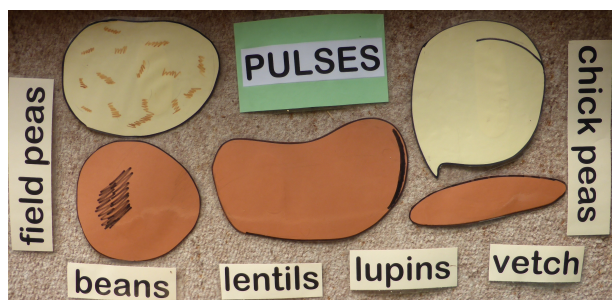


Nutritious Pulses

Continuing Jeanie Clark's environmental education series in the International Year of Pulses (IYP) 2016

"Nutritious seeds for a sustainable future"

What do you think of when you read this slogan? It belongs to pulses, as it's the slogan of the 2016 International Year of Pulses (IYP). This third IYP article explores nutrition and pulses, the new Victorian curriculum and Venn Diagrams.



Icon-Messages

Recall the icons used for visual communication in my first IYP article (*Otherways*, issue 147, p 29). What meanings did you give the icons then? The UN's Food and Agriculture Organization (FAO) intended meanings are below with their icons. As reading comprehension, divide them into nutritious or sustainability message groups:

Key messages of the Year



Pulses are highly nutritious.



Pulses are economically accessible and contribute to food security at all levels.



Pulses have important health benefits.



Pulses foster sustainable agriculture and contribute to climate change mitigation and adaptation.



Pulses promote biodiversity.

Ref: FAO website <http://www.fao.org/pulses-2016/about/key-messages/en/>

Nutrition

The nutritious messages above are that "pulses are highly nutritious ... and have important health benefits". How do they fit in a curriculum? Victoria has a new curriculum (see box), but still eight key 'Learning Areas'. Nutrition and health fits under the "Health and Physical Education" Learning Area of this *Victorian Curriculum Foundation-10* and 'Food and Nutrition' is one of its twelve focii.

As with any concept, first look at what the word 'nutrition' means. Why not start during a meal? Discuss why we eat and why we eat different foods. Perhaps your definition of 'nutrition' covered something like 'the good stuff in food that gives us energy to live and grow'. Then use a dictionary search to confirm and/or expand this.

Food groups

Do you know the types of pulses commonly found in Australia? Match names against shapes in the Pulses photo diagram left. Help may come from the logo activity (*Otherways*, issue 147, p 30), or pulse shape activity (*Otherways*, issue 148, p 29), or from these clues:

- Beans – brown, shaped like a jelly bean with a black slash at the top,
- Chick peas, - cream or brown, shaped like a ball with a beak
- Field Peas- brown, shaped like a ball with a dint
- Lentils – brown, shaped like a discus
- Lupins – cream with brown speckles
- Vetch – black, shaped like a discus

How are foods organised for nutrition? Have you seen a Healthy Eating Pie (Chart) or Pyramid? These are two common diagrams that also indicate relative amounts to eat to be healthy. Find the pulse names in such diagrams as:

This pie chart - <https://healthy-kids.com.au/wp-content/uploads/2013/10/AGTHE.png>;

And this as a Food Pyramid example- <http://nutritionaustralia.org/sites/default/files/HealthyEatingPyramid.jpg>.

Are you surprised to find some pulses in two parts of both diagrams –sectors of the pie and layers of the pyramid – and as part of 'legumes'? What does this mean? Being in two parts supports the idea that these beans, chickpeas and lentils are seeds that are indeed 'nutritious'!

Victorian Curriculum Foundation-10

(The Australian Curriculum for Victoria from 2017)

Learning Areas

- The Arts - Dance, Drama, Media Arts, Music, Visual Arts, Visual Communication Design
- English
- Health and Physical Education
- The Humanities- Civics and Citizenship, Economics and Business, Geography, History
- Languages
- Mathematics
- Science
- Technologies - Design and Technologies, Digital Technologies

Capabilities

- Critical and Creative Thinking
- Ethical
- Intercultural
- Personal and Social

(Ref: Victorian Curriculum and Assessment Authority <http://victoriancurriculum.vcaa.vic.edu.au/overview/curriculum-design/learning-areas-and-capabilities>).

For the 12 focus areas of Health and Phys Ed, refer to <http://www.vcaa.vic.edu.au/Pages/foundation10/viccurriculum/hpe/hpe.aspx#link2>

Why is 'legumes' used, but not 'pulses'? Take a look at Pulse Canada's diagram of legumes at <http://www.pulsecanada.com/food-health/what-is-a-pulse> . Pulses are a sub-group of legumes.

