EMERGING MARKETS
RISING DEMAND FOR AGROCHEMICALS

WHITE PAPER

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ABSTRACT

As emerging markets become more accessible, new market opportunities arise in many different sectors, notably in agriculture, giving opportunity for western conglomerates to implement themselves. This sector generally contains more than half of the available workforce and severely lacks agrochemical inputs that are commonly used in developed countries.

The goal of this paper is to provide insight into the leaders in the agrochemical market and its subsections as well as a brief detailing of agricultural trends in leading Asian and Eurasian markets.

INTRODUCTION

The agrochemical market is split into two categories

SEED AND CROP PROTECTION TECHNOLOGY PROVIDERS	CROP NUTRIENT PROVIDERS

The first category tends to be those with large revenue streams of above $50 billion in comparison to the other category where revenue streams are downwards of $15 billion.

The Seed and Crop Protection market sees a clear trend of mergers between rivals, such as Monsanto and Bayer, and Dow Chemicals and DuPont. Chinese state-owned giant ChemChina has recently acquired Syngenta. Bayer remains the only major company in the sector that has not merged with a competitor.

The crop nutrient market has begun following this trend as PotashCorp and Agrium have also merged.

These companies' headquarters are primarily based in North America and Western Europe, which are their main markets. These markets have established distribution channels economic agents hold similar characteristics.

AGROCHEMICAL INDUSTRY LEADERS

	Merger Approved 2017		*Merger Approved 2017*			*Merger Approved 2016*		*Acquired by ChemChina 2017*						
	DOW CHEMICALS	DUPONT	MON-SANTO	BAYER	BASF	AGRIUM	POTASH-CORP	SYNGENTA	YARA	MOSAIC	ICL	CF INDUS-TRIES	K+S GROUP	URAL KALI
Headquarters	US	US	US	Germany	Germany	Canada	Canada	Switzerland	Norway	US	Israel	US	Germany	Russia
Total Revenue	48.0	24.6	13.5	46.0	57.5	13.6	4.5	12.8	11.0	7.1	5.4	3.7	3.4	1.9
Agrochemicals	6.2	9.5	13.5	2.2	5.5	10.9	4.0	12.8	8.3	7.1	3.1	3.7	1.2	1.9
Crop Nutrients	–	–	–	–	–	5.4	4.0	–	8.3	7.1	3.1	3.7	1.2	1.9
Crop Protection	4.7	2.9	3.5	1.9	5.5	4.1	–	9.6	–	–	–	–	–	–
Seeds	1.6	6.6	10.0	0.3	–	1.4	–	3.2	–	–	–	–	–	–

Units in billions of dollars

Created from sources: Monsanto 2016, Dupont 2016, YARA 2016, Agrium 2016, BASF 2016, CF 2016, Bayer 2016, ICL 2016, k+s 2016, Mosaic 2016, PotashCorp 2016, Syngenta 2016, DOW Chemical Company 2016, Uralkali 2016.

AGRI SALES REGION SEGMENTS

	DOW CHEMICALS	DUPONT	MON-SANTO	BAYER	BASF	AGRIUM	POTASH-CORP	SYNGENTA	YARA	MOSAIC	ICL	CF INDUS-TRIES	K+S GROUP	URAL KALI
Headquarters	US	US	US	Germany	Germany	Canada	Canada	Switzerland	Norway	US	Israel	US	Germany	Russia
North America	40	55	64	19	32	83	60	26	0	50	6	60	2	7
Latin America	30		19	48		3		26	42		16	5	22	20
Middle East			1		23				0		0	0	0	0
Africa	19	45	12	18		0	40	33	3	50		35	5	
Europe					35				37		30		55	12
Asia & Pacific	11		4	15	10	14		15	6		34	0	16	40
Rest of the World	0	0	0	0	0	0	0	0	0	0	14		0	21

Units in percent

Figures are approximations based off of collected data
Data collected from 2016 Annual Reports

Created from sources: Monsanto 2016, Dupont 2016, YARA 2016, Agrium 2016, BASF 2016, CF 2016, Bayer 2016, ICL 2016, k+s 2016, Mosaic 2016, PotashCorp 2016, Syngenta 2016, DOW Chemical Company 2016, Uralkali 2016.

