Types of Farms

Sydney Royal Easter Show Competitions

Life on the land requires lots of work and often farming families do this together.

There are over 135,000 farms in Australia. Australian farms produce around 93% of the food we eat. There are many different kinds of farms. There are farms which grow beef cattle, sheep, goats, pigs and poultry. Others are involved in dairying with Australian dairy farmers producing over 9,102 million litres of whole milk per year.

Natural fibres such as wool, cotton, mohair and alpaca provide the raw materials for the clothing we wear. In a normal year, Australia's cotton growers produce enough cotton to clothe 500 million people. Cotton is used in a vast array of products, from jeans to cotton sheets. Australian wool exports are worth over 3 billion dollars to the Australian economy. Australian wool is used for a variety of products, from fine apparel in business suits to the production of carpet and furnishings.

89% of farms are Australian owned. There are around 38,550 farms in NSW alone. While the majority of farms are still owned by families there are a variety of people of different ages and abilities to help do the work.

Children live on farms and properties that are very remote. Some students use a high frequency (HF) radio transceiver to receive their school lessons. New technology, such as digital media is continually being incorporated into the Schools of the Air. More and more, lessons are also being delivered via an interactive broadband satellite network. Using a video camera and electronic whiteboard, teachers are able to talk to students each day, provide lessons and send and receive emails, so students can get help with their school work. By watching their teacher in real time using computer web cams, students can participate in group discussions with their classmates, even when they are hundreds of kilometres apart.

Did you know?

On average, Australian farms export over 60% of what they produce

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Often living on a farm means that you have to drive long distances to see friends, do your shopping, play in team sports or visit the doctor. People in remote areas sometimes need medical assistance in an emergency.

The Royal Flying Doctor Service (RFDS) of Australia is one of the largest aeromedical organisations in the world. The RFDS is a not-for-profit organisation that has a fleet of 63 aircraft operating from 21 bases around Australia. This service provides medical assistance to over 290,000 people every year.

WONDERFUL WORDS

Name 3 ways school is different for kids in the bush to kids in the city?

1. _____

2. _____

3. _____

Name 3 ways school is similar for kids in the bush to kids in the city?

1. _____

2. _____

3. _____

MATCH THE PRODUCT TO THE FARM

Olives	Dairy
Mutton	Paddy Field
Pork	Vineyard
Milk	Sheep Station
Grapes	Orchard
Apples	Grove
Rice	Piggery

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Jobs in Agriculture

Sydney Royal Easter Show Competitions

There are many jobs in agriculture. Here are a few examples of what people do to help provide our food and fibre.

Farmers need to know about many things – how plants and animals grow and what they need to do to help this happen. They need to know how to sell or market their produce.

Vet: No two days are the same and can be very long. They are often woken in the middle of the night to help an animal in an emergency, like helping a cow deliver a calf. Later they may be back in the clinic – doing health checks on snakes.

Truck Driver: Trucks move animals, grains, fruit and vegetables from farms around Australia to markets, processing, packaging or distribution centres. Much of the food and fibre produced is in outlying areas on the edge of cities or often many hundreds of kilometres away from the high concentration of people living in towns and suburbs.

Fashion Designer: These are the people who create new ideas for what clothes will look like. They obtain fabrics that contain natural fibres such as cotton, wool, mohair, alpaca fleece, as well as other man-made fibres and design clothing that is both fashionable and practical.

Food Scientist: Using cutting edge technology they are developing an understanding of how different things affect eating quality and their research will help consumers have a better experience when eating farmers' produce. They will also develop information for farmers and food processors about the best ways to handle and care for the produce, to ensure they have the best quality products.

Some days they need to be a biologist, plant scientist, mechanic, computer expert, accountant or a human resource manager. While many farming families do most of the work, that doesn't mean they do everything. Sometimes they hire part-time workers to help with shearing sheep, harvesting crops or packing produce. Often these people are hired at especially busy times of the year and are called seasonal workers.

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Did you know?

There are 1.6 million jobs in agriculture in Australia

Farmers are always learning. By observing what happens when they plant certain crops or feed animals different types of hay and grains; the farmers see results and develop more productive ways of doing things.

Farmers are able to do courses at university, attend field days or consult with other people who are experts in particular areas. Farmers often use computers to keep all their finance and farm records.

Produce buyers: Buy and sell produce from farmers to distribute it to other places. There are stock and station agents at stock yards or grain or wool brokers who then forward produce onto markets while others act as agents in distributing fruit and vegetables at wholesale markets.

Support services: Is another level of employment associated with farms. Examples of such services are; consultants, veterinarians, machinery dealerships, repair workshops, feed suppliers, laboratory/analysis companies and financial advisors.

WORD SCRAMBLE

kscot genat

dofo echtistonlgo

gforrema

cutrviatilrualst

loow ssercla

WONDERFUL WORDS

Fill in what people do for these Jobs:

Vet:

Fashion Designer:

Truck Driver:

Meat Scientist:

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Safety on the Farm

Living on a farm can be great fun and is very different from the city. Even though farms are exciting places to live, there are more risks that people, especially children, need to be aware of. In order to stay safe, children on farms are taught from a very young age important things to remember.

Did you know?

16% of people injured on farms are under 16 years of age

Livestock are often being moved from one paddock to another for fresh grazing land and periodically are brought into the yards for health checks. Farmers have to open or shut gates ahead of time before they go to muster more livestock. Children are always told to leave a gate the way they have found it (if it is closed, close it behind you). This is because if they are not left the same way, livestock will not be able to move around the farm quickly and may even accidentally get out onto a road without the farmer being aware.

Children are taught the following farm rules from a very young age:

- Never wander from the house without telling an adult where you are going
- Keep all chemicals locked away and only adults should enter chemical storage sheds
- Do not swim in areas that have water such as dams, creeks and rivers, as shifting sand and submerged trees can make them dangerous
- Wear protective equipment like gloves, helmets, goggles and hats when doing certain jobs around the farm and don't play in or around silos, hay sheds or dangerous machinery
- Tell an adult if you notice something that could be dangerous, like frayed electrical leads
- Kids shouldn't ride on tractors

Farm jobs should only be done by those who have the skills to safely do the job. If kids are asked to do a job, they should ask someone who does the job regularly for help to explain how it should be done.

There are many resources on farm safety, from how to drive tractors and all-terrain vehicles (APVs) to using chemicals and operating chainsaws. There are information sessions and field days for farmers to learn the latest information. Safety is all about taking steps to try and prevent an accident from happening to you or someone else.

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LABEL THE KEY PIECES OF EQUIPMENT THAT A FARMER USES TO SPRAY HIS VEGETABLES

FIND A WORD

BOOTS
CABINET
CAPPED
EQUIPMENT
FACE
FLURO
GLASSES
GLOVES
GUARD
GUMBOOTS
HAND
HELMET
LOCKED
MASK
OVERALLS
SAFETY
SHOWER
STEEL
VEST
WASHING

S	O	G	D	E	R	R	R	S	W	O	V	N	T	V
L	T	N	F	E	O	S	C	L	T	I	J	T	X	S
W	A	O	W	L	E	V	P	L	C	J	S	D	S	V
H	A	O	O	S	U	X	C	A	B	I	N	E	T	G
J	H	S	S	B	L	R	S	R	D	U	V	P	E	L
S	K	A	H	P	M	A	O	E	C	E	V	P	E	O
A	L	S	K	I	F	U	R	V	M	C	K	A	L	V
G	T	F	A	E	N	O	G	O	C	L	S	C	L	E
J	S	C	T	M	H	G	U	A	R	D	Z	L	O	S
X	E	Y	T	E	M	L	E	H	E	C	A	F	M	L
V	V	Q	D	B	O	L	M	X	W	E	X	B	H	J
X	M	U	O	U	H	R	M	G	S	K	O	K	C	U
F	D	O	B	P	U	R	Z	R	H	I	W	T	A	K
U	T	N	E	M	P	I	U	Q	E	M	Q	M	K	S
S	E	L	U	X	U	M	P	A	C	U	G	M	K	T

Life Cycles

There are many cycles on a farm, from the life cycle of the plants and animals to the movement of water and nutrients from the ground into plants and animals. One of the often overlooked life cycles is that of a bee.

