

NORTH DAKOTA

Ag Mag

A Magazine about Agriculture for North Dakota Students

January 2009



We're #1!

North Dakota usually ranks first in the nation in production of these 14 agricultural products:

Spring Wheat

Dry Edible Peas

Durum Wheat

Oil Sunflowers

Oats

Non-oil Sunflowers

Barley

Canola

Flaxseed

Lentils

Pinto Beans

Honey

Dry Edible Beans

Navy Beans

Crop Categories

Crops can be divided into different categories. Oilseeds, legumes and cereal grains are examples. The major purpose of oilseeds is to produce vegetable oil. Legume crops grow in pods and produce foods that humans and animals eat and are high in protein. Cereal crops are mainly grasses that have an edible fruit, which is a grain.



Circle the products above that are oilseeds.

Put a check mark next to the legumes.

Put a star next to the cereal grains.



List all the foods you ate yesterday.

Circle the foods you ate yesterday that came from North Dakota's #1 products.



Crop Production

What Crop is It?

Use the description to identify each crop plant. Write the plant name under the drawing.

Pinto Beans are a bushy legume plant with leaves separated into three sections (trifoliate leaflets). Flowers develop into pods that hang under the leaves, are 4 to 5 inches long and somewhat flat, and have spotted beans when mature.

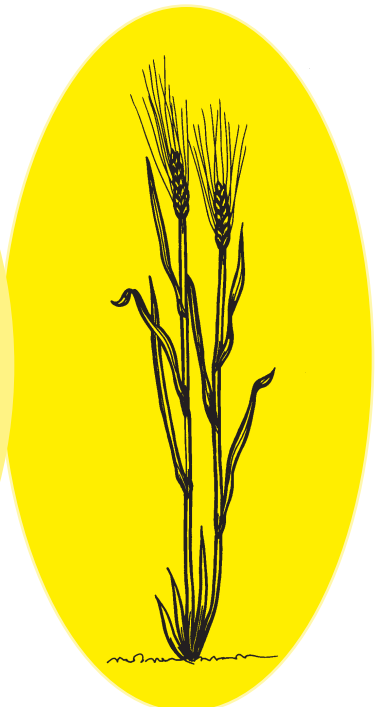
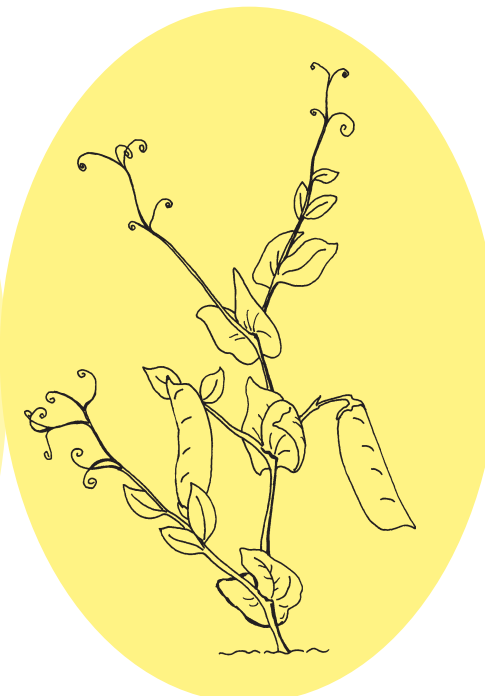
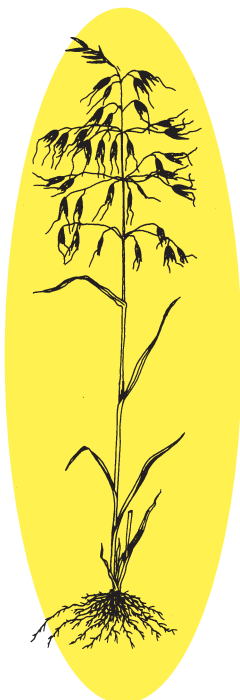
Canola grows 3 to 6 feet tall and has a cluster of bright yellow flowers at the top of each branch in early summer. The flowers produce seed pods 3 to 4 inches long. Each pod turns brown as it ripens and contains 20 or more tiny, round black or brownish-yellow seeds.

