as increased government support payments for dairy and wagyu production have driven a rebound in cattle inventories, for more see JA2020-0064 and JA2020-

[1] The number of forage production contractors increased from 581 in 2013 to 858 in 2019. The number of TMR centers increased from 110 in 2013 to 156 in 2019.

0090. Continued growth of dairies in Hokkaido will increase the amount of forage consumed and further outpace forage production in the region.

Chart 3. Total Feed Consumption

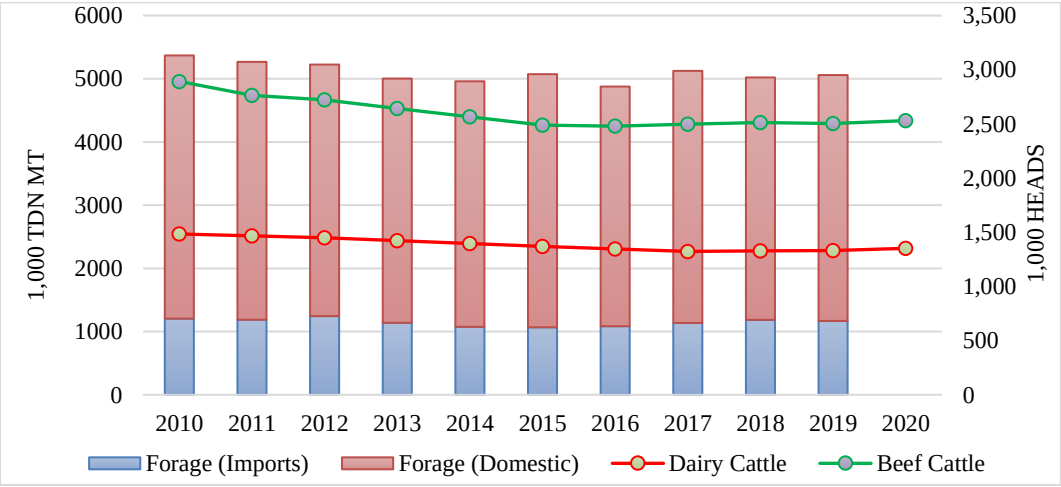


Source: MAFF

Trade

Demand for imported forage is forecast to remain stable over the short-term as little fluctuation is forecast in domestic forage and livestock production.

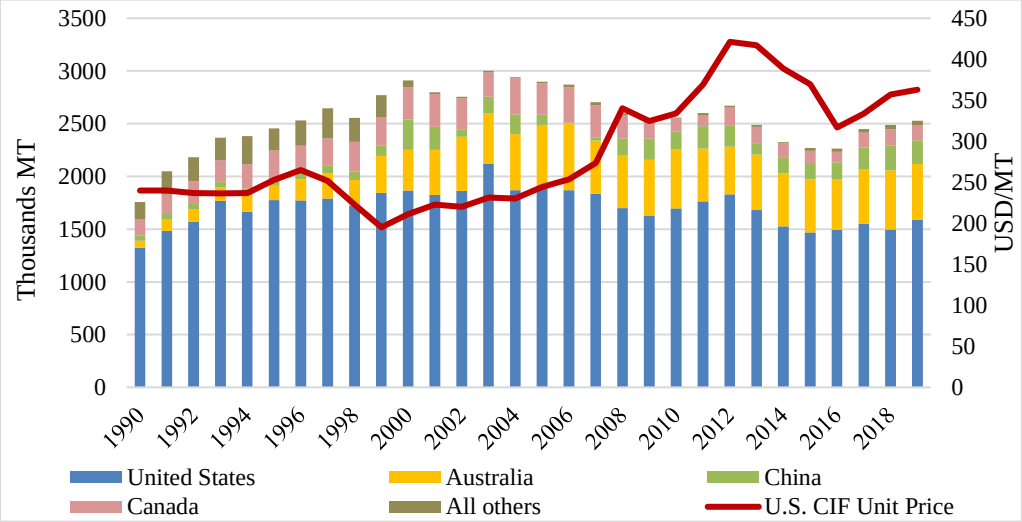
Chart 4. Forage and Cattle Inventories



Source: MAFF (Cattle inventories are updated on February 1 of each year.)