Bees are incredibly important in the agricultural sector. Why, you may ask? Bees, apart from producing honey that we love to eat, are also busy pollinating many of our vegetable and fruit crops.

The bee life cycle occurs in four stages. Every beehive contains a queen bee, there are some drones (males) and the rest are workers. Before any new bees can hatch, a queen must fly high into the sky and the strongest and fastest drone gets to mate with her. After mating the drone dies. After mating with several drones, the queen returns to the hive and starts laying eggs within 1-2 days. The queen lays 300-1000 eggs daily and most of the eggs are fertile. The fertile eggs are cared for by worker bees and in the right conditions, larvae develop from the eggs in 3-4 days. Nurse bees must feed them.

CROSSWORD

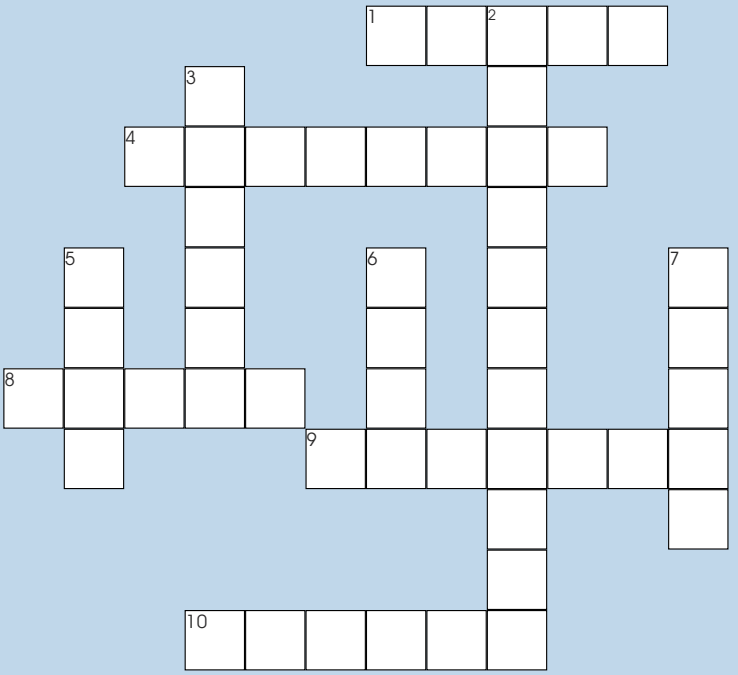
Find the answers in the text

ACROSS

1. Third stage of the bee life cycle
4. What a new bee uses to cut the wax
8. Which bee flies high into the sky being chased by other bees
9. What types of eggs are looked after by worker bees
10. Worker bees fill the chamber with.....

DOWN

2. Bees aid fruit trees by helping with...
3. Second stage of the Bee life cycle
5. The number of stages in a bees life cycle
6. Where bees live
7. Bees make.....



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Did you know?

When a queen bee is deemed too old, she is swiftly killed by the worker bees

After 6-7 days, they turn into pupae and stop eating. The worker bee fills the chamber with pollen and honey and seals the pupa inside with a covering of wax. Pupa, who will later become workers, drones or queens are inside the chamber for 12-20 days. During this time they develop wings, legs, eyes and other body parts. When they have finished developing, they use their mandible (jaws) to cut their way out through the wax.

Approximately 2-3 weeks later, these bees will leave the hive. Adult bees live for varying amounts of time. Queen bees survive for 3-5 years, drones 1-3 years and worker bees only 2-3 months.

Bees generally collect nectar or pollen as a food source for the developing larvae and take it back to the hive. Bees can carry half their body weight. As the bee moves from plant to plant, the pollen attached to its body accidentally gets passed from one plant to another, causing pollination to take place. Bees help in the life cycle of many plants, enabling the plants to grow and develop fruit and/or seeds.

FINISH THE ACROSTIC POEM:

A farmer works all day long,

Growing our food so we can be healthy and strong,

R _____

_____

I _____

_____

C _____

_____

U _____

_____

L _____

_____

T _____

_____

U _____

_____

R _____

_____

E _____

_____

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Water Management

Having fresh water for plants and livestock as well as managing high rainfall and drought conditions are some of the biggest challenges for farmers. Digging wells and dams, sinking bores and erecting tanks have become increasingly important for farmers to survive dry weather conditions.

Irrigation is a very important factor in making farming viable in inland Australia. The total area of land irrigated is about 1.8 million hectares or less than 1% of the total land used for agriculture.

Irrigation helps farmers produce about 25% of Australia's agricultural produce, therefore 75% of farm production relies on rain that falls onto their property. Farmers are regulated on how many dams they are allowed to build or if they want to pump water from rivers.

Some areas of Australia have underground water which farmers can use. It must be adequate quality and quantity if it is to be used for livestock drinking water or irrigation. Bores bring this type of ground water to the surface.

Farmers use a variety of machinery and equipment to move water around a farm. Some large cropping properties use travelling or pivot irrigators that spray water 10-50 metres over the crop. More intensive farm operations in nurseries and greenhouses may use sprays or drip irrigation that travels only a few centimetres. Water is such a valuable resource that farmers often try to recycle water by collecting excess water that runs off sheds or sloping surfaces. When animal yards such as dairies, are washed down after each milking, this water is collected and re-cycled for irrigating onto crops and pastures.

WONDERFUL WORDS

Write down the meaning of these words:

River:

Dam:

Creek:

Water Tank:

Canal:

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Did you know?

Farmers spend an estimated $2.6 billion annually on natural resource management looking after their soil, vegetation and waterways

Farmers also have to plan for when they will water and how much time and money it will cost to store, move and distribute. Each time a pump is turned on, electricity or fuel, such as diesel, is used to run the pumps. With advances in technology, farmers are continually adopting more sustainable equipment such as solar pumps and digitally-timed irrigation systems. GPS satellite navigation for irrigators and water sensors tell the farmer exactly when and where they need to use the water. These all assist the farmer so they do not have to estimate when the plants are about to become distressed and need watering. Smart phones and their applications also help farmers on remote properties to monitor watering points and indicate to farmers if troughs have fresh water for the livestock to drink.

