

Honey on Toast

The journey from paddock to plate

Honey on toast is a favourite breakfast or snack for many Australian's. But how many of you have ever stopped and wondered how it gets from a farmers paddock to your plate? At this year's Royal Adelaide Show we are showcasing Australian farmers, bakers, manufacturers and apiarists and the role they play in food production. It's a tasty journey that involves research, sustainable land management, innovation, quality control, technology and skill. Immerse yourself in the journey, enjoy!

GROWING THE GRAIN > MAKING THE BREAD > PRODUCING AND COLLECTING HONEY > EATING!



Did you know?



AUSTRALIAN FARMERS
PRODUCE ABOUT
24 MILLION TONNES
OF WHEAT PER YEAR.



BREAD-EATING
AUSTRALIANS
CONSUME MORE THAN
53 KILOGRAMS
PER YEAR.



THERE ARE ABOUT
16,800 KERNELS
OF WHEAT IN ONE
STANDARD LOAF OF BREAD.



THE AUSTRALIAN HONEY BEE
INDUSTRY PRODUCES BETWEEN
25,000 & 30,000
TONNES OF HONEY ANNUALLY.



PRESENTING PARTNER
bankSA



Show Society
FOUNDATION



Growing the Grain

Australia is a world leader in the production of high quality, safe and clean wheat for both human and livestock consumption. About 25 million tonnes of wheat is produced in Australia each year which accounts for 3-4% of world wheat production and 10-15% of global wheat exports. (AEGIC 2018)

Australian wheat is used to make flour for biscuits, noodles, pasta, flat breads and breads. The whole grain is also used in wholemeal or whole grain breads and pastas, breakfast cereals, muesli bars and stock feeds. Growing great grain is not just a matter of putting a seed in the ground and 'hoping for the best', it's a sophisticated 'grain chain' and it results in high quality grain for food production. Here's a snap shot ...



1. Research

Research scientists and plant breeders develop wheat varieties, which suit a range of environmental conditions and quality requirements.



2. Plant variety selection

Farmers select a variety suited to their region and paddock. They prepare their paddocks for sowing, ensuring they are free of weeds and disease.



3. Sowing

Using air or disc seeders, seeds are sown about 2 cm below the soil, in rows about 30 cm apart.

Seeding occurs anywhere from April to June, depending on the weather and location. In South Australia, most wheat crops rely on winter rainfall (not irrigation).



4. Seed Germination and Growth

Following a rainfall event the seed germinates. Over the next few months the plants stems and leaves grow.

The average wheat plant grows to around 1 meter in height. Each plant has a single main stem plus 2-3 tillers (or secondary stems).



5. Crop Agronomy

Throughout the growing season, farmers monitor plant growth and health, ensuring they have the right nutrients to grow and survive. Crops are also monitored closely for insects and weeds, which can impact growth, development and yield.



6. Head Emergence

The wheat 'heads' start emerging from each tiller. At the top of each tiller is a 'spike'. Each spike has around 35-50 grains (or kernels). During this growth phase, the plant needs plenty of water, nutrients and sunlight.



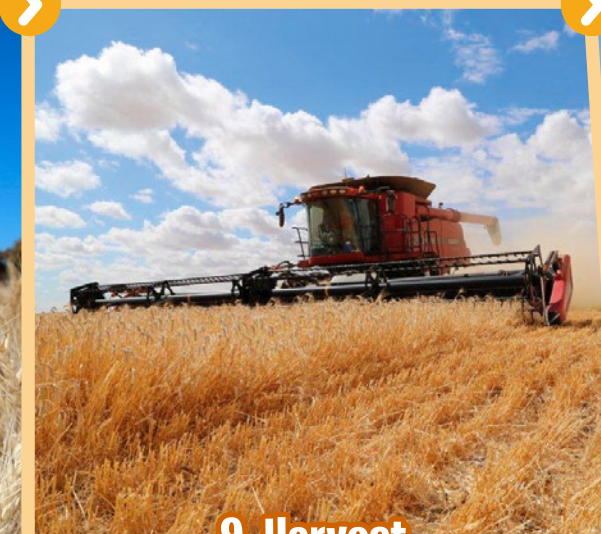
7. Flowering and Grain Fill

As the weather starts to warm up the wheat plants start to flower. Pollination occurs mainly by 'self-pollination' – this results in fertilisation and a baby seed begins to grow in the spike. As the grain fills, farmers hope for good weather – hot and windy days can affect grain fill and frosts can cause grain sterility. A good rain at this time is essential - if there is not enough moisture, grains will not fill out and will become pinched, shriveled and lack quality.