Nutrients

What nutrients in food help us to live? The 'Healthy Kids' website gives two nutrient groups:

- macro – proteins, carbohydrates/fibre and fats.
- micro – vitamins and minerals.

Their webpage (<http://healthy-kids.com.au/food-nutrition/nutrients-in-food/>) is easy to read, but does not have a lot of detail. Ready for greater detail? Read about nutrients and what they do at <http://www.mydailyintake.net/nutrients/> http://www.trans4mind.com/personal_development/nutrition/typesOfFood.htm and <http://www.glnc.org.au/legumes-2/legumes-and-nutrition/>

Which of these nutrients would be in pulses? Being in two food sector/layer groups suggests that pulses will have more than one nutrient group. The Pulses Canada webpage above has a clear statement of what they are. Another clear one is given by Pulses Australia at <http://pulses.org/future-of-food/pulses-nutrition>

Use these for reading comprehension. There may be some new words that need to be defined:

- fibre,
 - carbohydrates and starch,
 - proteins,
 - vitamins (B vitamins - folate, thiamine, niacin),
 - minerals (iron, potassium, magnesium, zinc).
- Yes, this list shows that pulses contain a range of good macro- and micro- nutrients!

For Health

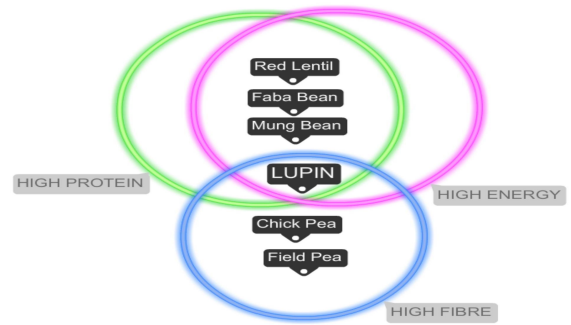
What good do they do for our bodies? 'Food, nutrients and energy' is a summary diagram at http://images.slideplayer.com/32/9899866/slides/slide_2.jpg For reading comprehension, the Healthy Kids website has a page for each of the nutrients above. It is in a chart in pages 4-5 of <http://www.slideshare.net/wellnessestelle/emeascienceofnutritiontraining> Try creating a diagram to show pulses by shapes in the middle surrounded by these important nutrients' names and drawings to represent their benefits to the body.

For the more advanced, are there nutritional differences between the pulses? Yes. See <http://www.pulseaus.com.au/using-pulses/health-benefits> or, once the pulse seeds have been processed into foods, in the table at <http://www.glnc.org.au/wp-content/uploads/GLNC-Nutrient-Composition-of-Legumes.pdf> How might these differences be shown in a visual diagram?

Venn Diagrams

Overlapping or multiple features can be easily seen in a Venn Diagram, such as this one.

Venn Diagram showing Pulses with high levels of three nutrients



It shows the highest of three macro-nutrients, again using the Pulses Australia's table. How quickly can you read it? Which pulses are high in fibre only? Which are high in both protein and energy? Which is high in all three?

How is a Venn Diagram set up? With pen/pencil, or a Venn Diagram maker, on the web. This free, intuitive, 'read-write-think' one, saves as a pdf - http://www.readwritethink.org/files/resources/interactives/venn_diagrams/ Instructions: title the diagram first. Click on circle labels to name each as a feature. Do this for each feature to be considered, e.g. high in protein, energy and fibre nutrients = 3 circles. Drag on circle names to move and overlap them. To add pulses, click 'add item' and type the name of a pulse, then drag it into position. You have a choice of three font sizes to add importance of the item. Save!

Nothing is perfect!

Using this same table reference, a second Venn Diagram could show what the pulses are low in. It would be more complicated with fibre, calcium, amino acids, sulphur and lignin circles. Chick peas would be in one circle, beans and field peas in two, and lentils in three.

Both this and the charts show that no food gives all the things our bodies need. Hence why we need combinations of foods and cooking advice for what goes well with what, e.g. with pulses. What is missing from pulses in general? Look for sugars, salts and fats in the nutrient group references. Pulses are low in these three. Back to a difference with legumes - they have fats.

Animal Nutrition

Many pulses are not grown for human food directly but indirectly through the animal food chain. The Pulses Australia notes above also refer to animal food uses. Youngsters could make a diagram to show this by drawing pulses linked to animals and then to people for any you eat.

All this goodness comes from the food storage part inside the seed – as seen in the photos in my last IYP article (*Otherways*, issue 148, p 30.) Why is all this nutrition there in a pulse seed? Have we forgotten it is for the seed to grow into a plant?