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U.S. Distiller's Dried Grains with Solubles (DDGS)

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Grain and Feed

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Report Highlights:
U.S Distiller's Dried Grains with Solubles (DDGS) has a potential growth market in Malaysia as corn, and soybean meal becomes more expensive, prompting feed manufacturers to consider alternative feed ingredients. The competitive price of DDGS will spur further imports into Malaysia as it is an excellent, nutrient rich feed ingredient in livestock and poultry feed rations. In 2017/8 export sales to Malaysia could reach up to 80,000 tons valued $14.0 million.

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Section II: Introduction

In Malaysia, U.S. Distiller's Dried Grains with Solubles (DDGS) can play a key role in the diet of chicks, broilers, broiler breeders, laying hens and swine. DDGS are the nutrient rich co-product of dry-milled ethanol production made from corn.

As the world's biggest producer and exporter of DDGS with over 200 ethanol plants, the United States offers price competitive DDGS relative to other feed ingredients (note below)

Table 1. Price Comparison of feed ingredients, FOB Gulf *, dated April 27, 2017

Grain Type	DDGS	Soybean Meal	Yellow Corn
Price (US$ per MT)	$147.00	342.60	159.44

Exchange rate or USD1 = 4.32

(Source: Index Mundi)

*(*FOB Gulf is used as a point of comparison for the three feed ingredients even though technically DDGS normally departs from the container port of Long Beach, California while soybean meal and yellow corn leaves from the bulk port of New Orleans bound for Malaysia.)*

DDGS is high in energy, mid-protein, and high digestible phosphorus which makes it an attractive, partial replacement for some of the more expensive, traditional energy (corn), protein (soybean meal), and phosphorus (mono- or dicalcium phosphate) used in animal feeds.

According to the abstract from the Poultry Science Association's 105th Annual Meeting in 2016, another benefit of DDGS is that it contains a natural yellow pigment called xanthophyll which improves egg yolk and poultry skin color. This reduces the need for synthetic pigment which may otherwise be used, another cost savings.

Yet another benefit is that it is uncommon for most of the corn producing regions in the United States to have adverse weather and climatic conditions that cause susceptibility to mycotoxins in corn which in turn affects mycotoxins in DDGS. This impacts animal performance.

Section III: Malaysia Market Perspective

The first U.S DDGS sold in Malaysia was in 2004, and the yearly growth of Malaysia production in the poultry, swine, and ruminant industry meat production points to potential growth in DDGS exports as an alternative feed and livestock supplement. In Malaysia, the two most popular breed of broilers are Ross and Cobb.

Malaysia DDGS exports have seen a 45.1% increase from 2015 of 36,884 tons valued at USD$8.7 million to 60,206 tons valued at USD$12.6 million in 2016 (see below). Malaysia ranks the fourth largest destination in Southeast Asia and twenty-first worldwide for U.S. DDGS that year. Malaysian feed millers told Post they believe that DDGS may comprise up to 10-12% of feed formulation. There is no data on production of compound feed produced in Malaysia as this varies in formulation.

Table 2. Top Southeast Asia U.S Export Partners – CY 2015 and CY 2016

U.S Export Partner	Rank	CY 2015 (US$ millions)	CY 2016 (US$ millions)	Percentage (%)
Vietnam	3	153.3	237.2	54.7% ↑
Thailand	5	88.7	147.1	65.9% ↑
Indonesia	8	54.7	67.4	23.1% ↑
Malaysia	21	8.7	12.6	45.1% ↑
Cambodia	27	6.0	6.5	8.6% ↑
Burma	28	1.5	5.0	239.3% ↑

(Source: USDA / BICO)

Popular Cobb broilers, fans of DDGS.
(Source: The Poultry Site)

Malaysians, fans of chicken to the tune of 50 kilos per capita per year. McDonalds and KFC appeal to local tastes.

(Source: McDonald Malaysia and Poultry World, KFC Holdings & Star Newspaper)

With chicken consumption at an estimated 50 kilograms per person per year, Malaysians are crazy about chicken as it is considered an affordable source of protein in every household compared to seafood. Meanwhile, beef or swine are not permitted depending on religious affiliation in this multi-cultural country.

Thus, there are varieties of fast food, ready-to-eat processed food and cuisines from many cultures based on chicken in Malaysia. Chicken is everywhere.

The livestock industry in Malaysia will continue to contribute towards food security and income generation as demand climbs due to growing population, higher income and urbanization.

The aquaculture industry is another fast growing industry in Malaysia with a production of 532,000 tons in 2014. The increasing cost of aquaculture feed could likewise prompt feed manufacturers to look for less expensive, high quality alternative ingredients, primarily plant-based meals, to partially or completely replace fish meal in aquaculture feeds.