GLOBAL SALES REGION SEGMENTS

<table>
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<tr><td>North America</td><td>35</td><td>42</td><td>64</td><td>27</td><td>26</td><td>83</td><td>60</td><td>26</td><td>12</td><td>50</td><td>20</td><td>60</td><td>38</td><td>7</td></tr>
<tr><td>Latin America</td><td>0</td><td>11</td><td>19</td><td>11</td><td rowspan="3">9</td><td>3</td><td rowspan="5">40</td><td>26</td><td>37</td><td rowspan="5">50</td><td>11</td><td>5</td><td>10</td><td>20</td></tr>
<tr><td>Middle East</td><td rowspan="4">30</td><td rowspan="3">23</td><td>1</td><td rowspan="3">38</td><td rowspan="3">0</td><td rowspan="3">33</td><td>0</td><td rowspan="2">0</td><td>0</td><td>0</td><td rowspan="2">0</td></tr>
<tr><td>Africa</td><td rowspan="2">12</td><td>6</td><td rowspan="2">35</td><td>0</td></tr>
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CROP NUTRIENTS CLASSIFICATION

The crop nutrient market is mainly comprised of relatively smaller companies that range from single macronutrient fertilizer specialists to those that provide all categories and blends containing different combinations.

CROP NUTRIENTS → **SYNTHETIC CROP NUTRIENTS** Fertilizers → **NITROGEN BASED** / **POTASSIUM BASED** Potash / **PHOSPHATE BASED** → **BLENDS**

NITROGEN BASED

[1] Nitrogen is needed for chlorophyll, which enables plants to carry out photosynthesis. In addition, it is a strong component in the basis of proteins.

POTASSIUM BASED
Potash

Potassium contributes to the plant's size, shape color and taste as well as other qualitative propreties.

PHOSPHATE BASED

Phosphorus encourages root growth and facilitates blooming as well as being an essential component in DNA.

BLENDS

1 http://feeco.com/npk-fertilizer-what-is-it-and-how-does-it-work/

CROP NUTRIENTS LEADERS

Units in billions of dollars	AGRIUM	POTASH-CORP	YARA	MOSAIC	ICL	CF INDUSTRIES	K+S GROUP	URAL KALI
	5.4	4.0	8.3	7.1	3.1	3.7	1.2	1.9
NITROGEN BASED →	+	+	+	–	–	+	–	+
POTASSIUM BASED Potash →	+	+	+	+	+	–	+	–
PHOSPHATE BASED →	+	+	+	+	+	–	–	–

CROP NUTRIENTS LEADERS

The top crop nutrient suppliers tend to focus primarily on the North American and European market, indicating that these markets remains highly profitable. However, interest is rising in less developed markets. These large companies tend to buy smaller companies in emerging markets in which they are interested in entering, highlighting the opportunity presented by these economies. One of the main challenges they face is market implementation and lack of adequate distribution channels, in addition to clients with less resources than their counterparts in developed economies. For example, Yara has bought Tata Chemicals based in Uttar Pradesh, India, in order to expand into the Indian market.

Many of these companies are part of associations such as The International Fertilizer Association (IFA). The IFA rewards companies with their "Protect and Sustain[2]" accreditation, indicating safe and sustainable practices in line with new regulations. It has become the de facto global product stewardship standard for fertilizers. The fertilizer market is subject to new policy developments that impact future outlook such as those of the EU, and state governments such as India, Pakistan and Nigeria. Global fertilizer demand is expected to grow, notably in Africa, Eastern Europe, Central Asia and Latin America, areas with the greatest growth potential. Increased Nitrogen and Potash demand will notably be present in South Asia and Latin America.