Lentil plants grow 8 to 24 inches tall and have 9 to 15 leaflets on each branch. Before flowering, new leaves develop a tendril (small vinelike structure) at the leaf tip. Lentils have flowers on top and small, round pods that contain one or two seeds.

Dry Edible Peas come in green and yellow. Later leaves have tendrils and a large stipule, which is a leaflike structure wrapped around the stem. Pea pods are similar to regular garden variety peas.

Barley is an annual grass that produces up to 80 kernels (seeds or small grains) in each head at the top of each stem. Each kernel has a long, straight fiber called an awn coming from the tip of the kernel. Generally barley has several stems arising from near the ground, called tillers.

Oats are a cereal crop with grass-type leaf blades. It has 7 to 8 leaf blades when fully grown. The flowering part and reproductive structure at the top of the plant become the oat grain.



Honey Production

Honey is food for bees. Bees produce so much honey that humans can harvest the excess. In the United States, there are about 2.5 million honey-producing colonies. North Dakota produces about 30 million pounds of honey in one year.

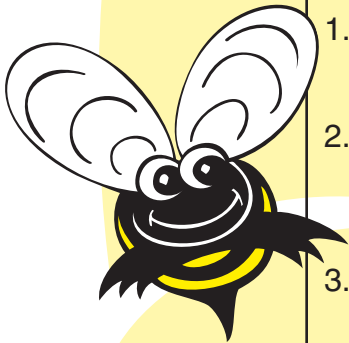
Bees are social insects because different members of the colony have special jobs that help the entire colony. A colony includes one queen; drones, which are male bees; and tens of thousands of worker bees that gather nectar and make honey.

One of the ways honeybees communicate with each other is by dancing. The dance alerts other bees where nectar and pollen are located and explains the direction and distance.

The color and flavor of honey depend on the type of flower the nectar came from. There are more than 300 different kinds of honey. In addition to gathering nectar to produce honey, bees are responsible for 80 percent of all plants' pollination.



Honeybee Math



1. The average worker honeybee makes $\frac{1}{12}$ teaspoon of honey in its lifetime. How many bees could make 1 tablespoon? _____
2. A hive of bees flies more than 55,000 miles to gather nectar for 1 pound of honey. How many miles would a hive of bees travel to bring 8 pounds of honey? _____
3. A honeybee flies about 15 miles per hour. How far could a bee travel in $3\frac{1}{2}$ hours? _____
4. In the United States, each person consumes about 1.31 pounds of honey per year. How much honey would a family of five consume? _____
5. A honeybee must tap 2 million flowers to make 1 pound of honey. How many flowers would a honeybee tap to make 5 pounds of honey? _____
6. About 2 tablespoons of honey would fuel a bee's trip around the world. How many tablespoons would it take to fuel a bee to travel around the world 7 times? _____ How many cups would that be? _____
7. North Dakota produces about 30 million pounds of honey in one year. With an estimated 639,715 people in the state, how many pounds of honey per North Dakotan is that? _____

Processing

Where in North Dakota?

Many agricultural products are processed in North Dakota. Write the names of the towns where these processing plants are located on the state map.

Barley

Busch Agricultural Resources Inc., West Fargo
Cargill, Spiritwood

Dry Edible Peas

Agricore United, Ray
Dakota Dry Bean, Crary
Paulson Premium Seed and Conditioning, Bowman
Superior Grains, Crosby

Lentils

Agricore United, Ray
Dakota Dry Bean, Crary
JM Grain, Garrison
Paulson Premium Seed and Conditioning, Bowman
Premier Pulses International, Minot
Stone Mill, Richardton
Superior Grains, Crosby
West Dakota Feed and Seed, Ross

Canola

ADM, Velva
ADM Northern Sun, Enderlin
Cargill, West Fargo
Northwood Mills, Northwood