According to the USDA-Agricultural Marketing Service (AMS) Grain Transportation Report, there is about a 50/50 split between containers versus bulk for DDGS export shipments. U.S. DDGS exports dominate the containerized grain export market—shipments represent nearly 50 percent of containerized grain exports each year.

For Malaysia, DDGS is commonly exported via sea shipment in either standard 20 ft. or 40 ft. containers loaded at the actual ethanol plant or at a trans-loading facility in the United States. The maximum capacity of a 40 feet container is 58,000 pounds (26.3 tons).

Drumsticks stand at attention at a Malaysian night market.
(Source: FAS Kuala Lumpur)

Containers are transported by truck or train, ready to be shipped across the country to major container export points in the States. Key such ports among others for departure of DDGS are Long Beach, California and Savannah, Georgia. However, for container shipments bound for Malaysia, cargo would be loaded onto a container vessel and most likely leave from Long Beach.

In Malaysia, there are 27 feed millers, of which 16 are the major players in the feed industry. These were also the main buyers of DDGS at some point during the last decade.

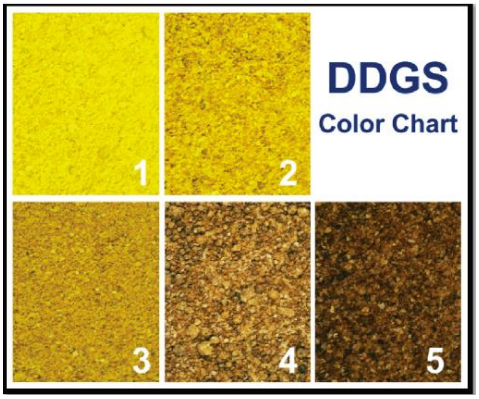
For Malaysia, price is a significant factor of demand increasing. With large supplies, U.S. DDGS are price competitive relative to other feed ingredients. DDGS are not subject to any import duties.

Section IV: Malaysia Market Challenges/Concerns

As a DDGS exporter, it is important to understand the concerns of feed manufacturers in Malaysia.

1. Misperceptions about Color of DDGS

Malaysian consumers believe the golden color of skin and meat for poultry indicates quality. There are also Malaysian buyers who believe the color of DDGS is a measure of quality, but color is, in fact, not necessarily the best indicator. They prefer a golden color closer to corn and believe that dark DDGS indicates over processing. Based on the below DDGS Color Chart, Malaysian importers prefer L-1 and L-2.



Malaysian importers prefer L-1 and L-2
(Source: U.S. Grains Council)

According to Asian Feed Magazine January 2017 (page 6), for most DDGS users, a high quality DDGS source is high in nutrients and digestibility and free of mycotoxins. Nutritional quality represents the concentration of digestible nutrients and value or cost obtained when adding DDGS to partially replace other ingredients in animal feed.

However, according to University of Minnesota research for Minnesota Corn Growers Association dated April 25, 2017 (page 82), the best method for determining DDGS value in various types of livestock, and poultry diets is to obtain a complete nutrient profile (ranking of foods according to nutritional composition to prevent disease and promote health.

According to the May 2017 issue of the Ethanol Producer Magazine (page 26), typically, DDGS is traded on protein, fat or "pro-fat" combination for nutrient guarantees. However, more DDGS customers are asking for additional guarantees depending upon intended feeding applications. Additional guarantees are negotiated prior to export with the importer, and it is extremely important to agree on the laboratory and testing method that will be used for any nutrient analysis being guaranteed or checked because the testing procedure can have a significant influence on whether or not a guarantee is met.

2. Corn Crop Condition

Malaysian feed millers are interested in knowing the condition of corn crops, particularly where there have been wet weather conditions. Their concern is whether the factors that include pre-harvest moisture, agronomic conditions, and soil types can affect digestibility. However, there is no direct link or correlation between weather conditions on corn and digestibility of DDGS as animal feed.

What should be a concern is variability in weather patterns that affects susceptibility to mycotoxins in corn, which in turn affects mycotoxins in DDGS. Mycotoxins can be present in DDGS if the grain delivered to an ethanol plant is contaminated with them. Mycotoxins are neither destroyed during the ethanol production process, nor during the drying process used in producing DDGS. However, as stated previously, it is uncommon for most of the corn producing regions in the United States to have adverse weather and climatic conditions that lead to mycotoxin production in corn.

3. Grain Storage

Due to tropical weather conditions in Malaysia, maintaining stored grain integrity and quality is a concern of feed mills and manufacturer as it is extremely susceptible to fungal deterioration and mycotoxin contamination. Tropical conditions are usually above 28◦C and 65% Relative Humidity (RH) which is ideal for mold (fungal) growth. Mold can produce mycotoxins and to reduce their growth, grain has to be kept at lower moisture levels, and avoid contact with other ingredients or grain with different moisture content.