2 http://www.fertilizer.org/ProductStewardship

CROP PROTECTION & SEEDS LEADERS

<table>
<tr><th></th><th>DOW CHEMICALS</th><th>DUPONT</th><th>MONSANTO</th><th>BAYER</th><th>BASF</th><th>SYNGENTA</th></tr>
<tr><td colspan="7">Agrochemical Industry Leaders
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</table>

Agricultural chemical leaders sell a combination of crop protection technologies and seeds. The trend in the market is that each company tailors its seed to only respond to their protection products in order to avoid rivals' products being used. As is the case in the crop nutrient market, the North America and European markets remain highly attractive.

The main problem faced by these companies in emerging markets is that the patented technologies sold in developed countries are not competitively priced for the specific agricultural sector. In order to gain market share in these economies, significantly cheaper alternative products must be created to satisfy demand.

RUSSIA & UKRAINE

In 2016, Ukraine established itself as an export leader in several categories

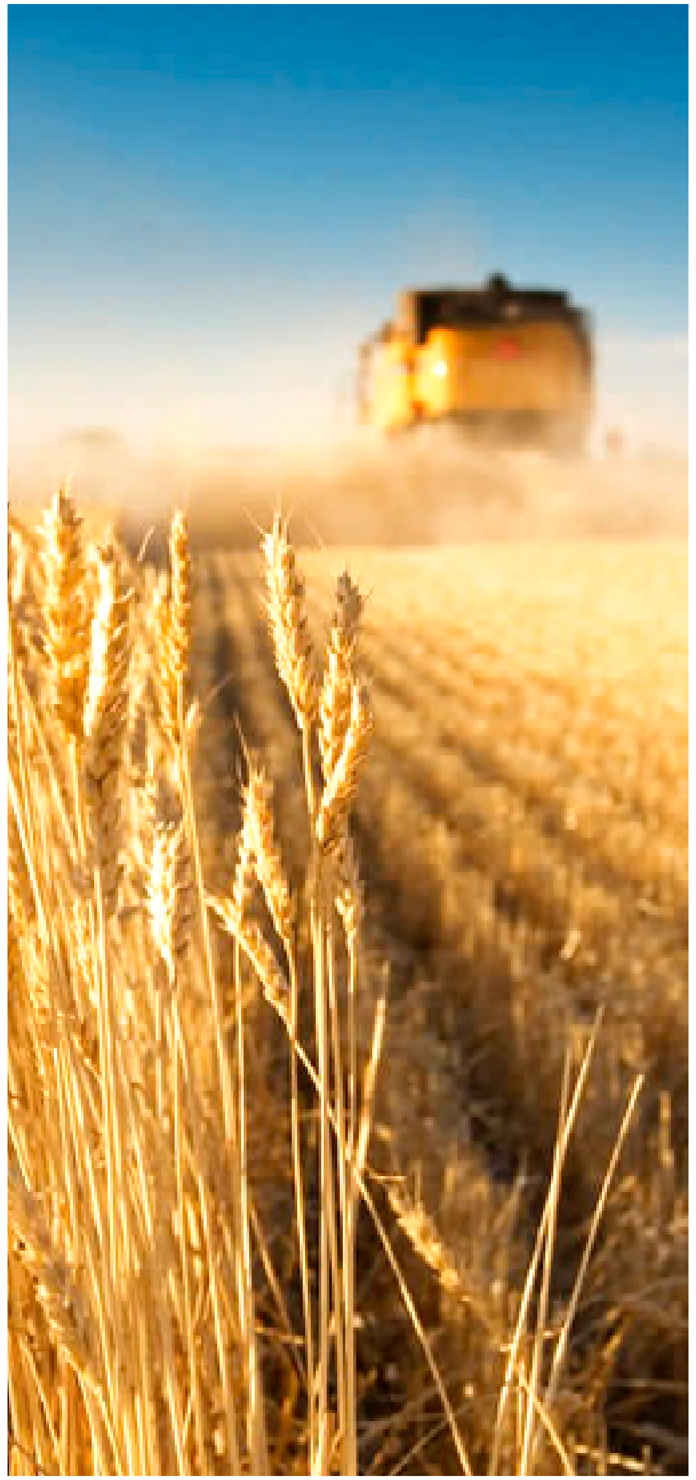
Russia has recently become the top wheat exporter in the world, exporting around