AQUIFER

Think of 3 ways pollution can affect waterways or our underground water supply

1. _____

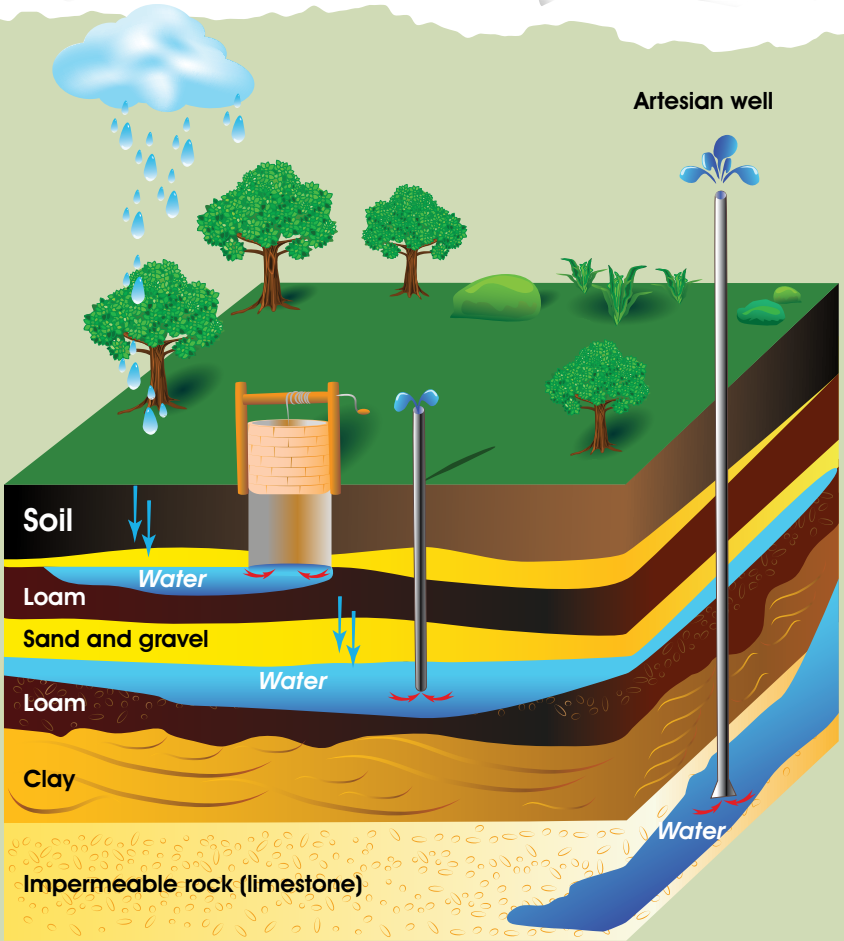
_____

2. _____

_____

3. _____

_____



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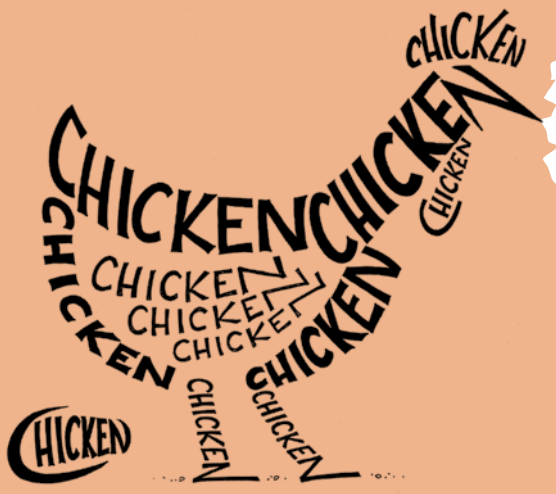
Plant & Animal Health

CALLIGRAM

Draw a calligram of your favourite farm animal or plant:



Farmers are very conscious of what types of pests and diseases can make their plants and animals sick or even die. Farmers use preventative measures such as spraying or vaccination to prevent different diseases.

Farm animals are valuable and farmers want to keep their livestock in good productive health and condition. This enables them to grow and reproduce within the planning calendar.

Farmers can administer medications to animals through their mouths or other treatments which are absorbed through the skin. These types of treatments are often for organisms such as gastrointestinal worms or external parasites such as ticks.

Similarly, plants can be attacked by mites and insects which destroy roots, leaves, stems and fruits. In addition, there are mildews, fungi and an array of animals such as birds and other wildlife which can attack plants. Farmers always try to ensure plants and animals have sufficient nutrients and water for their needs. Livestock and crops in optimum health have stronger immune systems and are much better at fighting disease.

Farmers seek advice from local consultants in addition to working with surrounding farms. If farmers are trying to eradicate a particular weed for example, the success rate is much higher if everyone in a region works on a similar plan of attack.

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Did you know?

The animal welfare system in Australia aims to ensure all animals have adequate food, water, housing, and veterinary care

Farmers have pest management strategies. These strategies are an environmentally sensitive way to survive attack by pests and diseases. This method tries to prevent problems occurring by planning ahead, monitoring crops and livestock and making good decisions at the right times.

Biological control – means using biological measures such as predators to suppress pests e.g. using the parasite wasp control for black scale in olives

Physical control – this includes using barriers or traps, adjusting planting locations or times. Using a variety of techniques, like slashing to expose pests, destroys the pest's food source, shelter or ability to breed

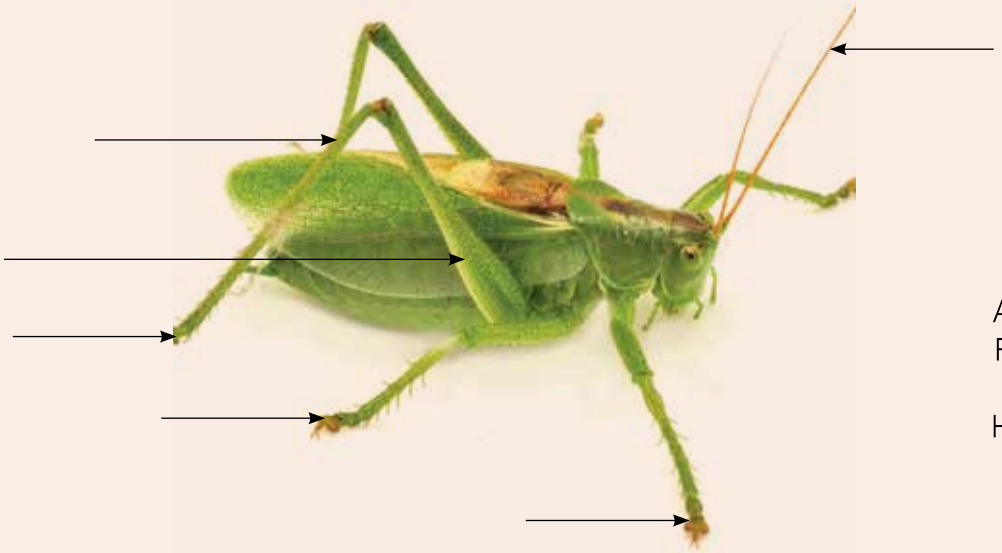
Chemical control – selecting the most appropriate pesticide to target the pest and using them in combination with other strategies

Plant or animal choice – examples include breeding Braham cattle in tropical regions because of their noted resistance to ticks

Genetic control – releasing insects that can't reproduce to decrease the number of successful matings

Pheromone control – using pheromones (naturally occurring chemicals) attracts insects thereby luring them to enter traps from which they cannot escape.

LABEL THE PARTS OF A GRASSHOPPER



ANTENNA
FORELEG
MIDLEG
HIND LEG
FEMUR
TIBIA

What's in my soil?

Soil is one of the key features in a farm system. Soils are made up of different types of broken down rocks and are a collection of minerals found in clay, silt and sand as well as organic matter and micro-organisms.

Soils vary in composition from region to region, farm to farm and sometimes even within the one farm. Variations can occur within a paddock. Areas that have basalt soils are rich in minerals which assist in plant growth. Soils derived from sandstone have fewer minerals and are very porous; that is, they do not hold water well and are not ideal for growing crops.

Farm land adjacent to creeks and rivers can sometimes experience flooding. Areas damaged during a flood event usually have deeper layers of top soil because of the soil that is washed down slopes and onto these flatter, low lying areas.

Soils are made up of a combination of sand, silt, clay and loam. Soils rich in organic matter also have an abundance of good micro-organisms such as bacteria and fungi. Good micro-organisms help organic matter breakdown and return nutrients back into the soil. Farms that are often lacking in organic matter will, at times, bring in additional organic matter such as composts and animal manures to improve the soil.

Increased organic matter in sandy soils helps water to slow down as it moves through the soil. Soils with large amounts of clay need organic matter to help water be more available for plants to use. Farmers often include planting green manure crops like lupins in their sowing calendar. These types of plants add nitrogen to the soil and are sometimes ploughed back into the soil to increase the organic content.

WHAT DOES YOUR SOIL CONTAIN?

Select the correct ingredients:

- ☐ *Sand*
- ☐ *Clay*
- ☐ *Plastic*
- ☐ *Silt*
- ☐ *Organic matter*
- ☐ *Paper*
- ☐ *Gases*
- ☐ *Glass*

Farmers are continually investigating new cultivation methods to preserve the condition of their soils. The fewer times a tractor has to go over a paddock in the preparation, sowing and harvesting time, the less compaction and destruction to the soil particles.

Farmers are also very proactive in tree planting programs, particularly along creeks and rivers as this stabilises the banks and helps to prevent erosion.

Did you know?

Australian farmers look after 61% of Australia's land mass

DIRECT DRILL

Name 5 ways farmers try to improve and conserve the soil on their farms.