8. Ripening...

As the weather starts to warm up, the grain fills and eventually start to ripen, turning from green to gold.



9. Harvest...

Harvest commences when the grain is completely dry and ripe. Farmers measure grain moisture and protein content to ensure the grains are harvested at the perfect time. The grain is collected in the harvester, then stored in chaser or field bins.



10. Grain logistics

Harvested grain is graded for quality and then transported from farm to silos around Australia, by trucks and train.

From here the grain is transported via ships to all areas of the world, or it is kept and sold to local markets to make bread, pasta, biscuits and more!

Making flour



Once farmers have grown the grain, it is used by flour mills, bakers and manufacturers.

The process of milling grain and producing a high quality flour, is dependent on the quality of the wheat. Wheat flour for bread making, which comes from specific hard wheat varieties, needs to have between 11-13 % protein, low moisture content and must be free from any contaminants.

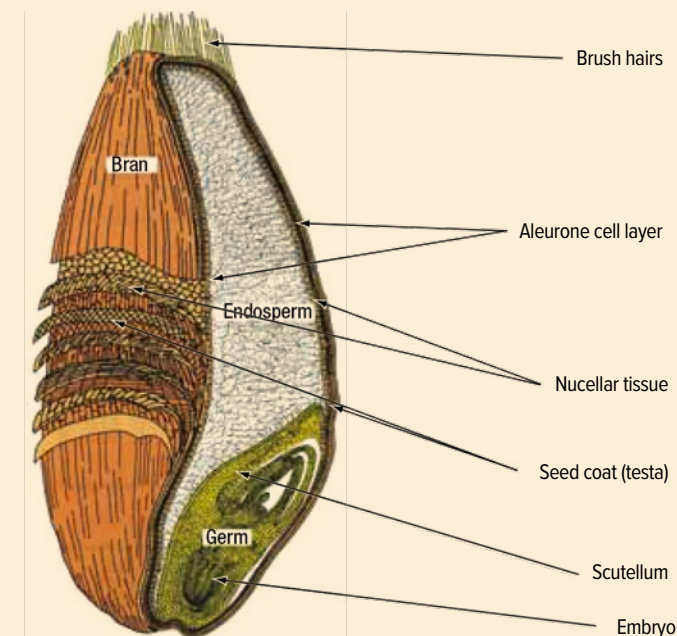
Grains are the edible seeds of grasses, such as wheat. An individual grain of wheat, the kernel, can be ground (or milled) to make flour.



- When wheat arrives in a mill it is firstly cleaned, to remove any impurities. It is then passed through a series of roller mills which grind the grain into flour.
- In between rolling, the ground grain is sifted to remove the bran and germ, leaving the endosperm - white flour!

Did you know?

- Protein content is particularly important in bread making as the amount, and quality, affects the way the bread rises, tastes and behaves when cooked.



Reproduced with permission: Wheat Food Council, Canada).



- The average wheat kernel has three distinct parts. The seed coat (which makes up around 14 per cent of the grain), the endosperm (which makes up around 83 per cent of the grain) and the embryo which makes up 3 per cent.
- White flour contains the endosperm only.
- Whole meal flour contains the whole grain, the bran, the germ, and the endosperm.
- Whole grain flour is recommended due to its higher nutritional content.
- Whole grain wheat is low in fat, high in carbohydrate, relatively high in protein, high in potassium and low in sodium, contains prebiotics, B group vitamins, vitamin E, iron, zinc, magnesium, phosphorous and selenium. PLUS MORE! (GLNC 2018)

Making bread



Bread making is a fabulous science experiment!

Simply take the high quality flour and add water, salt, yeast and sugar ... THEN KNEAD!



