



Alltech[®]

**2019 GLOBAL
FEED SURVEY**

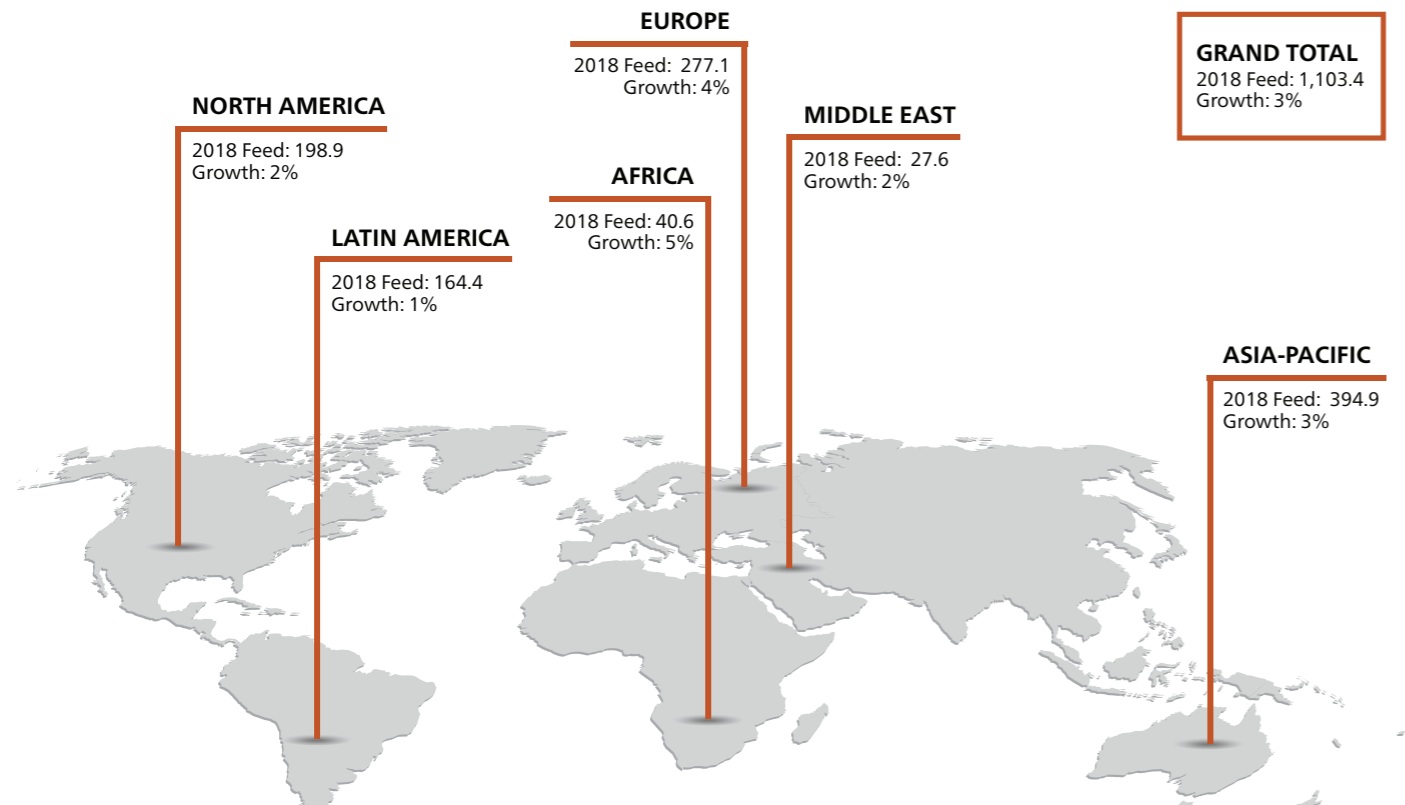
8TH ANNUAL ALLTECH GLOBAL FEED SURVEY

Now in its eighth year, the annual Alltech Global Feed Survey has become the premier insight into the feed industry. The survey is cited in more than 80 articles or references each year, and it generates interest in all corners of the globe, from Brazil to Russia. Since the first iteration eight years ago, the survey has grown in size, content and reliability to become the most complete source available for feed industry metrics. The eighth Alltech Global Feed Survey draws upon data from 144 countries and nearly 30,000 feed mills.

Two years ago, the feed industry crossed the threshold of 1 billion metric tons and is expected to maintain an upward trajectory as the population continues to grow — particularly the middle class, which is increasingly showing its interest in protein consumption. Overall, the feed industry grew by a strong 3 percent last year, to 1.103 billion metric tons.



A GROWING INDUSTRY



* All numbers are in million metric tons, unless otherwise noted.