30 million tons = **6** billion dollars

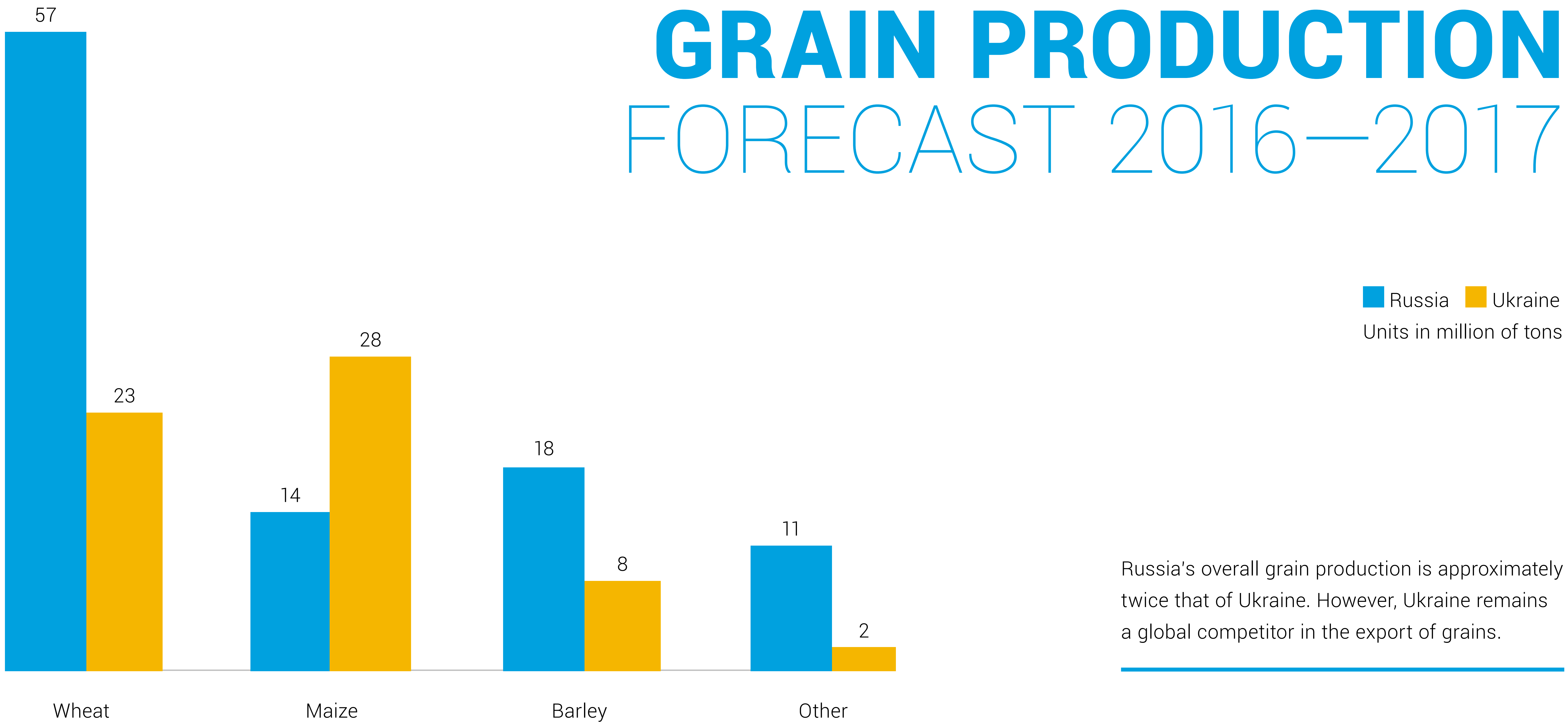
1st place in world export of sunflower oil $4.8 billion	**4th** place in world export of barley $0.65 million	**4rd** place in world export of maize $2.4 billion	**6th** place in world export of wheat $2.6 billion
32% of total world export	**8.5%** of total world export	**8.4%** of total world export	**7.2%** of total world export

The increased productivity has also entailed a significant increase in demand of agrochemicals, which is being met by domestic companies.

