

Executive Summary and Findings

Agricultural Equipment is produced in the United States by a robust and highly successful manufacturing industry, with total domestic and foreign sales of \$38.9 billion in 2013. U.S. exports were worth \$11.1 billion in 2014. More than 1,000 U.S. manufacturers provide commercial producers of food, fiber, fuel crops, and livestock around the world with a wide range of high-technology agricultural equipment. Despite intense global competition and globally weak prices for commodities produced by many U.S. exporters' customers, the United States enjoys a strong trade surplus in agricultural equipment. Export growth is driven by a global population that is expected to reach 9 billion by 2050, as well as expanding middle class populations in many emerging economies. Technologies to produce more food, in greater variety, more efficiently, while conserving scarce water and other resources will be in demand for the foreseeable future.

ITA expects U.S. agricultural equipment exports to decline in 2015, although not as steeply as in 2014. Exports of machinery and equipment for raising grain, oilseeds, and other commodity crops will fall more sharply than agricultural equipment overall, based mostly on weak international commodity prices. Parts and components, especially for overseas manufacturing, will also decline. Exports of equipment for the livestock and produce sectors, conversely, will grow modestly. ITA anticipates that exports will flatten out in 2016, as international grain prices stabilize.

Growth prospects for U.S. agricultural equipment exports remain strong over the medium- to long-term, however, as the industry's fundamentals should continue to underpin U.S. competitiveness for the foreseeable future. The world's population is expected to exceed 9 billion by 2050,¹ but land and water available for agriculture is becoming scarcer by the day. Demand for innovative products that improve yields

and lower costs are thus at a premium, positioning U.S. suppliers as providers-of-choice for many commercial farmers around the world. Today, U.S. manufacturers provide essential technology for raising hundreds of different food and fiber crops and livestock.

Nevertheless, U.S. exporters remain vulnerable to fluctuating prices for the agricultural commodities that their customers grow and sell, as well as to other economic variables, including the cost of fuel and other inputs, exchange rates, the availability of credit, etc. As prices for commodities increase, so do the profit margins of the agricultural producers, creating more purchasing power and higher demand for U.S. products. When prices decline, farmers must cut costs, often choosing to retain existing equipment or upgrade using cheaper technology procured from lower-cost providers outside the United States.

Figure 1: Projected Top Markets for Agricultural Equipment Exports (2015-2016)

<u>Market</u>	<u>Volume/ Growth Rankings</u>	<u>Affiliations</u>	<u>Market</u>	<u>Volume/ Growth Rankings</u>	<u>Affiliations</u>
Canada	1/8	NAFTA, OECD	Chile	11/9	FTA, OECD
Australia	2/18	AUSFTA, OECD	Japan	12/13	OECD
Mexico	3/7	NAFTA, OECD	Sweden	13/19	EU, OECD
Germany	4/11	EU, OECD	Spain	14/16	EU, OECD
France	5/10	EU, OECD	Italy	15/17	EU, OECD
Netherlands	6/3	EU, OECD	Turkey	16/4	OECD
Belgium	7/12	EU, OECD	Poland	17/2	EU, OECD
United Kingdom	8/15	EU, OECD	Denmark	18/6	EU, OECD
Korea	9/12	KORUS, OECD	Lithuania	19/1	EU
New Zealand	10/2	OECD	Czech Republic	20/5	EU, OECD

NOTE: Markets listed in order of U.S. 2013 agricultural equipment export volume. Growth ranking is based on the average of the 2004-2013 and 2011-14 combined annual growth rates (CAGR). Affiliations are relationships that indicate a high degree of market access for U.S. exports: North American Free Trade Agreement (NAFTA), U.S.-Australia FTA (AUSFTA), U.S. Korea FTA (KORUS), membership in the European Union (EU) or the Organization for Economic Cooperation and Development (OECD).

As a result, U.S. agricultural equipment exporters do business in a highly dynamic global agricultural setting. Currently, although prices for most major commodities are relatively high, grain and oilseed prices are well off the peaks reached between 2007 and 2012. Productivity growth is slowing for many crops, while strong demand and limited global stocks of key commodities will likely keep prices from falling much farther. Growing urban, middle-class populations are transforming their diets with a much greater preference—backed up with purchasing power—for higher-value food products, especially animal protein.² Increasing water scarcity, limited agricultural land, and the growing impact of climate change on agriculture all challenge equipment manufacturers to constantly adapt and develop new technologies and products to remain competitive.