Africa

We are seeing continued strong growth in Africa, with a 5 percent increase in feed production. In fact, no country within the region saw a decline in overall feed production. Morocco, in particular, stands out as a country that is demonstrating growth across nearly every species. The region itself did not necessarily see strong growth in every sector, though the areas that did show decline were not necessarily animal protein production-related, such as equine (-4 percent) and pets (-14 percent). These two areas represent a very small proportion of Africa's overall production, so their impact is minimal. Most of the major animal production species, such as those found in ruminant and poultry, did exceedingly well and, therefore, brought about high overall growth for the region.

Asia-Pacific

The Asia-Pacific region is home to several of the top-10 feed-producing countries, including China, India and Japan. China maintains its hold as the global leader in feed production, with a lead of about 10 million metric tons over the United States. While Japan did not show a significant change in feed production, India did, with a growth of 13 percent. This was largely due to growth in dairy, layer and broiler feeds, but it can also be attributed in some part to other unexpected species growth — such as in calves and the other ruminant category, where an increase in sheep and goat consumption has brought about new producers to accommodate this trend in protein consumption. Other countries that demonstrated higher growth variance included Pakistan, Myanmar and Laos.

Europe

Europe saw an overall growth of about 4 percent over 2017, making it the second-fastest-growing region in the survey. Most of the primary protein areas saw growth; layer and broiler feed production were up 7 percent and 5 percent, respectively, while the feed production of pig, dairy and aquaculture were up 3, 4 and 5 percent, respectively. Beef was the only primary protein species in which there was a decline, though it was less than 1 percent. Feed production increases were seen in smaller-producing countries, such as Turkmenistan, Macedonia, Azerbaijan, Montenegro, Kazakhstan and Uzbekistan, as well as larger-producing countries like Russia, Spain and Turkey, all adding to overall production growth.



Latin America

The only region that didn't show much growth in overall feed production was Latin America. Brazil, Mexico and Argentina continue to produce the majority of feed in Latin America, for a combined total of 76 percent. Brazil remained steady in feed production, while Mexico and Argentina saw growth of 1 percent and 4 percent, respectively. Colombia's feed production grew by about 8 percent, primarily due to an increase in pork and egg production.

Several countries saw a decline in feed production, such as Venezuela (-27 percent), El Salvador (-16 percent) and Chile (-8 percent). Regionally, broiler feed is down by around 2 percent over last year's data, and this was evident in countries such as Venezuela, Nicaragua, Guatemala and Colombia. Some of these countries suffer political unrest and instability. It has been suggested before that the feed industry could act as a barometer for countries' economies, and last year's results certainly lend some credibility to that theory.

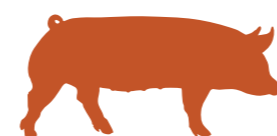
Middle East

The Middle East is still the smallest region of production, but it did see feed production increase by 2 percent in 2018. The region remained flat in many species, but the primary contributor to the increased feed production was in the broiler species, which saw an increase of 5 percent regionally. Most of this increase was in Iran, which continues to lead the region at 10.7 million metric tons and saw an overall increase of 5 percent over last year. Following Iran is Saudi Arabia, with about 7 million metric tons of feed, though it didn't see any growth in feed production this year. Together, these countries produce nearly 65 percent of the feed for the region. While not a massive producer of feed, Qatar demonstrated strong growth at 11 percent, bringing its total feed production to nearly 500,000 tons of feed.

North America

North America again saw a steady growth of about 2 percent over last year. This is due to a small but consistent increase in nearly every major species in the U.S. and Canada. There were no major decreases in feed production in any specific area, and overall, each species either grew or remained flat. Feed costs in this region are the lowest globally across all species, and with the availability of land, water and other resources, the region is expected to remain a primary contributor of feed production.

SPECIES



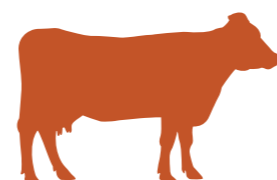
SWINE

Africa	2.2
Asia-Pacific	126.8
Europe	80.0
Latin America	31.5
Middle East	0.0
North America	52.7
Total	293.2



* All numbers are in million metric tons, unless otherwise noted.

Pig feed production saw an increase of about 1 percent in 2018. The primary producing region for pig feed is Asia-Pacific — but, interestingly, this was also the only region that saw a decline in pig feed production. Mongolia, Vietnam, China, New Zealand and Japan all saw decreases in pig feed production, contributing to the overall downturn. From a tonnage standpoint, Europe saw the biggest growth in pig feed production, at about 2.2 million metric tons. Russia and Spain could nearly account for all of this, but others, including Finland, Denmark, France and Poland, also contributed. Latin America saw the greatest growth in pig feed as a percentage at 5 percent, with the largest growth seen in Mexico and Argentina.