Oil Sunflowers

ADM Northern Sun, Enderlin
Cargill, West Fargo

Non-oil Sunflowers

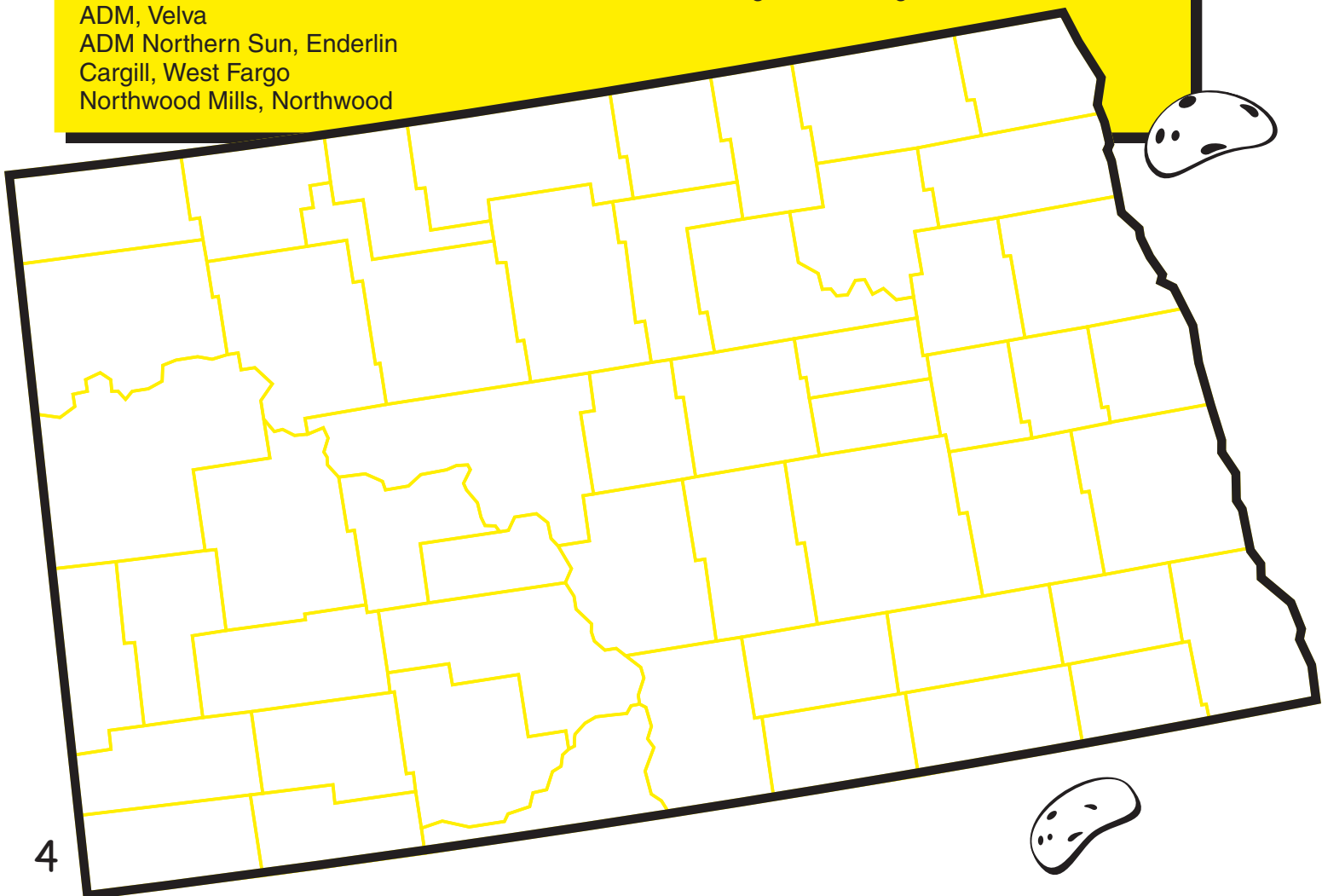
CHS, Grandin
Minn-Dak Growers Assn., Grand Forks
Red River Commodities, Fargo
SunOpta, Wahpeton
Dahlgren, Fargo

Honey

SpringTime Honey Co., Belfield
American Honey Co., Hettinger
Kent Honeybees, Tioga
Grand River Honey Co., Hettinger
Stewart Apiaries, Bismarck
Stromme Honey, Kloten

Flaxseed

Cargill, West Fargo



Career Corner



Ambrose and Charlotte Hoff

Stone Mill Inc.
Richardton, N.D.