1. _____

2. _____

3. _____

4. _____

5. _____

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Heritage & Competition

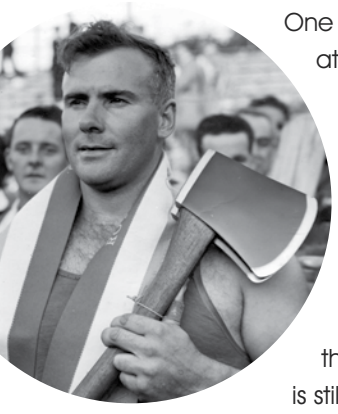
IN 1822 A GROUP OF SYDNEY'S LEADING CITIZENS GATHERED IN PARRAMATTA WITH THE AIM OF IMPROVING THE QUALITY OF AUSTRALIA'S PRODUCE AND FORMED THE AGRICULTURAL SOCIETY OF NSW. THESE MEN WERE FARMERS WHO WANTED TO HELP ONE ANOTHER TO GROW BETTER CROPS AND PRODUCE BETTER LIVESTOCK. THIS REMAINS ONE OF THE PRIMARY AIMS OF THE RAS TODAY.

The competitions that are held at the Show and during the year, award excellence in agriculture and encourage innovation through competition.

Prize-winning livestock at the Sydney Royal Easter Show are considered to be very valuable, as are the best arts and crafts, most successful fleece and champion food and wines.

The Sydney Royal Competitions have not only provided a forum where producers can show off the results of their hard work, but also encourage them to work harder to produce their best in order to win prizes and the prestige that comes with winning at the 'Royal'.

Consumers also benefit from this, as better quality produce is more readily available when more producers follow the innovative methods of the prize winners.



One of the most iconic competitions at the Show is the woodchop. As in many other Sydney Royal Competitions, competitors must compete and succeed in their local shows to be able to take part in the biggest woodchop competition in the country. Woodchop has been a part of the Show for over 100 years and is still a huge favourite amongst the Show's visitors.

The Grande Parade held on the Commonwealth Bank Arena is a wonderful display of winners from the hundreds of categories of competitions that the Show has to offer.

Did you know?

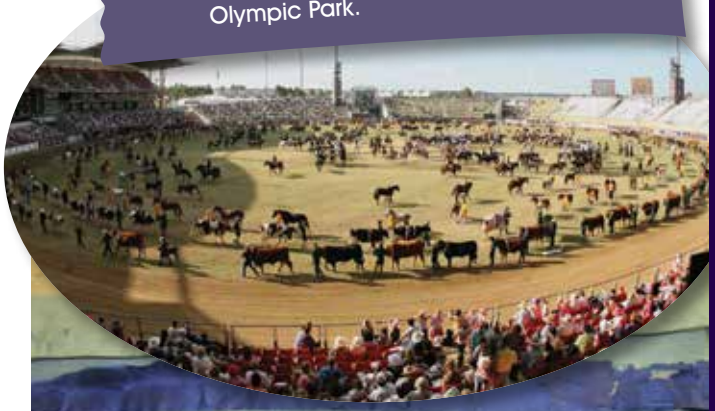
1869 Crafts were introduced into competitions at the Show.

1884 The first fireworks were held during the Show at Moore Park.

1891 Queen Victoria granted permission for the society to use the term 'Royal'.

1900 Showbags were called 'sample bags' and were given away free.

1998 The Show was first held at Sydney Olympic Park.



WHAT IS YOUR FAMILY HISTORY?

On a separate sheet of paper write a timeline showing important dates in your family's history.

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What are farms & who are farmers?

Sydney Royal Easter Show Competitions

THE DICTIONARY DESCRIBES A FARM AS: 'AN AREA OF LAND OR WATER, WITH APPROPRIATE BUILDINGS, WHERE PARTICULAR ANIMALS, BIRDS, FISH OR CROPS ARE RAISED FOR COMMERCIAL PURPOSES'.

Farms are much more than just land, water and buildings...

Farms comprise of the natural resources that make up the land; resources like soil, waterways, hills, plains, sunshine and rainfall.

Farms are also made up of man-made resources, like farm houses, stables and other buildings, trucks and tractors, processing plants, computers and other hi tech equipment, even helicopters!

Can you think of any other resources a farm might need?

_____

But most importantly farms are made up of farmers!

Farmers can be men or women, young or old, even children like you can be Junior Farm Hands!

Farmers are the people who use their knowledge, skills and experience to make the natural and man-made resources work for them, in order to produce the highest quality products possible.

Farmers do this whilst taking care of the land and environment and by making sure that their farms are sustainable for future generations.

Can you think of a farm you have seen recently? Was it a long way from your home?

_____

What products does that farm produce?

_____

Have you ever bought produce from a farm gate stall? If so, what did you buy?

_____

_____

WONDERFUL WORDS!

Write the meanings of the following terms in your own words. Be careful not to use the term itself in your answer!

Commercial: _____

Resources: _____

Sustainable: _____

Products: _____

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Did you know?

There are over 120,000 farms in Australia and over 30% of these are in NSW.

Forests NSW pine plantations grow enough timber to build one quarter of the houses built in Australia each year.

Sultanas come from farms – they are grapes that have been dried in the sun.

The largest farm in Australia, and the world, is Anna Creek Station in South Australia. At 6,000,000 acres, Anna Creek Station is larger than Israel.

In NSW we are lucky enough to have farms of almost every kind possible, and not all farms are in the country. In fact there are more than 60 farms very close to the centre of Sydney and almost 80% of the perishable goods we eat in Sydney come from farms in the Sydney Basin.

NSW farms produce just about every natural material that we use during the day, including:

Timber, fruit, vegetables, lamb, wool, pork, beef, milk, fibres, grains, nuts, lentils, flowers, cotton, eggs, chicken, poultry, grapes, leather, fish and crustaceans.

FIND A WORD

Find the following produce words in the puzzle.

N	L	B	W	I	F	C	S	S	G
E	V	M	A	O	O	E	S	G	K
K	B	A	E	T	O	T	Q	G	R
C	B	L	T	T	U	L	O	E	O
I	B	O	A	N	F	F	X	G	P
H	N	T	L	E	A	T	H	E	R
C	O	T	O	M	A	T	O	E	S
P	L	S	T	O	R	R	A	C	Z
J	G	P	O	U	L	T	R	Y	J
R	C	S	R	E	W	O	L	F	R

TOMATOES
POTATOES
CARROTS
LAMB

WOOL
PORK
NUTS
FLOWERS

COTTON
EGGS
CHICKEN
POULTRY

LEATHER

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Seasons & Farming

Can you think of some activities/ sports that you like to do in different seasons of the year?

Do you feel that you need to drink more water or eat different foods when it's hot outside?

Do you have chores to do around the house when the weather changes from hot to cold?

Farmers also do specific things in different seasons, this helps their animals and crops to grow throughout the year.

Animals are guided by the seasons too, baby animals arrive around the same time each year and then the cycle of mating and birthing begins all over again.

Autumn

Autumn is the time when many farmers plant seeds that will grow into the vegetables we will eat during winter, like cabbages and carrots. Autumn is a good time to sow seeds as we usually have good rainfall which helps the vegetables to grow.

Many other vegetables and crops are harvested in autumn, including pumpkin, broccoli, corn, tomatoes, sunflowers, soybeans and cotton.

Sowing of winter wheat and winter barley also takes place in autumn and some dairy and beef cows produce young at this time, this is called autumn calving.

Sheep farmers will mate their rams with their ewes in autumn, so that we can have wonderful lamb to eat the following spring.

What changes do you see in the plants around your place during autumn?

Winter

Winter is a time on the farm when things slow down a little. Farmers often catch up with their chores in the winter, fixing fences and checking on their property. Sheep farmers take this time to care for their animals by crutching them to keep disease away.

Why do things slow down on farms in winter?

Spring

Spring is a very busy season for families on the land. With the warmer weather, crops grow rapidly and baby animals arrive. Chicks and lambs bring much excitement and activity for farming families.

Sheep shearing is a large part of the springtime workload for sheep farmers who often bring in extra help to get the sheep shorn as quickly as possible.

Cotton planting is another job that takes place in the spring, and although this is done using very large machinery, it is a huge task for all involved.

Why do you think sheep are shorn in spring?