Domestic forage is price competitive against imports (Annex- Table 5), but Japan must import hay and straw to supplement domestic production.[2] The United States, Australia, China, and Canada are the primary hay and straw suppliers to Japan, accounting for 98 percent of Japan's hay and straw imports in 2019. The United States accounted for 63 percent of Japan's hay and straw imports, followed by Australia for 21 percent, China for 9 percent, and Canada for 5 percent. The United States is the leading supplier of alfalfa hay, klein grass, sudangrass, bermudagrass, rye grass and fescue grass. Australia is the primary supplier of oats hay, and China is the sole supplier of rice straw. The United States and Canada are the leading suppliers of timothy hay. The U.S. market share of Japan's hay and straw market has declined from 75.5 percent in 1990 to 63 percent in 2019 due to increased prices for U.S. hay and straw as other foreign markets have developed for U.S. exports and driven up demand (Chart 5).

Chart 5. Hay and Straw Imports and U.S. CIF Unit Price

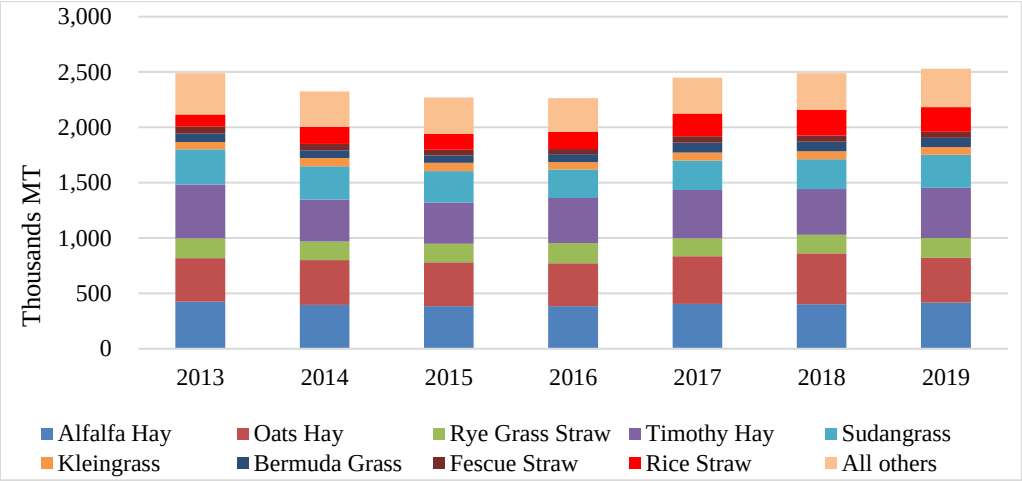


Source: Trade Data Monitor

Of the approximately 2.5 million tons of hay and straw imports, alfalfa hay, timothy hay, and oats hay each account for 20 percent (400,000 tons each), followed by sudangrass, rice straw, bermudagrass, kleingrass, and fescue grass (Chart 6).

[2] For the purposes of this report, hay and straw includes HS Codes HS121490 and HS121300.

Chart 6. Hay and Straw Imports by Species



Source: MAFF Plant Protection Station, Trade Data Monitor

Rice straw is an important ingredient for beef cattle feed rations in Japan and approximately 200,000 tons are imported annually to supplement domestic production. China is currently the only country that Japan imports rice straw from and the United States does not have market access, for more see JA2020-0078. Ryegrass, fescue, wheat, and barley straws are fed to beef cattle as a substitute for rice straw when imports from China are disrupted by periodic animal disease outbreaks.

Roughly 50 small and medium sized trading firms that specialize in forage imports and distribution have mostly replaced the large Japanese trading firms that used to dominate the forage trade in Japan. The smaller firms are able to sell directly to farms, streamlining the supply chain and enabling exporters to meet the specific needs of livestock producers.

In addition to hay and straw imports, Japan also imports approximately 80,000 tons of alfalfa meal and pellets. Alfalfa meal and pellets are used in compound feed production and Canada is the major supplier due to price competitiveness. Japan also imports approximately 170,000 tons of dry and wet corn silage.