Farmers produce many kinds of crops, but what happens to those crops after they leave the field? The crop often is hauled to the local elevator, but farmers who produce specialty crops, such as coriander or fenugreek, can't sell these crops in most local markets.

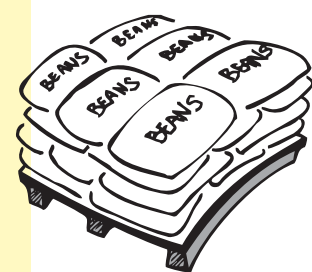
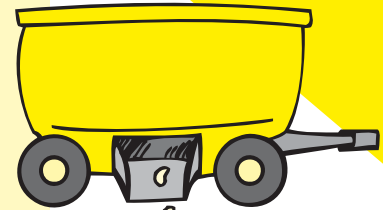
Ambrose and Charlotte Hoff operate Stone Mill Inc., a processing plant near Richardton, N.D., where they clean, package and transport specialty crops and seeds to all parts of the world.

Ambrose first thought a processing plant would be beneficial in 1986 when the Hoff's started raising garbanzo beans. Since there wasn't a local processing plant or market, the Hoff's decided to start their own plant where they could clean, bag and market the beans themselves. The plant has expanded and now processes about 20 different types of seeds and beans. These include flax, radishes, small grains, mustard, lentils, fenugreek, garbanzo beans, safflower, coriander, rye, buckwheat, alfalfa and millet.

Area farmers harvest these crops and haul them to Stone Mill Inc. Workers at the processing plant check the seed to make sure it is high quality. It is then run through a cleaner to separate out anything that isn't seed. The seed goes into a bagging bin where it is stored until the automatic bagger fills the 50-pound bags. The bags are sewn closed and stacked onto pallets. The pallets are loaded onto trucks and hauled throughout the United States and as far away as Africa. Beans follow a similar quality checking, cleaning and bagging process.

Fifteen full-time employees work in several areas of the processing plant from cleaning seed to bagging, general repair, office work or managing the general store.

Stone Mill also is organic certified, which means the grains are grown without the use of chemicals, and kosher certified, which is a Jewish approval of procedures.



Distribution

Where in the World?

To export means to move to another country, and to import means to bring into another country.

On the world map, color in the countries that are major importers of North Dakota's #1 products.