FARMERS GET TO DO MANY THINGS!
COWS ARE MILKED EVERY DAY, HENS LAY EGGS, PIGS PRODUCE PORK AND BACON AND SALAD LEAVES ARE GROWN INSIDE IN HYDROPONIC SHEDS.
FARMERS MUST FERTILISE CROPS AND PROTECT THEM FROM DISEASE ON A YEAR ROUND BASIS.
A FARMER'S WORK IS NEVER DONE!

Summer

Summer can mean extra work for farmers especially if the rainfall in the previous year has been low. Without sufficient rainfall, the pastures do not grow well enough to feed the livestock for the coming summer. This often means that farmers need to feed their animals hay and silage and provide water for them if the dams are dry. They may also have to hand water young trees.

Summer is the time for stone fruit to be picked. Stone fruit farmers often employ fruit pickers to make sure that the fruit is picked and gets to market as quickly as possible, so we can all enjoy cherries on our Christmas tables!

Name your two favourite summer fruits?

_____

WONDERFUL WORDS!

Write the meanings of the following terms in your own words. Be careful not to use the term itself in your answer!

Sowing: _____

Ewes: _____

Cycle: _____

Harvested: _____

WORD SCRAMBLE

Unscramble the words from these two pages and write them under the season they relate to: irsheang, hericers, catrros, cehosr, hnad tawer, perckis, lasbm, cenfes, ppukmin, cruchitgn, ckichs, tame.

AUTUMN	WINTER	SPRING	SUMMER

Did you know?

Most parts of Australia have 4 seasons, but in the tropical far north of Australia there are just two, the wet season and the dry season.

Plants that grow from bulbs, such as daffodils and tulips, flower in spring.

Summer is often a time of drought in Australia.

The seasons change because the Earth tilts on an angle as it orbits the sun, which means that either the northern part or the southern part of the Earth leans more directly towards the sun.

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Two types of farming

NSW IS A VAST STATE WHERE FARMERS USE A WIDE VARIETY OF FARMING TECHNIQUES TO PRODUCE WORLD-CLASS COMMODITIES FOR AUSTRALIA AND THE WORLD.

Aquaculture

Aquaculture is the farming and harvesting of aquatic organisms for food e.g. fish and shellfish, in natural or controlled environments and is the fastest growing primary industry in Australia. Cultivation of both saltwater and freshwater species can take place on land-based or open-ocean production areas.

On land-based farms, large tanks are used to contain the species while open-ocean farms are contained by strong netting, which allows smaller species to enter to provide food and nutrients for the farmed variety, whilst keeping out larger predatory species.

Aquaculture is a very efficient method of farming because farmers can monitor and protect their produce and provide nutrients when needed.

Aquaculture relieves the pressure on the natural marine environment by reducing overfishing and allowing natural species to multiply, which in turn develops a healthier marine environment for all to enjoy.

Mixed farming

Many farmers throughout NSW choose to operate mixed farms.

A mixed farm is where a farmer conducts different types of agricultural practices together on a single farm to diversify risk and to increase income through different sources.

Mixed farms generally combine the running of livestock (cattle, sheep) and growing crops (wheat, legumes), by rotating the two throughout the year.

Mixed farming provides many benefits including:

- Maintaining ground cover for livestock feed and soil preservation.
- Minimising paddock downtime between cropping and pasturing/grazing of livestock.
- Sustainability, through effective land management.
- Water use efficiency.

A good example of mixed farming is sheep and wheat farming, which is often practised in the Central West and Riverina districts of NSW.

WONDERFUL WORDS!

Write the meanings of the following terms in your own words. Be careful not to use the term itself in your answer!

Aquatic: _____

Cultivation: _____

Species: _____

Overfishing: _____

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Did you know?

Australian farmers are environmental stewards; owning, managing and caring for 61% of Australia's land mass. (Source: NFF)

Around one-third of NSW land is dedicated to farming.

Hydroponics is a method of farming where plants grow in a nutrient rich solution without soil.

Horticulture is the name given to the growing of plants, fruit and vegetables.

PRIMARY INDUSTRIES ARE EVERYWHERE! ...GROWING OUR FOOD, FIBRE & SHELTER

Food

- apples
- bananas
- beef cattle
- dairy cattle
- fish hatcheries
- grains, wheat
- lettuce
- oranges
- oyster leases
- poultry
- prawn farming
- rice
- sheep
- wine

Fibre

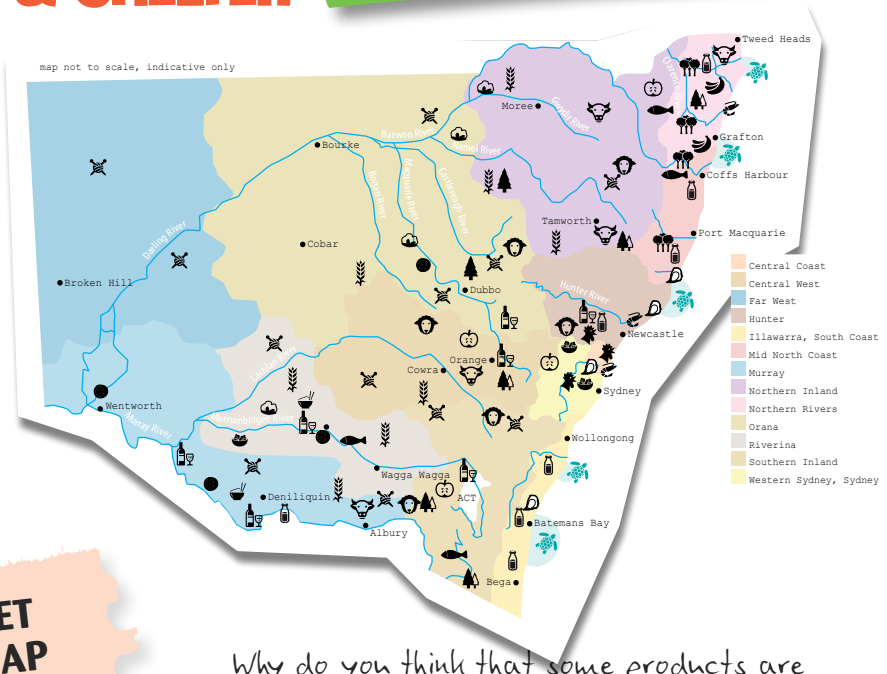
- sheep
- cotton

Shelter

- pine plantations
- cypress forests
- hardwood plantations

- marine parks

This map kindly provided by the NSW Department of Primary Industries



DESIGN YOUR OWN SET OF ICONS FOR THIS MAP

PRODUCT	ICON	PRODUCT	ICON

Why do you think that some products are grown in selected areas but not in others?

Wool is the only product from the Far West region of NSW; can you suggest a reason for this?

Bananas are grown only in the Northern Rivers area, what does this tell you about banana plants?

Research where the mountain ranges are in NSW. Add them to the map above, using an icon you have designed.

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Farm animals

There is great diversity in the livestock kept by farmers across NSW.

Sheep and cattle are the most commonly farmed animals in the state, but there are many more that have become a part of the agricultural canvas of NSW.

Sheep are farmed for their wool but also for their meat, lamb.

Beef cattle are farmed for their meat and dairy breeds for milk.

Aquaculture farmers are responsible for a large percentage of the fish and seafood that we eat each year and they are also helping with the rejuvenation of our waterways by easing the burden on these natural resources.

Why do you think that there are lots of egg and chicken meat farms close to Sydney?

Some farmers choose their livestock according to the environment and climate of their land.

Some choose the type of livestock by the services available near their land i.e. abattoir or dairy processing plant.

Some by the accessibility to markets and transport routes, and some choose their land especially to suit their chosen livestock.

Whichever way it happens, farmers must work with the natural and man-made resources available to them, to produce the very best animals possible. They must also care for their land so that they can continue production for many years in the future.

Why do you think it's important that livestock farms are close to markets and/or transport routes?

Did you know?

- Products from farm animals are in almost everything from lipstick to lollies.
- There are 73 breeds of beef and dairy cattle recorded in Australia.
- There are approximately 100,000 Alpacas in Australia.
- All chicken meat sold in Australia is produced in Australia.