In the near term, ITA expects U.S. exporters will see the best growth prospects in markets where the agricultural economy includes robust livestock and/or fresh produce sectors. A growing middle-class that wants and can afford high-value protein, dairy, and fruits and vegetables is another strong indicator. Finally, countries in a position to export such products are also likely growth markets for U.S. agricultural equipment exporters for the period 2015-2016.

In 2014, U.S. agricultural equipment exports declined 8.8 percent from the previous year. This decline was due principally to a 16.8 percent fall in exports of equipment for producing grain, oilseeds, and other commodity crops, to \$3.8 billion, and a 12.6 percent decline in exports of parts and components, to \$3.5 billion. Exports grew last year in several smaller sub-sectors, however. Equipment for raising livestock saw foreign sales rise 7.1 percent to \$863.5 million. Equipment for cultivating fresh produce and higher-value crops enjoyed a 3.5 percent increase in exports, to \$860.6 million.

Agricultural Equipment Export Markets

The most important influence on the sale of agricultural equipment is the price farmers receive for their crops or livestock at the farm gate. Basic commodities trade globally. Their prices are widely reported and sophisticated commercial farmers watch them closely, calibrating their business decisions accordingly. Global commodity prices are also widely available for basic meat and dairy products. Prices for fresh produce and

Figure 2: Dynamic Growth Markets (Rankings and Affiliations)

<u>Market</u>	<u>Volume/Growth</u>	<u>Affiliation</u>
Brazil	1/5	Mercosur, WTO
China	2/1	WTO
Russia	3/2	EEC, WTO
South Africa	4/4	SACU, WTO
Ukraine	5/3	EU Assoc., WTO

NOTE: Markets listed in order of U.S. 2013 agricultural equipment export volume. Growth ranking is based on the average of the 2004-2013 and 2011-14 combined annual growth rates (CAGR). Affiliations are relationships with regional customs unions or trading blocs: Mercosur (customs union), the Eurasian Economic Commission (EEC; customs union), Southern African Customs Union (SACU; customs union), World Trade Organization (WTO). In addition, Ukraine has an Association Agreement with the European Union.

other high-value crops are more difficult to track, and are often more localized; as a result, more indirect indicators are often used to anticipate market behavior.

Export performance in the agricultural equipment industry varies widely among several sub-sectors, including equipment for producing:

- **grains** (wheat, rice, corn, others), **oilseeds** (cottonseed, peanut, rapeseed, soybean and sunflower seed), and **other commodity crops** (cotton, sugar beet, potatoes, others);
- **livestock** (beef, pork, poultry, dairy cattle, others); and
- **fresh produce and other high-value crops** (fresh fruits and vegetables, tree-nuts and other orchard crops, coffee, others).

Roughly 50 percent of U.S. agricultural equipment exports can be linked to these sub-sectors. This study will evaluate global markets with these categories in mind.

Parts and components for agricultural equipment are another major element of U.S. trade in agricultural equipment. Specialized engines, engine parts, and parts and components for tractors make up about 18 percent of U.S. exports; total parts exports, less engines, are about 28 percent of the total. Parts exports support both manufacturers' after-sales service operations and the globalized manufacturing operations of the larger U.S. agricultural original equipment manufacturers (OEMs).

Figure 3: Agricultural Equipment Trade Snapshot

Global Trade--2013
\$58 billion*

Annual Growth—2004-13
7.3%**

U.S. Market Share—2013
11.9%

NOTE: *Less tractor parts; **Compound Annual Growth Rate (CAGR)
Source: UN Comtrade Data

Sales of equipment for producing grains, oilseeds and other commodity crops—the largest sub-sector, averaging 36.1 percent annually from 2009 through 2014—are highly dependent on the prices offered on global markets for those commodities.

Global trade in agricultural equipment, including U.S. exports, more than tripled in the 11 years between 2001 and 2012. This growth coincided with a strong run-up in global commodity prices that peaked in 2011-2012. With the turn in grain and oilseed prices that followed, overall U.S. agricultural equipment exports fell nearly 10 percent through 2014. Overseas sales of equipment for grain/oilseed/commodity crop production declined by nearly 25 percent.

Although there are many influences on sales of equipment for raising livestock (7.3 percent of exports), low grain prices tend to expand production of livestock, since feed is less expensive. Sales prospects for produce-related machinery are independent of grain prices. For all high-value products, overall economic growth, consumer preferences, and disposable income are key variables driving prices. Put simply, while the economic forces at work on parts exports are diverse, the overall impact of the global decline in commodity prices has been negative.