Ukraine mainly consumes nitrogen-based fertilizers as the country's soil content is considered one of the highest nutrient-dense soils.



GRAIN PRODUCTION FORECAST 2016—2017



Russia's overall grain production is approximately twice that of Ukraine. However, Ukraine remains a global competitor in the export of grains.

ASIAN MARKETS

The top Asian countries in terms of synthetic fertilizer consumption are Indonesia, which consumes almost triple the quantity as other countries, along with Vietnam, Thailand and Malaysia.

Indonesia's agriculture is based on rice, which consists of almost half of its cultivation acreage, oil palm, maize, rubber and coconut. Indonesia's synthetic fertilizer consumptions consists almost entirely or nitrogen-based fertilizers, with little relative use of potash, phosphate and blended fertilizers.

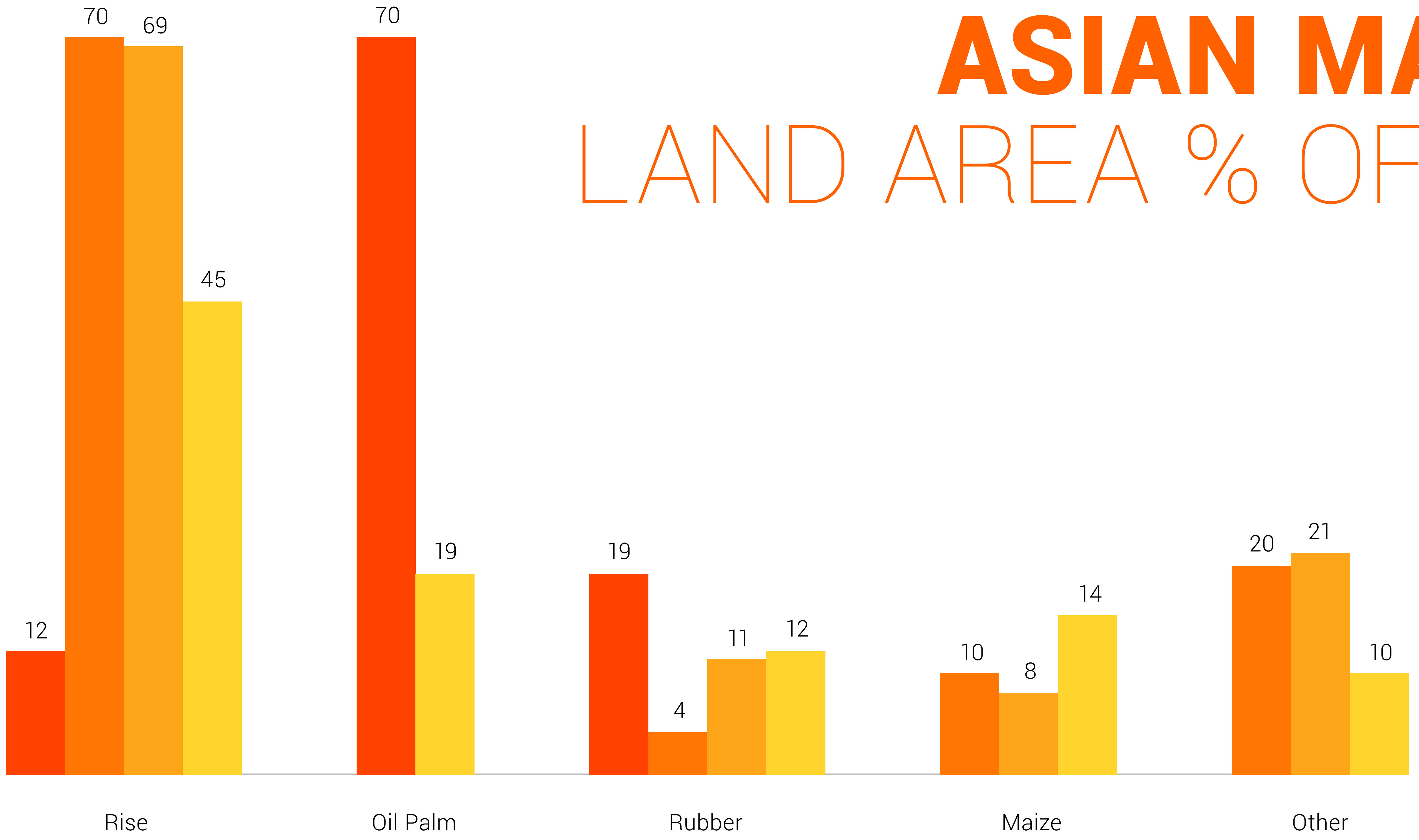
Vietnam and Thailand hold significant similar trends in terms of consumption of category of fertilizer and choice of crop.

