7TH ANNUAL

Alltech® GLOBAL FEED SURVEY | 2018

The global feed industry: Producing more than 1 billion metric tons

Last year, the Alltech Global Feed Survey estimated world animal feed production at over 1 billion metric tons globally for the first time. This year, our estimates have confirmed that barrier has been crossed again, with a total of 1.07 billion tons of feed produced in 2017.

Now in its seventh year of analysis, the Alltech Global Feed Survey continues to be the most quoted reference on the state of the feed industry, with last year's survey data cited in more than 1,000 reports by the United Nations, industry market research companies, leading agricultural institutions and associations. The survey data not only give insights into the feed industry, but into the health of agriculture as a whole, and, to some degree, it reflects the strength of the individual economies of the countries included in the report.

The information becomes more robust and detailed every year, with new countries included this year, namely Cambodia, Laos, Fiji and Samoa, for a total of 144 countries. As our organization's global reach expands, it is Alltech's goal to have the survey grow in scope. We also intend to provide open and free access to this report for the purposes of demonstrating the importance of animal agriculture and the centrality of the feed industry in feeding the world of the future sustainably.

Where is the growth?

The growth seen in 2017 was strong at 2.57% over 2016. Indeed, over the last five years, the feed industry has seen a total growth of 13%, which translates to an average growth of 2.49% per annum. This substantial and healthy growth has been supported by higher consumption of meat, milk and eggs, which is reflected in the increased feed production for the pig and broiler industries as well as the dairy industry. Growth in the demand for broiler feed of 3% and less than 1% for layers has been seen against the backdrop of an average growth of 2% in egg and meat consumption but also a historic improvement of 1% in feed conversion efficiency, primarily led by genetic improvements.

Global leaders in pork production led the way in pig feed production in 2017. The world's largest market, China, saw a rebound in pig feed production, and Russia grew, where government policy favors internal production and import displacement. Many smaller countries, particularly those in Africa, such as Kenya, Tanzania, Mozambique, Uganda and Namibia, also showed marked increases in pig feed production.

Dairy was one of the few sectors that saw growth across all regions. Europe, a global leader in dairy production, has seen the reform of the Common Agricultural Policy have a tumultuous impact on milk production, yet the region grew on average by about 2%. From a percent-growth standpoint, Africa was the star with dairy feed production up 10%. Obtaining information from Africa continues to be more difficult than in other regions, but the survey showed countries such as South Africa, Morocco and Zimbabwe significantly increased their reported 2017 dairy feed production.

Broiler feed production is the other primary species that saw increased feed production across all regions, with the largest growth found in Africa (10%) and Europe (7%). Egypt, Uganda, Mozambique and Morocco added a combined 1.3 million tons to Africa's growth. Romania, Russia and Ukraine all reported growth, contributing to Europe's overall production.

Both pet food and horse feed have had strong years, with no regional declines in either species. The growth in the pet food industry, and to some extent the equine industry, is usually correlated with the expansion of the middle class and urbanization. Pet food, in particular, is affected both by per capita income growth and a change in diet as more households transition from feeding pets table scraps to feeding them with complete nutrition. Several regions' pet food production powered ahead. Europe and Latin America, to a lesser degree but no less dramatic, saw increases in pet food production at 17% and 15%, respectively. Russia, the Czech Republic, Romania, Poland and Hungary combined for over 580,000 metric tons of extra pet food. Uruguay, Ecuador, El Salvador, Chile and Argentina represent almost all of the pet food production growth in Latin America, combining for 725,000 more tons. Asia-Pacific's pet food production increased by 13%, with China, Thailand and Taiwan as the primary contributors to the increase.

Avid readers of previous surveys will note that the feed mill number has increased from last year about 5%. It was determined that some of the smaller, private feed mills, particularly in European countries such as Ireland, Ukraine and the Czech Republic, should be included because they have grown to a larger size and are contributing more significantly to animal feed production.

One area showing some stagnation is beef. It is down overall about 1%, and Latin America, Africa and Europe show declines. This global downward trend has generally been felt by the industry for some time as more consumers turn to "white" meats such as chicken, pork and fish.

Which region is growing fastest?