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THERE IS A LARGE VARIETY OF TYPES AND BREEDS OF ANIMALS FARMED IN NSW AND ACROSS AUSTRALIA FOR FOOD AND FIBRE.

OUR ANIMALS KEEP US CLOTHED AND FED ALL YEAR ROUND.

Pigs are farmed across NSW but because they are heavily reliant on grain for feed, the largest growing regions for pig farming are the Central Western and Southern grain producing regions of NSW.

Goats produce a lean and flavoursome meat that is gaining in popularity in Australia. Australian farmers are the largest exporters of goat meat in the world. Some breeds of goats are farmed for their fleece.

The Alpaca Industry is growing in NSW as the public become more familiar with the beautiful fleece that alpacas produce.

Poultry farms are often developed within 50 kilometres of major cities. This allows farmers to take advantage of lower transport costs to get the produce to market and also ensures availability of reliable power and water supply, larger labour force and veterinarians.

WONDERFUL WORDS!

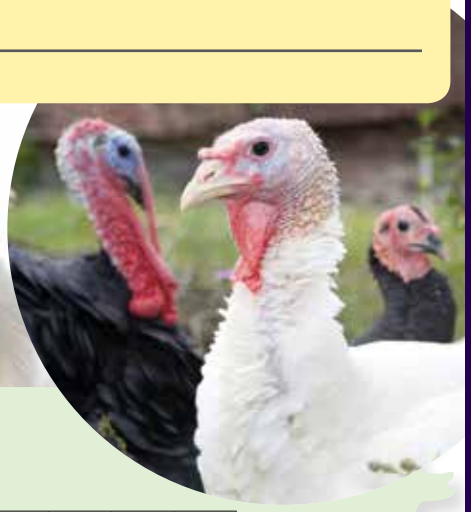
Write the meanings of the following terms in your own words. Be careful not to use the term itself in your answer!

Diverse: _____

Livestock: _____

Aquaculture: _____

Rejuvenation: _____



FIND A WORD

Find the words listed below to reveal a hidden message.

ALPACAS
ANIMALS
AQUACULTURE
BEEF
BREEDS
CHICKEN
CLIMATE
DUCKS
EGGS
FISH
GOAT
HEN
LAMB
LAND
LIVESTOCK
PIGS
ROOSTER
SEAFOOD
TRANSPORT

W	K	E	S	T	S	C	S	D	N	E
R	E	C	A	L	L	D	O	G	R	E
O	A	O	O	I	A	O	E	U	I	T
O	G	L	M	T	F	M	T	E	R	P
S	D	A	P	A	S	L	I	A	R	F
T	T	A	E	A	U	E	N	N	S	B
E	H	S	D	C	C	S	V	G	A	R
R	M	E	A	U	P	A	G	I	E	R
S	B	U	N	O	C	E	S	E	L	V
E	Q	E	R	N	E	K	C	I	H	C
A	R	T	E	Y	F	I	S	H	D	A
D	N	A	L	F	B	M	A	L	Y	

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Crops

ACROSS NSW THERE ARE MANY DIFFERENT CLIMATIC AREAS. THIS MEANS THAT WE CAN GROW A WIDE VARIETY OF CROPS, EACH IN ITS OWN PERFECT GROWING ENVIRONMENT, PROVIDING US A LARGE SELECTION OF FRESH PRODUCE AVAILABLE YEAR ROUND.

LET'S LEARN ABOUT A FEW OF THESE CROPS.

Avocados

Avocados first arrived in Australia in 1840 in seed form, and were planted in the Royal Botanical Gardens in Sydney but it wasn't until the 1960's that the Australian avocado industry started to take shape.

Avocados are a perennial fruit and Australian premium avocados are available all year round because of our diverse growing regions. The variety that grows best in NSW is the Hass, which is a hybrid variety. As avocados are native to tropical regions they require large amounts of water to grow well and therefore grow best in our wettest months between March and November.

Avocados are quite unique because although they can reach maturity on the tree, they will not ripen until they are harvested. Harvesting is usually done by hand by either clipping or snapping the avocado off the tree. Avocados are usually cooled after harvesting and sent to markets in refrigerated trucks.

Avocados can be eaten in many ways and are also used in cooking oils and in cosmetics.

Citrus

Citrus is a common term that refers to the fruit from lemon, lime, orange, mandarin and grapefruit trees. Citrus is one of most important horticultural industries in NSW.

The main citrus fruits grown on NSW orchards are Navel and Valencia oranges, mandarins, lemons, limes and grapefruit. Most of these are grown in the Riverina and Murray Valley regions in the south of NSW.

For all varieties except limes, fruit should be left on the tree until they have reached full colour and flavour. On commercial orchards, extra staff members are employed to pick the fruit by hand, using a twisting–pulling action which breaks the stalk but does not damage the button or the fruit.

Fruit is then packed into cardboard lined boxes and sent to market, ready for us to buy and eat.

What is your favourite citrus fruit?

_____

Do you like it whole or in juice form?

_____

Can you think of a tasty way to eat avocado and citrus together?

_____

_____

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Did you know?

In Australia we can produce enough rice each year to feed 20 million people 365 days of the year.

NSW produces around 250,000 tonnes of citrus annually representing 40% of Australian production.

One avocado tree can produce between 150-500 avocados per year.

Rice

During the Australian gold rush in the 1850's, Chinese prospectors introduced rice seeds to NSW and records show that the first rice crop grown in South-Eastern Australia was in 1906.

Rice is a cereal crop and is grown in the Riverina region of NSW during the summer.

There are many varieties of rice, each have their own texture, cooking ability and taste and each require particular conditions to grow their best. The dry hot summer and heavy soils of the Riverina are ideal for growing medium grain rice. In fact, this rice is so good that it is exported to over 60 international destinations.

Planting is done in October and for part of the growing season crops are grown in 5-25cm of water to regulate their temperature. Laser technology is often used to prepare the soil to ensure the water is distributed evenly across the planting area.

Rice is harvested in autumn using large mechanical machinery and every grain of rice produced in NSW is digitally scanned to ensure it is top quality. Australian rice growers then recycle their water and use the moisture left in the soil after harvest, to grow another crop.

After harvesting, rice is transported in large trucks to the storage facility. Here it is stored in large bins that are fitted with computer-linked sensors that monitor storage conditions and keep the rice at a suitable temperature and moisture level.

The rice is then milled to remove the husk, leaving brown rice.

For white rice, the thin brown layer of bran is removed. The rice is then ready to be cooked or to be made into rice flour and other products.

BE CREATIVE!

Fill each plate below with a meal that contains the crops discussed above.

Citrus

Rice

Avocado

WONDERFUL WORDS!

Write the meanings of the following terms in your own words. Be careful not to use the term itself in your answer!

Hybrid: _____

Industry: _____

Perennial: _____

Unique: _____

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Farm resources

THE COMBINATION OF RESOURCES AVAILABLE TO FARMERS IS PROBABLY THE MOST INFLUENTIAL FACTOR WHEN DECIDING WHAT TYPE OF FARM WILL BE DEVELOPED. RESOURCES INCLUDE BOTH NATURAL AND MAN-MADE ELEMENTS.

Natural resources are materials and components that occur naturally in the environment. These include native animals and plants, climate, minerals, water, soil and even wind.

Land formations are also natural resources; valleys and waterways can be extremely valuable to some crop and livestock farmers and add substantial value to their properties.

Climate

Climate is perhaps the most crucial of all resources when it comes to farming. Climate is the longstanding weather trends in a particular region; this cannot be modified or improved by man. Farmers must work within the limits of climate to achieve their goals.

For example, farmers in the north coast region of NSW use the hot humid climate to grow tropical fruits such as bananas and avocados; and those in the Central West region grow wheat and sheep that are less dependent on rainfall.

Soil

Soil is a fundamental element in farming, as both livestock and crop farmers require excellent soil to sustain grasses and fodder for livestock and to feed and nourish their crops.