Kneading forms gluten links, which are important for breads structure and function.

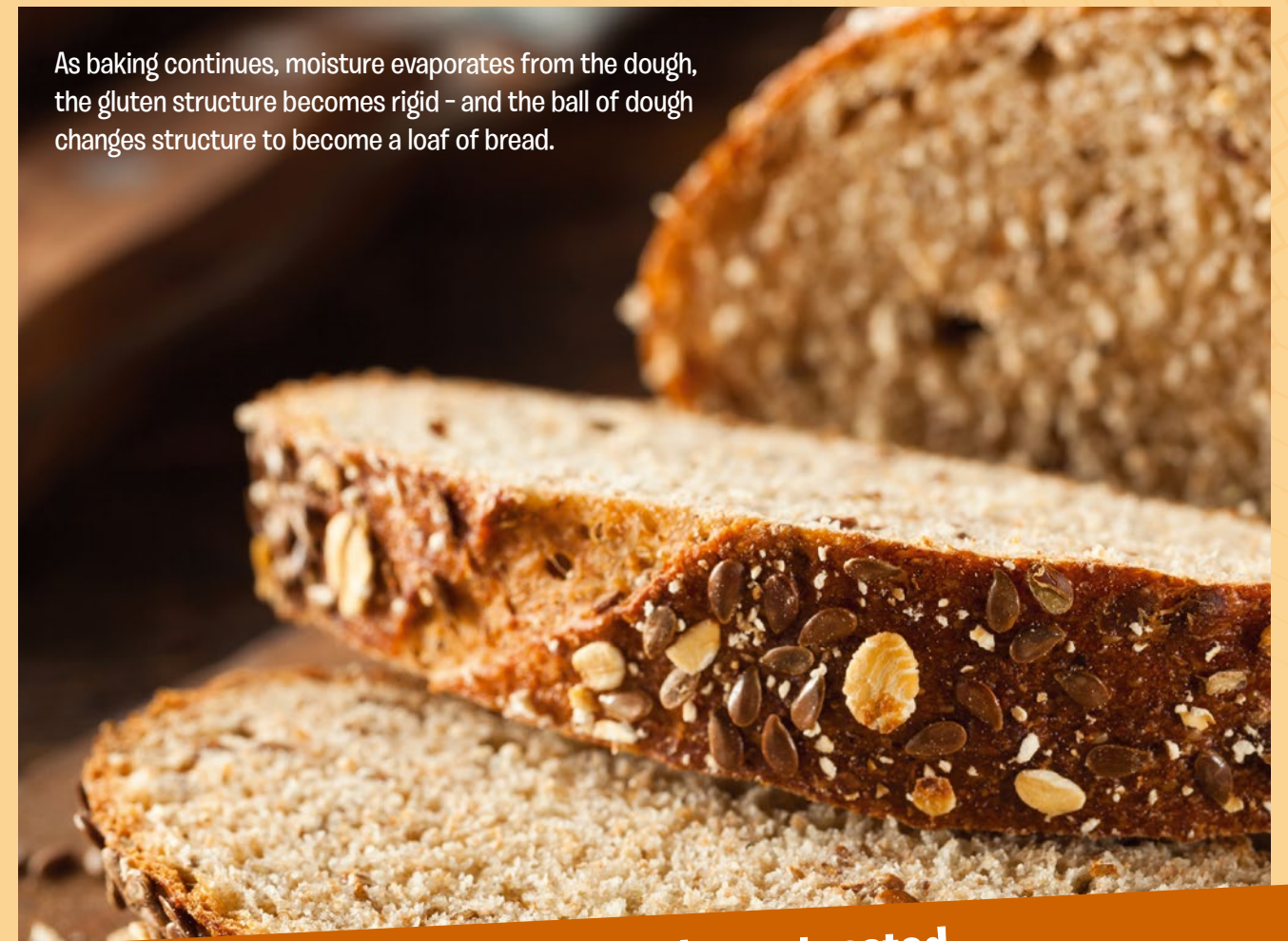
Did you know?

There are two proteins that form gluten - gliadin and glutenin. In order for these two proteins to join, you must knead the dough in the presence of water.