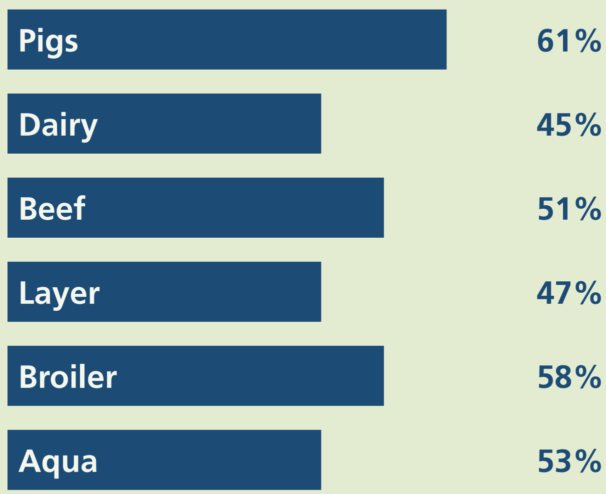
Europe and Asia-Pacific tied for the title of fastest-growing region, each at a 3% increase over 2016. This growth primarily stemmed from increases in pig and broiler feed production in Europe and pig and pet feed production in the Asia-Pacific region. Russia, in particular, increased its estimated pig feed, including more private production than before. While Russian broiler feed production also increased by 3%, Ukraine, Romania, the U.K. and Belgium also reported higher numbers, resulting in strong growth for that sector in the European zone.

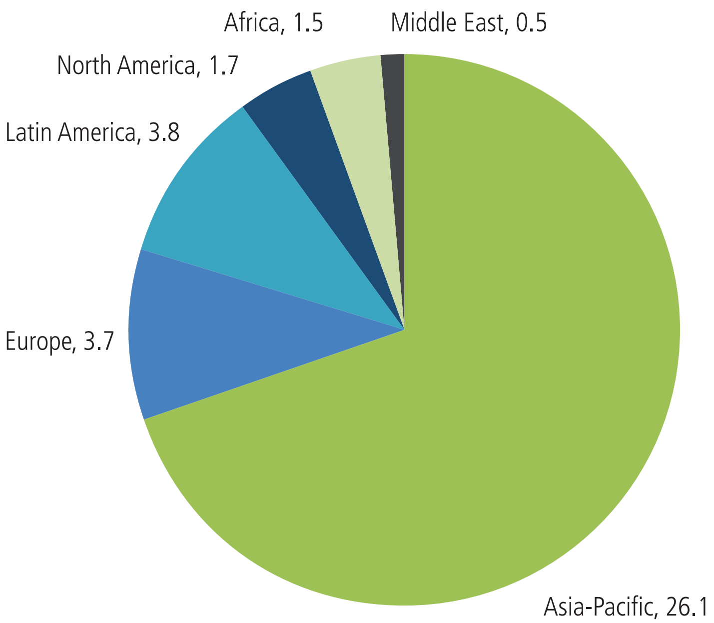
Region	2017	2012	% Change
Africa	39.1	30.3	29%
Asia-Pacific	381.1	356.5	7%
Europe	267.1	208.4	28%
Latin America	160.7	137.0	17%
Middle East	27.0	25.4	6%
North America	194.6	188.1	3%
Total	**1,069.7**	**945.8**	**13%**

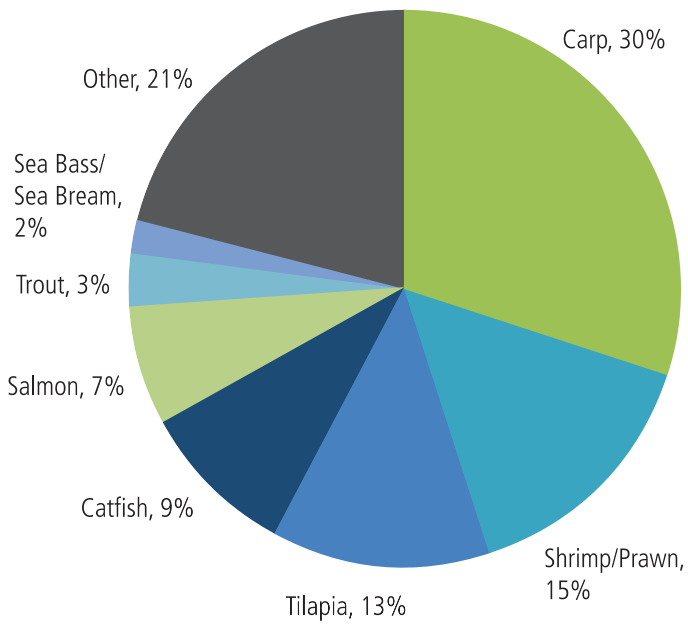
Top 7 in 2017

	Mills	Production	% Growth
China	**6,000**	**186.9**	**-0.4%**
USA	**6,241**	**173.0**	**2%**
Brazil	**1,572**	**69.9**	**1%**
Russia	**569**	**37.6**	**19%**
Mexico	**501**	**34.4**	**2%**
India	**1,201**	**34.2**	**7%**
Spain	**845**	**33.0**	**2%**