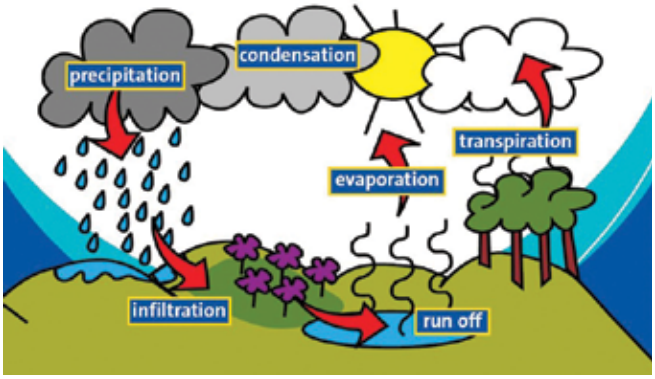
Farmers look after the soil by planting vegetation which reduces soil erosion. Organisms in soil, such as worms, also reduce erosion by helping soil development. Soil can also be called, 'the pedosphere'.

Water

Water is the most common substance on earth; however, fresh water is often a rare commodity in farming areas. Farmers must use water very wisely and conserve and recycle this precious resource whenever possible. An excellent example of this is demonstrated by rice farmers; although their crop is highly dependent on water they strive to use as little water as possible in the production of their crops.

Water cycle

The earth's supply of fresh water is constant but is it continually recycled in the Water Cycle, where it travels around the earth through a number of processes.



Source: Sydney Water

Precipitation – water falls from the sky as rain, hail or snow.

Infiltration – water falls on the ground and soaks in.

Runoff – water that does not soak into the ground but flows into waterways.

Transpiration – a process where water can be released into the air by plants.

Evaporation – when water turns into a gas, called water vapour, that rises invisibly into the air.

Condensation – the invisible water vapour that turns back into a liquid in the sky.

When this falls as precipitation, the cycle starts all over again.

Did you know?

Worms help soil to grow and sustain plants.

Small aircraft can be used to round up cattle and to spray crops.

It is important for farmers to be close to major transport links.

Water is the world's most precious resource.

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Man-made resources are objects that do not occur naturally in the environment, but have been made into useful products through human intervention.

Machinery

Machinery is extremely important to farmers in Australia. In fact, over the last 100 years, farmers have invented many of the machines they use today. Quality machinery can save farmers many hours of work, cut down on water usage and assist in producing a higher quality crop.

Examples of farm machinery include vehicles such as trucks, motorcycles, tractors, seeding machines, ploughs, headers and harvesters.

Other machinery used on farms includes helicopters, small aeroplanes, water meters, irrigators and even tree-shakers.

Buildings

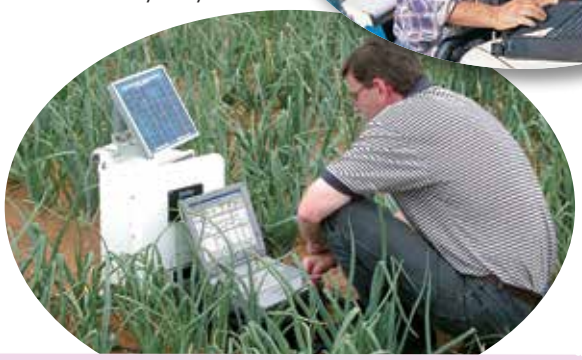
The variety of buildings on a farm depends on the work that is performed there. Many farms have a farmhouse on the property and somewhere to house vehicles; other buildings may include silos (a building where grain is stored), machinery and storage sheds, greenhouses, animal housing or shelters, cool rooms, shearing sheds, housing for temporary staff and sometimes processing plants. Many farm buildings are used year round; however, some are used only on a seasonal basis.

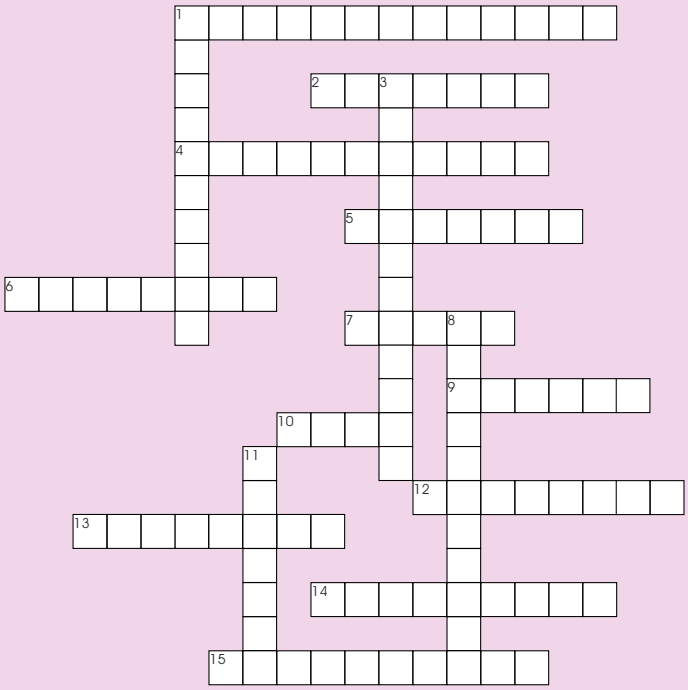
Computers and hi-tech equipment

Australian farmers are becoming increasingly knowledgeable about technology and use it in a variety of ways to increase productivity.

Technology is used in many ways across farm businesses from ordering supplies and marketing the farm's produce through to water and soil monitoring, processing of products, GPS tracking, the use of mobile phones and even using Skype from out in the paddock.

Modern technology is improving the lives of farmers every day.





CROSSWORD

Find the answers in the text

ACROSS

1. Rain is a type of this
2. A mechanical object
4. A considerable amount
5. Temperature, wind, rain and humidity
6. A component that can be used to benefit someone or something
7. H_2O
9. A long low area of land
10. Grain is stored in this
12. Remains the same
13. A structure
14. A series of actions that cause a change
15. Used to spray crops

DOWN

1. Another name for soil
3. Water vapour
8. The natural world
11. Long term weather pattern

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Sheep

In Australia, most sheep farmers (wool producers) choose the merino breed as these animals suit the Australian environment and produce the finest wool in abundant quantities.

Wool production is a natural part of a sheep's development. However, wool producers work very hard using good nutrition, modern technologies and their scientific knowledge to help their sheep to grow the very best wool possible.

Farmers keep a close watch on their sheep to ensure that they have plenty of water, good quality feed and pasture. They also provide shelter and ensure their flock is protected from disease and predators.

Farmers must also monitor their land to ensure that it can sustain the flock now and in the future. Some ways they do this are by: moving sheep to new paddocks regularly, growing extra pasture in good years and storing it for future use as hay and silage and sometimes buying extra feed for their flock.

Image provided by The Land

Image provided by The Land

Did you know?

- There are about 5 sheep for every person in Australia.
- Around 200 000 people in Australia are employed in producing and exporting wool.
- China is the only country in the world that has more sheep than Australia.
- Wool removed from a sheep is called a fleece.
- Shearing a sheep is like a sheep having a haircut, it doesn't hurt and the wool grows back.

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Activity

List 5 jobs sheep farmers do on their property

_____

_____

_____

_____

Match the word to its meaning

Pasture	A breed of sheep that has excellent wool
Flock	A group of sheep
Merino	To support something i.e. sheep
Monitor	Animals that hunt other animals for food
Predators	To manage and calculate needs
Sustain	The feed that grows in the paddock for sheep to eat

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Dairy

Image provided by The Land

Dairy farmers get up very early every day of the year to milk to ensure that we have fresh milk and dairy products whenever we need them.

Dairy farmers keep a very close watch on their herd and monitor the farm environment to ensure that their cows produce the very best milk in the largest possible quantities.

Before a cow can produce milk, she must have delivered at least one calf. She must eat a mixture of grasses and quality fodder to produce exceptional milk. A cow has four stomachs and she uses all four to process food into milk.

Cows are milked by machines, the farmer places suction cups on each of the cow's four teats. The milk then travels through the attached hose and into stainless steel pipes which lead to a large refrigerated vat.