- As bread is proofed and baked, gas is produced by the yeast (evident in the expanding and rising loaf).
- The gas bubbles move up through the gluten matrix and as they move, they become trapped. You can see these air bubbles in your loaf!

As baking continues, moisture evaporates from the dough, the gluten structure becomes rigid - and the ball of dough changes structure to become a loaf of bread.



**Enjoy this bread fresh... or toasted...
Then add butter and honey
YUM!**



Producing the honey



Honey is a natural product, which is nutritious and delicious. It is the perfect addition to our fresh bread or toast.

Honey production in Australia is big business. In an average year, it has been estimated that Australian bee keepers produce between 25,000 and 30,000 tonnes of honey. The value of this honey, along with the beeswax, is worth around \$90 million annually (APH 2018)! The below steps describe how honey is produced.

Bees collect nectar from flowering plants and return to the hive. Nectar is stored in a honey sack, where an enzyme converts the nectar into a sugary solution.

This solution is stored in wax cells in the hive, where it is converted to honey.

Bee keepers extract honey - leaving enough to sustain the honey bee population.

Honey is then packaged and sold, nothing is added! It is a truly natural foodstuff - thick, golden and delicious.



Bee keepers place bee hives in strategic places - they must be close to good sources of nectar such as native vegetation, particularly eucalyptus.

Commercial bee keepers use the European honey bee (*Apis mellifera*) as they produce large quantities of high quality honey.

There are around 12,000 registered bee keepers in Australia who own around 52,000 hives (BeeAware 2018)!

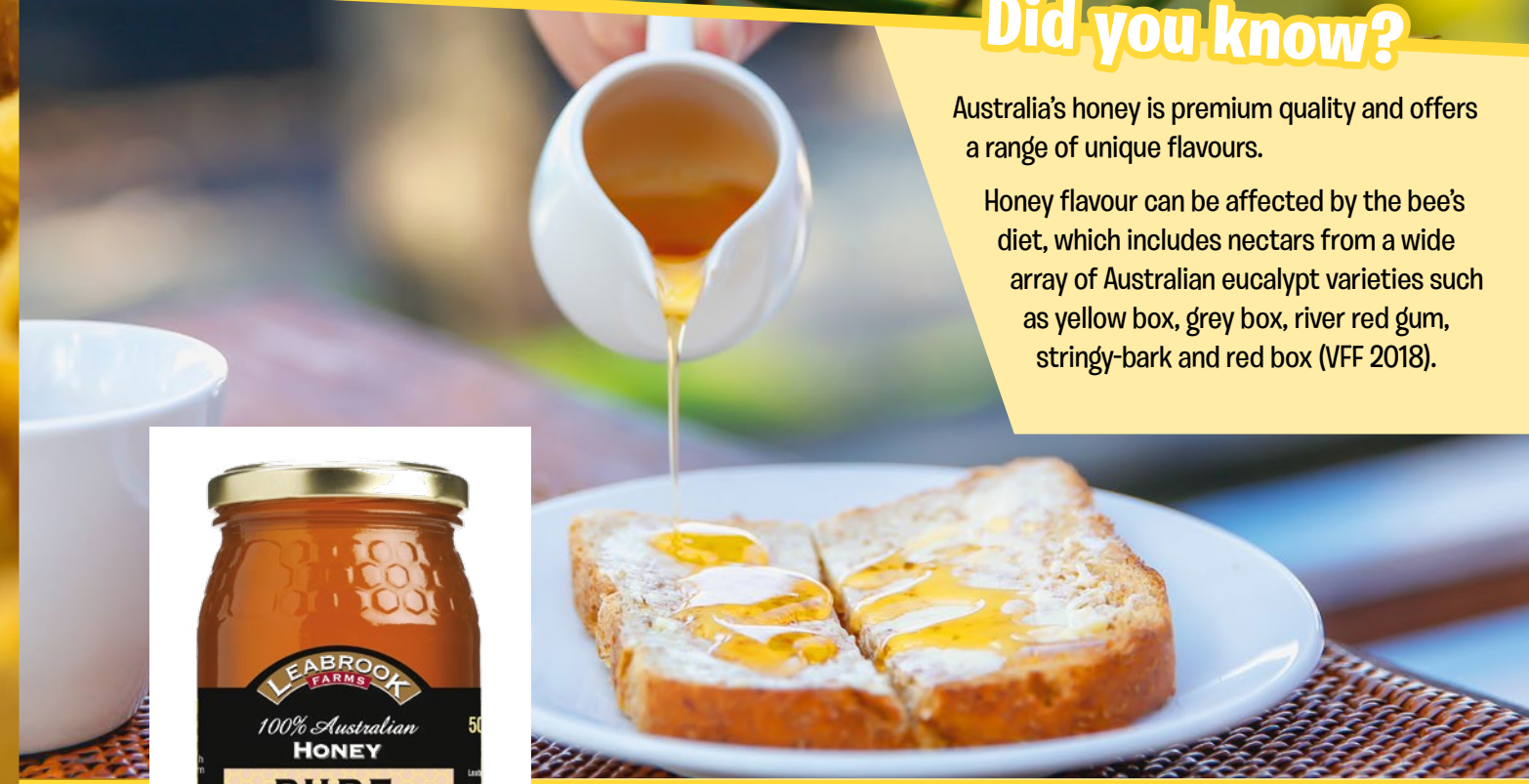
Beekeepers move their hives up to 20 times a year due to the high variability of budding, flowering and pollen and nectar yields (BeeAware 2018).