Hard Red Spring Wheat – Japan and the Philippines

Durum Wheat – Italy and Algeria

Oats – Mexico and Canada

Pinto Beans – Mexico

Dry Edible Beans – Mexico

Dry Edible Peas – Canada

Canola – Canada

Lentils – Spain

Sunflower Oil – Canada

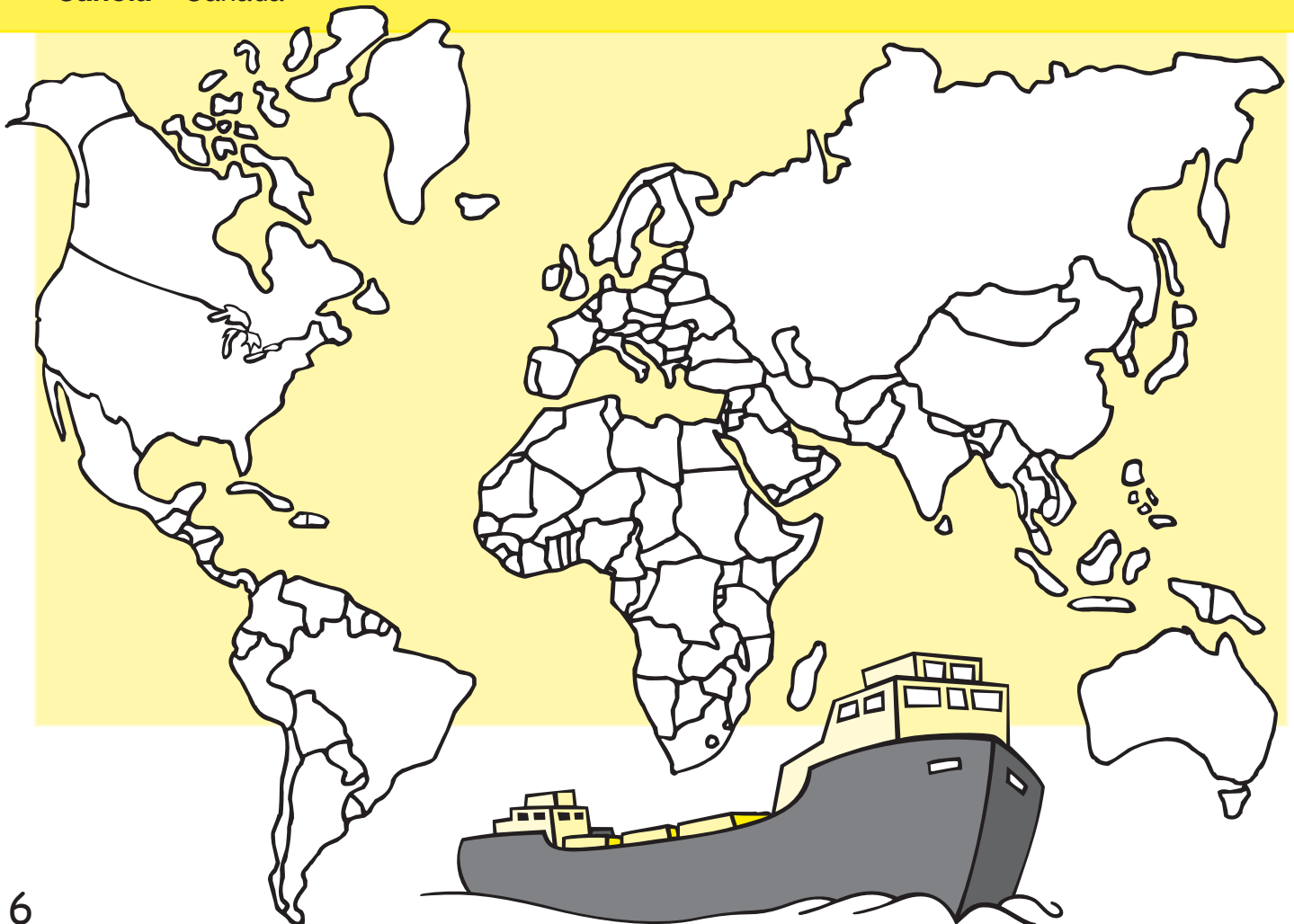
Non-oil Sunflowers – kernels, Germany; in-shell, Spain