RUMINANTS

	Dairy	Beef
Africa	6.8	4.2
Asia-Pacific	24.8	12.9
Europe	44.4	21.6
Latin America	20.3	14.3
Middle East	6.6	1.5
North America	28.2	27.7
Total	131.2	82.1



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Dairy

Regionally, the dairy feed industry did not see any declines. Feed production remained relatively flat in Latin America and the Middle East. There was steady growth in North America and even more in Africa and Europe. Africa's growth was primarily due to a significant increase in both Morocco and Nigeria. Europe's shining star this year was Turkey, which saw an increase of 10 percent in dairy production; other contributors in the region include Ireland, Russia and the U.K.

Beef

North America has always led beef feed production and continues to do so. The region saw an increase of 3 percent, which will ensure it maintains its lead for now. Europe saw a small decline at barely 1 percent. In the past, Europe has been followed by the Asia-Pacific region, but many of the countries in that region saw declines in beef feed production, including Bangladesh, Mongolia, Indonesia, Taiwan, Vietnam and Pakistan. China and Australia both saw growth — but not enough to offset the overall decline in the region. Latin America saw strong growth of about 8 percent, and Mexico and Argentina primarily contributed to this. As a result, the Latin American region now takes third place in beef feed production.



POULTRY

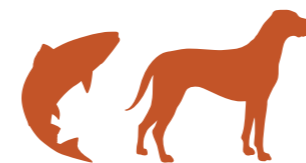
	Layer	Broiler
Africa	9.2	13.6
Asia-Pacific	68.1	112.3
Europe	32.5	55.0
Latin America	22.8	30.8
Middle East	5.5	9.6
North America	14.5	53.4
Total	152.6	304.6

Layer

Major growth areas for layer feed included Europe, Latin America and Asia-Pacific. In Europe, Poland and Uzbekistan each saw a growth of around 200,000 metric tons. Latin America's growth was biggest in Colombia, Peru, Brazil and Mexico. In the Asia-Pacific region, South Korea, India and Indonesia all saw growth of several hundred metric tons. North America saw an overall growth of 2 percent, in which both the U.S. and Canada saw increases in production. Africa saw small decrease in layer production, which was in large part due to declines in both Egypt and Seychelles.

Broiler

Demonstrating the continued interest in this versatile protein source, broiler production increased by about 3 percent in 2018. There was growth in all regions, with the exception of Latin America, in which a very small decline was observed. All other regions were up, though — particularly Africa, at 9 percent. Although this isn't huge growth from a production standpoint, it does show an overall trend: that as populations grow and become wealthier, interest in protein — particularly in palatable chicken — does as well.



OTHER SPECIES

	Aquaculture	Pet
Africa	1.5	0.4
Asia-Pacific	28.5	3.2
Europe	4.0	8.6
Latin America	3.9	5.6
Middle East	0.5	0.1
North America	1.7	8.8
Total	40.1	26.6



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Aquaculture

Overall, aquaculture feed saw a healthy growth of 4 percent over last year's feed total. This was primarily attributed to strong increases in the Asia-Pacific and European regions. The traditional Asia-Pacific leaders in aquaculture certainly showed growth this past year. Vietnam, India and Indonesia brought a combined additional 1.58 million metric tons of feed to the region. The region's leader, China, also saw an increase of 1 percent over last year. The primary European leaders either experienced strong growth or remained relatively flat. Those that did grow included Norway and Turkey, both at 7 percent, as well as Spain at a substantial 31 percent. The other four regions remained relatively flat or saw only a 1 percent increase or decrease in feed production, demonstrating the continuity of the industry as a whole.

Pet

The pet industry saw a growth of about 1 percent in 2018. This is primarily attributed to an increase in the Asia-Pacific region, which was offset by a decrease in the Latin American and African regions. North America and the Middle East both remained relatively flat. Previously, Europe had been in the lead for pet food production, but after a reassessment of 2017 numbers and despite a growth of 2 percent, it still ranks just behind North America. The primary countries with growth were Portugal and Turkey, which saw a combined 50,000-metric-ton increase in feed production. Europe is estimated in 2018 to have produced 8.6 million metric tons in total — only about 200,000 behind North America.

THE FUTURE OF PROTEIN PRODUCTION

Perhaps, someday, the advent of alternative proteins — such as lab-grown meats and plant proteins — will change the way we study the feed industry. Or maybe we will add a segment for insect protein. These are the concepts that will alter the feed industry in the future, forever changing the way we produce our food. For now, however, the Alltech Global Feed Survey is a snapshot of the industry as it is today.



2019 GLOBAL FEED SURVEY

This year marks the eighth iteration of the Alltech Global Feed Survey, an annual assessment of compound feed production. The data compiled represents 144 countries, reflecting information obtained through Alltech's global connections and relationships.

The feed industry is difficult to assess in its entirety, but Alltech strives to connect with feed mills, industry associations, government entities and other feed authorities to collect as much information and data as possible in order to provide an evaluation of feed production in each new year.

Further details pertaining to this survey are available online at alltechfeedsurvey.com, where an interactive map displays data for all of the countries in the survey. A presentation of the results given by Dr. Mark Lyons, president and CEO of Alltech, is also available for download.

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