Vietnam's primary crop is rice, accounting for almost three-quarters of its cultivation acreage. The other quarter is dedicated to maize, rubber, coffee, cassava and vegetables. Nitrogen-based fertilizers account for almost two-thirds of synthetic fertilizers, followed by blends and less than 10% towards potash.

Thailand's agriculture is almost identical to Vietnam's, with a heavy emphasis placed on rice, except for sugarcane replacing vegetables in cultivation acreage. Nitrogen-based fertilizers (roughly 60%) and blends are used in the country's agriculture.

Malaysia's agriculture is based on oil palm, which consists of more than half of its cultivated land area. The country's agriculture uses nitrogen, phosphate-based fertilizers and blends with a slight inclination towards nitrogen fertilizers.

ASIAN MARKETS
LAND AREA % OF CROPS



Frost & Sullivan.
Analysis of asia-pacific
synthetic fertilizers

CONCLUSION

Crop nutrient manufacturers are extending their reach to emerging markets as they try to capitalise on a growing market, while crop protection and seed manufacturers are merging with one another to create powerhouses in order to gain market share of a highly lucrative and competitive existing markets.

Emerging markets are presenting new opportunities to companies in the agrochemical industry as the demand for products is increasing in order to exploit the sector's potential in these regions. However, these new markets impose certain barriers, including limited resources and lack of distribution infrastructure.

Russia has become the leader in wheat exports and Ukraine continues to remain a top world exporter in certain crops. South Asian countries continue to grow their agricultural sector, increasing yields. The global demand for fertilizers continues to increase as developing markets expand.

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WHO IS BAZIS?

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Our team of highly-skilled research professionals is fluent in both English and Russian and provide international market research expertise to clients around the world from its offices in Chicago, USA and Ekaterinburg, Russia.

TWO SEGMENTS

1. BAZIS INSIGHTS
Composed of global, full-service sector experts, provides full-service research across the world in the key sections of construction, healthcare and agriculture.

2. BAZIS OPERATIONS
Composed of fieldwork and data experts in Russia, delivers a deep understanding of the Russian market by offering highest-quality fieldwork and analysis solutions.

Our expertise in the agriculture market includes a clear, demonstrated understanding of the key business drivers in the market, including such topics as crop seasonality and farmers' lifestyles, allowing us to deliver truly insightful recommendations in this unique sector.

We understand how to reach the many diverse target groups in the agriculture sector, including growers, integrators and industry experts. We collect those insights and share them through the Bazis Agro Tracker.

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The Agrochemicals is truly just one facet of Bazis's expertise — contact us to find out more about the vast array of services we offer.

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