Biosecurity Regulations for Imported Forage Products

The Hessian Fly is designated as a quarantine pest by Japan and prohibits the import of its host plants from countries where Hessian fly exists, incuding the United States, unless phytosanitary standards are met. Japan's Enforcement Regulations of the Plant Protection Act designated host plants of the Hessian Fly as stems and leaves of 1) the genus *Hordeum*, 2) the genus *Triticum*, 3) the genus *Secale*, and 4) the genus *Agropyron*, for details see MAFF's website. These host plants are often comingled with U.S. hay shipments, including baled alfalfa hay, orchard grass, sudangrass, and timothy hay. As a result, MAFF established phytosanitary standards (Japanese only) for U.S. hay shipments to be fumigated with hydrogen phosphine in a container at places designated by the U.S. National Plant Protection Organization seven days prior to export to Japan.

Phytosanitary Standards for U.S. Hay Exports to Japan:

- Standard bales are fumigated with 2.1grams of hydrogen phosphine per cubic meter in a container for maintaining the temperature in a bale at 10 degree Celsius or higher.
- Compressed bales are fumigated with 2.1grams of hydrogen phosphine per cubic meter in a container for maintaining the temperature in a bale at 20 degree Celsius or higher.
- Large bales are fumigated with 2.16 grams of hydrogen phosphine per cubic meter in a container for maintaining the temperature in a bale at 20 degree Celsius or higher.

When U.S. hay shipments are fumigated with the above treatment and are accompanied by phytosanitary certificates with attestations of the completion of the treatment, shipments will not be rejected by import inspections even if the host plants of Hessian fly are found in the shipments.

For animal biosecurity, Japan prohibits hay and straw imports from countries with Foot and Mouth Disease.

Annex

Table 1. Planted Areas for Feed Crops in Japan (ha)

	Forage Grasses		Corn for Silage		Sorghum for Silage		Whole Crop Silage Rice	Rice for Straw, Green Rice	Forage Total	Feed Rice	All others	Feed Crop Total
	Paddy Fields	Dry Fields	Paddy Fields	Dry Fields	Paddy Fields	Dry fields	Paddy Fields			Paddy Fields		
2006	73,700	703,300	10,500	73,900	9,140	9,950	5,182		885,672	104	12,324	898,100
2007	73,200	700,100	10,200	75,900	8,890	10,100	6339		884,729	292	12,179	897,200
2008	73,600	695,400	10,200	80,500	8,650	10,200	9,089	1,330	888,969	1,410	11,121	901,500
2009	73,300	690,800	10,000	82,300	8,510	10,200	10,203	956	886,269	4,123	11,108	901,500
2010	72,700	686,500	9,550	82,600	8,360	9,560	15,939	508	885,717	14,883	10,800	911,400
2011	73,300	681,800	8,980	83,300	8,310	9,310	23,086	501	888,587	33,955	10,458	933,000
2012	75,300	675,500	9,090	82,900	8,010	8,960	25,672	553	885,985	34,525	11,090	931,600
2013	75,300	670,200	8,850	83,700	7,670	8,850	26,600	457	881,627	21,802	11,671	915,100
2014	75,800	663,800	8,580	83,300	7,320	8,590	30,929	527	878,846	33,881	11,573	924,300
2015	77,000	660,700	8,430	84,000	6,950	8,280	38,226	283	883,869	79,766	11,565	975,200
2016	79,100	656,100	8,670	84,800	6,790	7,970	41,366	207	885,003	91,169	12,228	988,400
2017	79,100	649,200	8,690	86,100	6,650	7,770	42,893	252	880,655	91,510	12,935	985,100
2018	79,000	647,000	8,660	85,900	6,370	7,600	42,545	96	877,171	79,535	13,594	970,300
2019	724,400		94,700		13,300		42,450	114	874,964	72,509	14,127	961,600
2019/2010	-4.6%		2.8%		-25.8%		166.3%	-77.6%	-1.2%	387.2%	30.8%	5.5%