Honey – Saudi Arabia and the Philippines

Barley – Saudi Arabia and Japan

Flaxseed – Belgium

Navy Beans – United Kingdom and Canada



Consumption



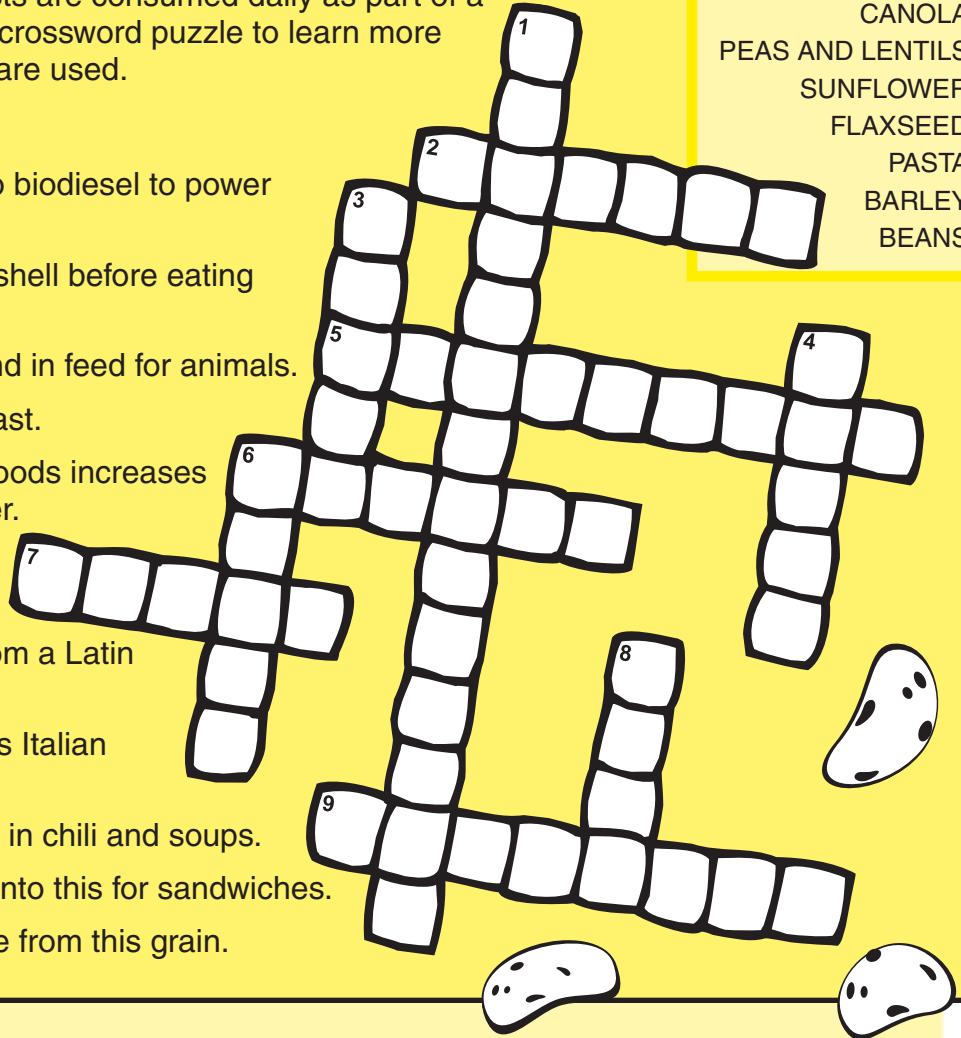
Many North Dakota products are consumed daily as part of a healthy diet. Complete the crossword puzzle to learn more about how these products are used.

Across

2. Its oil can be made into biodiesel to power trucks and tractors.
5. Requires cracking the shell before eating the seed inside.
6. Used in malted food and in feed for animals.
7. This tastes good on toast.
9. Adding this to baked goods increases protein and dietary fiber.

Down

1. These are called pulse crops, which comes from a Latin word for a thick soup.
3. Durum is made into this Italian specialty.
4. Various kinds are used in chili and soups.
6. Spring wheat is made into this for sandwiches.
8. Many cereals are made from this grain.



- HONEY
- BREAD
- OATS
- CANOLA
- PEAS AND LENTILS
- SUNFLOWER
- FLAXSEED
- PASTA
- BARLEY
- BEANS

Pack MyPyramid

In what part of MyPyramid does each of North Dakota's 14 #1 ag products belong? Write the food group on the line after each product.



- Spring Wheat _____
- Durum Wheat _____
- Navy Beans _____
- Barley _____
- Flaxseed _____
- Pinto Beans _____
- Dry Edible Beans _____
- Dry Edible Peas _____
- Oil Sunflowers _____
- Non-oil Sunflowers _____
- Canola _____
- Lentils _____
- Oats _____
- Honey _____



GRAINS

VEGETABLES

FRUITS

OILS

MILK

MEAT & BEANS

North Dakota
Agriculture
in the
Classroom



**Take this
issue of
Ag Mag
home to
share
what
you've
learned about North
Dakota's #1 products.**

Sources:

AmeriFlax
National Honey Board
National Sunflower Association
Northarvest Bean Growers Association
North Dakota Agricultural Statistics Service
North Dakota Barley Council
North Dakota Beekeepers Association
North Dakota Department of Agriculture
North Dakota Dry Pea and Lentil Association
North Dakota State University
North Dakota Wheat Commission
Northern Canola Growers Association

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