Caveats

All data and analysis in this study is based on North American Industry Classification System (NAICS) 333111 “Farm Machinery and Equipment Manufacturing” and the 94 ten-digit tariff codes associated with it from the Harmonized Tariff Schedule (HTS) of the United States. A breakout of these products can be found in Appendix 2. While the range of products included under NAICS 333111 is extensive, it omits certain types of equipment that are in widespread use in commercial agriculture.

Missing are grain storage buildings, precision agriculture technology (satellite navigation, wireless internet, information technology and other ITC products for maximizing the productivity of agricultural inputs) not included as original equipment in many types of farm machinery; and pumps, filters, and other systems that support the use of irrigation equipment. Data for these products cannot be broken out from U.S. or international trade data for specific agricultural end-uses. Also missing are more general purpose products such as light construction machinery, transportation equipment, etc.

For most of the last decade, Russia and Ukraine have been leading “dynamic growth” markets as identified in this study. Annual growth for U.S. agricultural equipment exports to both countries was well into double digits from 2004 through 2013: 30.5 percent for Ukraine and 17.0 percent for Russia. As recently as 2012, Ukraine was the United States’ seventh-largest export market, worth \$381.6 million, ahead of ninth-ranked Russia, at \$335.7 million. Since the outbreak of the conflict between the two countries last year, however, U.S. agricultural equipment exports have fallen precipitously—to Ukraine by more than 50 percent; to Russia by almost 25 percent. Given the character of the conflict and the damage it is inflicting on the two countries’ economies, it will be some time before these markets recover their previous vigor.

India is the world’s second-largest agricultural economy and has the world’s second-largest population. Paradoxically, however, the country is a negligible market for U.S. agricultural equipment. U.S. 2014 exports to India were worth \$24 million, two-tenths of one percent of the total. Indian agricultural equipment imports from the rest of the world are also less than one percent of the global total.

The principle reason India is such a small market for imported agricultural equipment is that most Indian farms are very small. As a result, the farmers’ output—and therefore, income—is too small to support investment in imported equipment. Moreover, very few Indian farmers have access to the kind of credit facilities or technical support they would need to make and sustain significant investments in equipment or other technology.

Challenges Facing Exporters

Most U.S. agricultural equipment exporters are small and medium-sized enterprises (SMEs). In 2012, sixty percent of manufacturing establishments had fewer than 20 employees.³ As a result, they have limited sales and engineering resources. Trade finance and working capital can also be hard to obtain for small companies with relatively small transactions. They compete, as well, with foreign manufacturers that often enjoy strong support from their own governments, including Germany, China, Italy, Japan, and others.

Paradoxically, many of the most dynamic growth markets—markets that have had strong growth and relatively high sales volumes—also present some of the greatest challenges. Tariff and non-tariff barriers can be onerous, customs administration slow and arbitrary, and protection of intellectual property rights (IPR) weak. Growth markets can also be extremely volatile. For example, as stated above, Russia and Ukraine are rapidly declining as markets as a result of their current political and military conflict.

American manufacturers of agricultural equipment are highly innovative. New technologies and products are being introduced all the time. Consequently, protection of intellectual property rights (IPR), including trade secrets, is a serious concern. This is especially—although not exclusively—true with respect to China.⁴

Industrial Policy

Both China and Brazil pose major challenges for U.S. exporters as a consequence of their aggressive industrial policies. The Chinese Government has identified agricultural equipment and food processing machinery as priority sectors for its Strategic Emerging Industries (SEI) initiative. U.S. agricultural equipment manufacturers are highly vulnerable to having their IP stolen, being out-manuevered in international standards development, and possibly to other elements of Chinese industrial policy. Specific concerns include aggressive subsidies for the purchase of domestically-produced goods, but not for imports; rampant theft of intellectual property; and the use of standards to disadvantage foreign manufacturers, especially in third-country markets.