Section V: Exporting to Malaysia

For all animal feed manufacturing company which intends to export to Malaysia **for the first time,** all application form must be completed and submitted by the manufacturer or the importer to the address for adequacy audit;

Quarantine Services and Import/Export Section
Biosecurity Management and SPS Division
Department of Veterinary Services Malaysia
Podium Block 1A, Lot 4G1, Presint4,
Federal Government Administration Centre,
62630 Putrajaya.

An approval letter will be issued if the manufacturing company passes the adequacy audit. For further information, contact:

Quarantine Services and Import/Export Section
Tel: +603-88702000 ext. 2010/2032 / 2033 / 2069 /2070 / 2093 /2089/ 2072

Under the Feed Law, importers are required to apply for an import license from the Department of Veterinary Services. The import license requires importers to provide:

- Certificate of Origin
- Certified composition by a competent agency of exporting country
- Relevant packaging, manufacturing and labelling requirement
- Import registration

For further information from Department of Veterinary Services (DVS) on procedures to import into Malaysia, click here.

U.S DDGS Quarantine Inspection Requirement

On January 09, 2017, Malaysia's Department of Agriculture (DOA) has issued a circular on the requirement for quarantine inspection for all imports of the U.S. DDGS into Malaysia. This is a precaution measures resulting from the decision of National Plant Protection Organization (NPPO) Vietnam suspension of all entry of U.S. DDGS due to a product pest known as Warehouse Beetle *(Trogorma variabile)* found in the shipment that can have negative impact to the agriculture industry in the country.

Legal action will be taken for all importer or agents that fail to declare any shipment or DDGS export into Malaysia.

For technical information and updates on this, please contact DOA hotline at +603 – 2030 1500 or email pradoamy13@gmail.com

Section VI: Appendix

1. **USDA has an FAS regional office at the American Embassy in Kuala Lumpur that represents USDA in Malaysia, Singapore, Brunei and Papua New Guinea.**

FAS Kuala Lumpur

U.S. Department of Agriculture (USDA)
Foreign Agricultural Service (FAS)
American Embassy
376, Jalan Tun Razak
50400 Kuala Lumpur, Malaysia
Tel: +(603) 2168-5082
Email: AgKualaLumpur@fas.usda.gov
Website: www.fas.usda.gov

2. **U.S Grains Council has a regional office in Malaysia covering the South and Southeast Asia regions.**

U.S. Grains Council
South and Southeast Asia Region
50-12-2, Level 12, Wisma UOA
50 Jalan Dungun, Damansara Heights
50490 Kuala Lumpur, Malaysia
Tel: +603–2093 6826
Fax:+603–2093 2052
Email: grains@gransea.org
Website: www.grainsea.org/

3. **Upcoming Events**

Asia's International Feed, Livestock & Meat Industry Show, April 19-21, 2018
Kuala Lumpur Convention Centre, Malaysia

For more information on the show, click here.

4. **Helpful Hyperlinks**

1. Download the USGC DDGS User Handbook here.

2. The special USDA-ERS report, *Estimating the Substitution of Distillers' Grains for Corn and Soybean Meal in the U.S. Feed Complex*, may be read here. Note the table on page 4 entitled "Nutrient profiles of selected feedstuffs."

3. 2016 Renewable Fuels Association's full report **here.**

4. The latest on DDGS pigmentation enhancement we can cite from Poultry Science Association 105th Annual Meeting in 2016 New Orleans, Louisiana abstract (Page 11) here

5. USDA-Agricultural Marketing Service (AMS) Grain Transportation Report (Page 2) here.

6. For a better understanding and illustration of the container loading process, click here. For a video of bulk DDGS vessel loading, click here.

7. Department of Veterinary Services (DVS) procedures on how to import into Malaysia, click here.

8. Asia's International Feed, Livestock & Meat Industry Show, click here.

5. Abbreviations

AMS	Agricultural Marketing Service
APHIS	Animal and Plant Health Inspection Service
CIF	Cost, Insurance and Freight
CY	Calendar Year
DDGS	Distiller's Dried Grains with Solubles
DOA	(Malaysia's) Department of Agriculture
DOE	Department of Energy
DVS	(Malaysia's) Department of Veterinary Services
EPA	Environmental Protection Agency
ERS	Economic Research Service
FAS	Foreign Agricultural Service
FOB	Freight on Board
GATS	Global Agricultural Trade System
MT	Metric Tons
MY	Marketing Year
NPPO	National Plant Protection Organization
PPM	Parts per million
RFA	Renewable Fuels Association
RH	Relative Humidity
USDA	United States Department of Agriculture
USGC	United States Grains Council