Did you know?

Australia's honey is premium quality and offers a range of unique flavours.

Honey flavour can be affected by the bee's diet, which includes nectars from a wide array of Australian eucalypt varieties such as yellow box, grey box, river red gum, stringybark and red box (VFF 2018).



Visit the Royal Adelaide's Show Golden Grains Pavilion to discover more!



Try your hand at milling grain, making dough and even immerse yourself in a Virtual Reality Experience showcasing the paddock to plate journey of 'honey on toast', with our new FARMVR - VIRTUAL REALITY FARMING EXPERIENCE, proudly supported by Spring Gully Foods.

Download a FREE FarmVR App, which includes the Honey on Toast experience, or visit www.farmvr.com.au

Contact the Grains and Fodder committee for more information on crop production in SA:
Jo Geschmay: JGeschmay@adelaideshowground.com.au

And next time you're in the supermarket don't forget to support local producers and manufactures.

Head to www.springgullyfoods.com.au for the best honey and produce in town.



Did you know?

- Agriculture, food, wine and forestry is South Australia's largest export industry, generating \$22.5 billion annually.
- South Australia's food manufacturing industry is another major economic contributor to the state, with gross food revenue worth around \$17.6 billion.
- Thanks to research, innovation and development, the Australian grains industry has achieved around 2% annual increase in grain yields over the past 30 years.
- In 2016-17, the field crops industry produced 11.1 million tonnes of grain, with a total farmgate value of \$2.2 billion.
- About 85% of the state's grain is exported internationally to around 60 countries accounting for 20% of South Australian agriculture, food and wine exports.

References:

AEGIC (2018) Australian Wheat, Australian Export Grains Innovation Centre. Viewed online at: https://aegic.org.au/wp-content/uploads/2018/02/AEGIC-Grain-Note-wheat_LR.pdf

APH (2018) Australian Honey Bee Industry Council. Viewed online at: https://www.aph.gov.au/.../house_of_representatives_committees?url=/pir/honeybee

BeeAware (2018) BeeAware Industry. Viewed online at: <http://beeaware.org.au/industry/>

GLNC (2018) Wheat. Viewed online at: <https://www.glnc.org.au/grains/types-of-grains/wheat/>

VFF (2018) Honey Production in Australia. Viewed online at: https://www.vff.org.au/vff/Industries/Horticulture/Beekeepers/Honey_Production_in_Australia/vff/Industry_Groups/Horticulture/Beekeepers/Honey_Production_in_Australia.aspx?hkey=bbb529de-9155-4a9f-b513-dd5fff5ad336

Reference: PIRSA, viewed online at: http://www.pir.sa.gov.au/_data/assets/pdf_file/0009/272880/PIRSA_Agriculture_Food_and_Wine_in_SA_Jan18_vFW.pdf