Source: MAFF

Table 2. Feed Consumption in Japan (Thousands TDN tons)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2019 / 2010
Forage (Imports)	1205	1188	1245	1139	1075	1068	1085	1136	1186	1168	-3.1%
Forage (Domestic)	4164	4080	3980	3864	3885	4005	3792	3989	3835	3891	-6.6%
Forage	5369	5268	5225	5003	4960	5073	4877	5125	5021	5059	-5.8%
Concentrates (Imports)	17713	17127	16740	16671	16053	15960	16351	16971	17115	17410	-1.7%
Concentrates (Domestic	2122	2358	2206	2281	2536	2536	2593	2497	2362	2389	12.6%
Concentrates	19835	19485	18946	18952	18589	18496	18944	19468	19477	19799	-0.2%
Total	25204	24753	24171	23955	23549	23569	23821	24593	24498	24858	-1.4%

Source: MAFF

Table 3. Livestock Inventories in Japan (Thousands heads)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2020/2010
Dairy Cattle	1,484	1,467	1,449	1,423	1,395	1,371	1,345	1,323	1,328	1,332	1,352	-9.8%
Beef Cattle	2,892	2,763	2,723	2,642	2,567	2,489	2,479	2,499	2,514	2,503	2,529	-14.4%
Swine	-	9,768	9,735	9,685	9,537	-	9,313	9,346	9,189	9,156	-	NA
Layers	-	175,917	174,949	172,238	172,649	-	173,349	176,366	181,950	182,368	-	NA
Broilers	-	-	-	131,624	135,747	-	134,395	134,923	138,776	138,228	-	NA

Source: MAFF

Table 4. Feed Composition (TDN base) in 2018

	Forage	Concentrates
Dairy Cattle in Hokkaido	52.2%	47.8%
Dairy Cattle in other Prefectures	38.8%	61.2%
Beef Breeding Cows	58.1%	41.9%
Beef Cattle on Feed	10.9%	89.1%
Dairy Breed Steer on Feed	8.3%	91.7%
Crossbred Cattle on Feed	10.4%	89.6%
Swine		100%
Poultry		100%

Source: MAFF

Table 5. Domestic and Imported Forage Prices (Yen/TDN kg)

		2017	2018
Production Costs	Domestic forage grasses	73	75
	Compound Feed	80	84
CIF Prices	Imported Hay Cube	117	121
	Imported Hay and Straw	103	102
	Imported Rice Straw	114	108
Exchange Rate (JPY/USD)		112	110

Source: MAFF

Table 6. Japanese Imports of Major Hay and Straw Products (MT)

	2013	2014	2015	2016	2017	2018	2019
Alfalfa Hay							
The United Stat	421,675	391,003	372,972	378,435	399,307	394,864	413,840
Australia	1,118	866	1,979	981	388	228	191
Canada	808	5,084	6,349	4,028	3,824	5,316	2,238
Spain	73	319	2,512	878	616	316	645
All others	0	34	677	0	49	250	146
Total	423,673	397,306	384,488	384,322	404,184	400,974	417,060
Oats Hay							
Australia	386,149	399,937	393,307	385,414	428,173	458,921	403,198
The United Stat	7,760	3,783	1,591	1,257	2,067	1,622	888
All others	709	347	249	131	490	189	596
Total	394,618	404,067	395,147	386,802	430,730	460,732	404,682
Timothy Hay							
The United Stat	368,688	282,715	279,524	328,708	336,183	297,794	349,543
Canada	118,482	96,477	92,378	78,525	101,618	116,229	103,389
All others	7	0	0	0	0	0	0
Total	487,177	379,192	371,902	407,232	437,800	414,022	452,932
Sudangrass							
The United Stat	309,090	300,134	282,782	256,672	263,222	269,499	297,322
Spain	61	597	1,491	510	409	46	-
All others	6,641	712	-	-	196	-	-
Total	315,793	301,443	284,273	257,183	263,826	269,545	297,322
Riec Straw							
China	110,547	150,992	144,165	155,776	204,537	235,708	224,354

Source: MAFF Plant Protection Station

Attachments:

No Attachments.