The top seven countries can be viewed as a barometer of the trends in agriculture. This year, comparing the production of these top countries as a percentage of aggregate feed production from the rest of the world demonstrates how significant they are to the overall business:







Aquaculture

Aquaculture trends tend to be amongst the most anticipated by the agricultural trade media. This is presumably because of the strong growth of farmed fish over the past 10 years and the degree to which aquaculture is replacing wild fishing as the primary source of fish for human consumption. Aquaculture feeds remained stable overall in 2017. The numbers showed a slight decline in the Asia-Pacific region, but an increase in Europe, Latin America and the Middle East. African countries mainly increased aquaculture feed production, but one of the larger producers, Egypt, saw a decline.

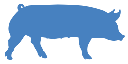
Asia-Pacific is 70% of aqua feed production.

The continued weakness of aquaculture in China (-5%) reported this year and last, and to a lesser degree in the rest of Asia-Pacific, has been linked to changes in consumption, disease outbreaks and a consolidation of the industry. Additionally, government controls on feeding practices and food safety, particularly the administration of antibiotics, may be having an influence on production levels.

Brazil, Chile and Peru led the increased reported production in Latin America, and Iran stood out from the pack in accounting for almost all of the reported growth in the Middle East. Carp leads the production of aquaculture feed, with shrimp/prawn and tilapia as the second and third places in total production. Catfish, salmon and trout also ranked, though to lesser degrees.

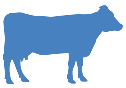
Species growth

Swine



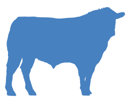
Region	% Growth
Africa	6%
Asia-Pacific	9%
Europe	5%
Latin America	0%
Middle East	0%
North America	2%
Global	**6%**

Dairy



Region	% Growth
Africa	10%
Asia-Pacific	2%
Europe	2%
Latin America	4%
Middle East	4%
North America	1%
Global	**3%**

Beef



Region	% Growth
Africa	-15%
Asia-Pacific	-6%
Europe	3%
Latin America	-9%
Middle East	5%
North America	4%
Global	**-1%**

Layer

Region	% Growth
Africa	11%
Asia-Pacific	-3%
Europe	3%
Latin America	3%
Middle East	-5%
North America	4%
Global	**0.3%**

Broiler

Region	% Growth
Africa	10%
Asia-Pacific	1%
Europe	7%
Latin America	2%
Middle East	1%
North America	2%
Global	**3%**

Feed costs reflect the global economy

Feed costs did not change much in 2017, which would be seen as a positive by many in the industry. Certainly, it has been good for producers of milk, meat and eggs as feed costs are highly correlated with cereal and vegetable protein prices.

In choosing to evaluate the feed costs for finisher feeds of pigs, layers and broilers, Alltech elected to compare these feeds based on the relative homogeneity of these formulations globally. Pig finisher feeds cost, on average, about 2% more globally than 2016. Considering that the production of pig feeds was about 5.54% higher, this would indicate a strong year for this sector.

The layer industry grew just 1%, but it remained stable with a drop of just 1.7% in feed costs. Broiler production costs for finisher diets dropped 14% globally, while the industry itself is showing incremental growth of just under 3%. Yet, with feed representing 70% of live animal production costs, this cheaper feed will translate into cheaper chicken and eggs for the consumer.

	Pigs	Layers	Broilers
Global Average	$363	$363	$418
Percent Change	2%	-1.7%	-14%

While the average global feed costs did not change much from 2016 to 2017, some individual countries experienced greater volatility. Germany and Bulgaria saw increases across the board for finisher diets. On the other hand, some Latin American countries seemed to get a break regarding feed costs. Brazil, Peru, Chile, Paraguay, Jamaica and Costa Rica all reported declines in animal feed finisher diet costs. Many countries in Africa, such as Nigeria and Cameroon, maintain some of the highest finisher diets with costs nearing $700 or above.

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This year marks the seventh edition of the Alltech Global Feed Survey, a yearly assessment of compound feed production. The data represents 144 countries, reflecting information obtained in partnership with local feed associations and Alltech's sales team, who collected data from more than 31,000 feed mills.

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