Brazilian industrial policy also aggressively promotes domestic manufacturing and export competitiveness at the expense of imports. The Plano Brasil Maior (the “Greater Brazil Plan”) provides an array of policies and programs to promote and finance localization of

Figure 4: Major Trade Events

Domestic:

International Production & Processing Expo

Atlanta, Georgia

ippexpo.org

World Ag Expo

Tulare, California

worldagexpo.com

Farm Progress Show

Boone, Iowa

farmprogressshow.com

Big Iron Farm Show

Fargo, North Dakota

bigironfarmshow.com

The Irrigation Show & Education Conference

Long Beach, California (2015)

www.irrigation.org/IrrigationShow/

International:

Agri-Show

Ribeirao Preto, Sao Paulo, Brazil

www.agrishow.com.br/en/

Agritechnica

Hanover, Germany (2015)

www.agritechnica.com/home-en.html?&L=9

Commonwealth Bank Ag-Quip Field Days

Gunnedah, New South Wales, Australia

www.farmonline.com.au/events/agquip

EuroTier

Hanover, Germany (2016)

www.eurotier.com/home-en.html

Expo Agroalimentaria

Irapuato, Guanajuato State, Mexico

www.expoagroto.com

Nampo Harvest Day

Bothaville, the Free State, South Africa

www.grainsa.co.za/pages/nampo/nampo-home

manufacturing in Brazil. Sixty percent local content is generally required for products to receive duty-free treatment within the Mercosur Customs Union (Brazil, Argentina, Paraguay, Uruguay, and Venezuela). The National Bank for Economic and Social Development

(BNDES) is another arm of Brazilian industrial policy, promoting the localization of manufacturing facilities and employment through deeply discounted interest rates.

For more information on these and other concerns, see the “2014 National Trade Estimate Report on Foreign Trade Barriers,” published by the United States Trade Representative, at <https://ustr.gov/sites/default/files/2014%20NTE%20Report%20on%20FTB.pdf>

China, Brazil and other markets prohibit the import of remanufactured goods, which are typically classified as “used.” China also maintains restrictions that prevent remanufacturing inputs (“cores”) from being imported, except for special economic zones. Brazil restricts the entry of certain types of remanufactured goods, including agricultural equipment and parts. In general, Brazil only allows the importation of such goods if an importer can provide evidence that the goods are not or cannot be produced domestically. In these and other markets, such bans have a negative impact not only on U.S. exporters, but also on local agricultural producers by denying them access to low-cost, high-quality remanufactured parts and components for U.S. agricultural equipment.⁵

U.S. Food Safety Modernization Act

The U.S. Food Safety Modernization Act (FSMA) is likely to influence investment in agricultural equipment, food processing and packaging machinery, and related goods and services in a number of countries. FSMA will require importers of foreign produce, seafood, spices, ingredients, and other food products regulated by the U.S. Food and Drug Administration (FDA) to meet—and document that they meet—the same requirements as U.S. domestic producers.⁶

Importers that fail to meet FSMA requirements will find their products excluded from the U.S. market. To retain access to the U.S. market, growers and processors in many countries will have to invest in improved water management for agriculture and food processing, irrigation and packing-house equipment, specialized information technology, and more. U.S. manufacturers and exporters are especially well positioned to offer foreign buyers the equipment and systems that will enable them to comply with this new law. On-going outreach and collaboration with foreign governments by the FDA is critical to the success of FSMA.⁷

The Food Safety Modernization Act

Signed into law on January 4, 2011, the objective of the Food Safety Modernization Act (FSMA) is to ensure the safety of the U.S. food supply by shifting the regulatory focus from responding to food contamination to preventing it. Among its major provisions, FSMA gives the U.S. Food and Drug Administration (FDA) much greater authority to ensure that imported products meet U.S. standards and are safe for U.S. consumers. New authorities include:

Importer accountability: Importers will have an explicit responsibility to verify that their foreign suppliers have adequate preventive controls in place to ensure that the food they produce is safe.

Third Party Certification: FSMA will permit qualified third parties to certify that foreign food facilities comply with U.S. food safety standards. This certification may be used to facilitate the entry of imports.

Certification for high risk foods: FDA can require that high-risk imported foods be accompanied by a credible third-party certification or other assurance of compliance as a condition of entry into the United States.

Voluntary qualified importer program: FDA will establish a voluntary program for importers that provides for expedited review and entry of foods from participating importers. Eligibility will be limited to, among other things, importers offering food from certified facilities.

Authority to deny entry: FDA can refuse entry into the U.S. of food from a foreign facility if FDA is denied access by the facility or the country where the facility is located.

Enhanced Partnerships: The law directs FDA to develop a comprehensive plan to expand the capacity of foreign governments and their industries. One component of the plan is to address training of foreign governments and food producers on U.S. food safety requirements.

Source: **U.S. Food and Drug Administration**, *Background on the FDA Food Safety Modernization Act (FSMA)*; August 5, 2014; <http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm239907.htm>

There is widespread private-sector concern that it soon will become difficult to export used agricultural and other off-road machinery equipped with diesel engines that meet the latest EPA-mandated emissions standards. The final “Tier IV” standards for new off-road diesel engines now require that engines sold for use in the United States emit only extremely low amounts of certain pollutants. To accomplish this, Tier IV engines can use only diesel fuel with very low sulfur

content. Low-sulfur fuel is generally not available in markets that take large quantities of used equipment.

Trade Events

Trade exhibitions are a widely used and highly cost-effective venue for agricultural equipment manufacturers to market their products to dealers, importers, and end-users. There are numerous, well-established domestic and international trade exhibitions serving different sub-sectors, regions, and countries. In North America, such events are generally known as “farm shows;” elsewhere in the English-speaking world they may be referred to as “field days.” More conventional industrial trade shows also serve certain markets and segments of this industry. A representative list of events can be found in the box (“Major Trade Events”) on page 6.

Trade Finance

Securing export financing is a constant challenge for most U.S. agricultural equipment manufacturers. For many, the Export-Import Bank of the United States is a key resource that supplements private-sector financial services. In addition to ExIm, the U.S. Agency for International Development (USAID) also provides financial services or funding for U.S. agricultural equipment exporters to certain markets.

Methodology

Types of Markets

This study groups export markets for U.S. agricultural equipment into three categories: *Strategic*, *Dynamic Growth*, and *Long-Term Opportunity*. Strategic markets are stable, relatively mature markets in advanced economies that offer a high level of market access. Dynamic Growth markets are more volatile, but have demonstrated high rates of growth, relatively high overall volumes of U.S. exports, and offer significant opportunities for further growth. Long-Term opportunity markets are very small economies that are growing rapidly and offer significant long-term possibilities for growth along with a high degree of volatility.

Strategic markets—because they are politically and economically stable, afford a high degree of market access, and pose relatively low risk—have much to offer any U.S. agricultural equipment manufacturer. Dynamic Growth markets offer—potentially—greater rewards, but also significantly greater risk. U.S. manufacturers should consider carefully the pros and cons for their company of doing business in these markets. Long-term Opportunity markets offer high levels of risk, but also—

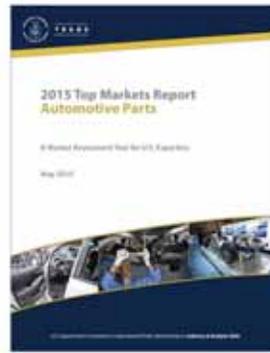
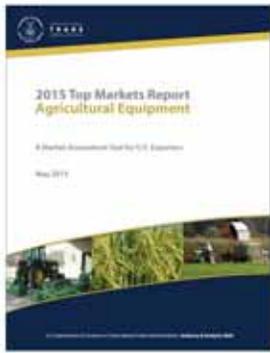
potentially—significant scope for growth in the future; experienced exporters may find these markets attractive.

Rankings

This *Top Markets Report* ranks export markets based on the criteria and data described below. The same methodology is applied to ranking both groups.

- Volume – The volume ranking is the nominal U.S. dollar value of 2013 U.S. agricultural equipment exports derived from data classified according to the U.S. Harmonized Tariff Schedule (HTS) ten-digit codes for these products. This group of codes, in turn, corresponds to NAICS 333111 Farm Machinery and Equipment. Markets are ranked by dollar value, highest to lowest.
- Growth – The growth ranking is derived by averaging the Compound Annual Growth Rate (CAGR) for the periods 2004-13 and 2011-14. The average includes the 2004-13 CAGR to capture long-term growth trends. The 2011-2014 CAGR is included to capture more recent developments. The data for 2014 was the ITA (OTM/Machinery Team) estimate for the year, based on nine-month U.S. export data—all that was available at the time the rankings were done.
- Performance – Globally and for each country case study, analyses of past and estimated future export performance are based on a comparison of U.S. agricultural equipment exports for use in specific sub-categories—grains and oilseeds, livestock, produce—with global commodity prices (where available) and other factors influencing the corresponding end-use categories. See Section V of this study, “Sub-Sectors,” for more detail.

U.S. export data is derived from 2014 U.S. exports, HTS 10-digit data for agricultural equipment. The U.S. share of individual countries import markets and the U.S. share of global trade are based on UN CompTrade data for 2013. Data on individual country agricultural production, for the year 2012, are derived from the United Nations Food and Agricultural Organization (UN FAO) “FAOStat.” Information on global agricultural commodity prices is derived from the “OECD-FAO Agricultural Outlook 2014-2023.”



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