Here the milk is cooled and stored until it is collected by a refrigerated tanker which takes the milk to the factory. The milking equipment, sheds and tankers must be kept extremely clean to protect the cows from disease and ensure safe quality of the milk we drink.

At the factory, the milk is pasteurised and homogenised, some is bottled and some is made into other dairy products we eat like yoghurt, cheese, butter and ice cream.

Did you know?

- Cows swallow their food half chewed and let their stomachs finish the job.
- Jersey, Guernsey and Holstein Friesian are breeds of dairy cattle raised in Australia.
- There are almost 8000 dairy farms across Australia.
- On average, cows produce 5,250 litres of milk per year.
- Farmers place plastic ear tags on their cattle in order to identify each individual and to keep records of their food intake, health, treatments and milk production.

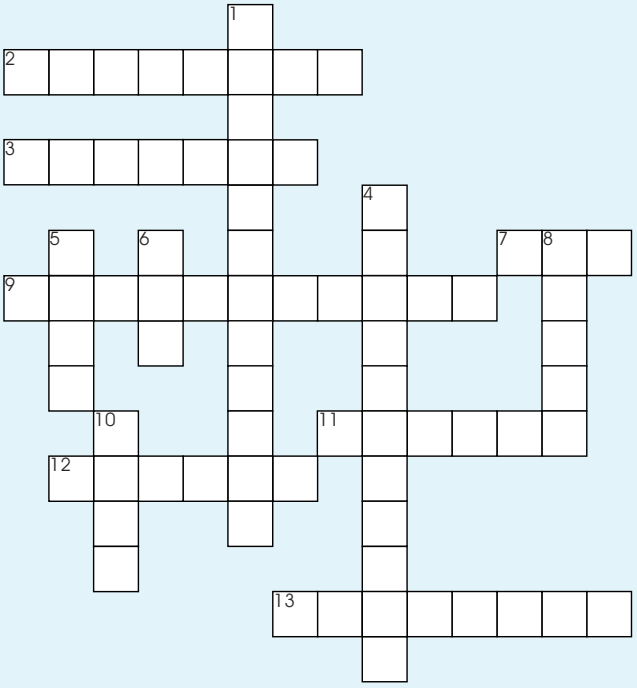
Activity

Across

2. A frozen dairy product
3. The natural cow feed that grows in paddocks
7. Small ball of chewed grass
9. A process that spreads the cream through the milk
11. Cream turns into _____ if it is shaken a lot
12. A breed of dairy cow
13. Ear tags are used to _____ cattle

Down

1. Milk is taken from the farm in a _____ tanker
4. A process that heats the milk and removes bacteria
5. Number of stomachs a cow has
6. The sound a cow makes
8. Where the cow stores her milk
10. A group of cattle



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Sydney Royal Easter Show Competitions

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Alpacas

Sydney Royal Easter Show Competitions

Alpacas originate from Peru, Chile and Bolivia in South America. Alpacas are bred in Australia for their soft fleece, which is shorn once a year and is valued for its soft feel, durability and its variety of natural colours.

Alpaca fleece is very warm, light weight and naturally water-repellent. Alpaca fleece does not contain lanolin, which makes it hypoallergenic.

Alpacas are very gentle on the environment. They graze on a variety of grasses without disrupting the root system of the plants and their soft padded feet do not compact the soil in the same way hooved animals can.

Alpacas suffer from little disease compared with other livestock which makes them a reliable source of income for farmers.

Alpacas are a herd animal and have very strong social instincts. They are inquisitive and are often used as herd guards to protect sheep from foxes.

Did you know?

- Alpacas have a gestation period of 340 days – nearly 1 year.
- An baby alpaca is called a Cria.
- Alpacas normally have one Cria. Twins are very rare.
- Alpacas grow to a height of approx. 150cm.
- Alpacas can weigh up to 70kg.

Activity

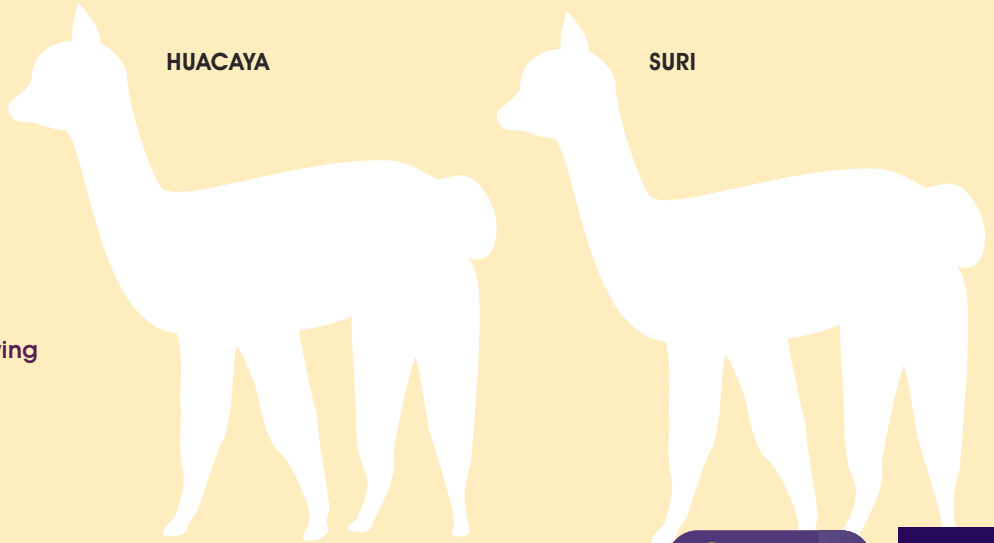
There are two types of Alpacas:

- **A HUACAYA's fibre stands upright from their body, much like sheep**
- **A SURI's fibre hangs from their body in ringlets**

Colour the two alpacas showing the different types of fleece

HUACAYA

SURI



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Poultry

In Australia, more than 1.4 million meat chickens are **hatched** every day and each parent **breeder** hen will produce 170 fertilised eggs in her **breeding** life.

Australians love chicken, in fact, we eat an average of 43kg of chicken per person each year. That means that our chicken farmers have to work very hard to keep us all well fed.

There are several important things that must happen before the chicken is ready for us to eat:

1. Hens are mated with **cockerels** to produce **fertilised** eggs.
2. The fertile eggs are sent to a **hatchery** where they are **incubated** until they are ready to hatch.
3. After the chicks hatch they are sent to **rearing** farms.
4. Day old chicks are then placed in large sheds where they have access to feed and water, until they grow large enough to be **harvested**.
5. Meat chickens are then taken to a **processing** plant where they are prepared for us to cook and eat.

Chicken **farmers** need to make sure that sheds are kept clean and well **ventilated.** Their chickens must also have access to a **constant** supply of **feed** and **water** so that they grow **healthy** and **strong**.

Use of genetics in poultry, egg and chicken meat production has streamlined production methods in recent times allowing farmers to reduce the cost of production and maintain high standards.

Egg production and chicken meat production in Australia are farmed in two forms, being intensive and free range. Farms are mostly located on the east coast of Australia.

Activity

Find the highlighted words from the information to the left in the Find-a-Word below.

Words appear forwards, backwards, up or down or diagonally.

P	M	C	A	F	A	R	M	S	R	E	T	A	W	I
T	V	F	Y	Q	K	G	N	I	R	A	E	R	P	W
H	W	E	I	N	C	U	B	A	T	E	D	L	X	S
E	A	R	N	W	S	B	R	E	E	D	I	N	G	T
D	T	T	B	T	M	R	D	P	S	R	F	V	G	R
E	N	I	C	H	I	E	E	R	X	S	T	N	H	O
H	A	L	Q	H	E	L	E	M	L	X	I	M	Y	N
C	T	I	T	F	E	L	A	E	R	S	Q	S	H	G
T	S	S	M	E	I	R	R	T	S	A	T	Q	T	V
A	N	E	V	O	A	E	Y	E	E	N	F	J	L	A
H	O	D	R	R	K	B	C	V	A	D	U	I	A	M
P	C	B	V	C	A	O	F	L	Q	K	L	G	E	X
N	T	Z	O	M	R	Q	P	V	M	O	B	R	H	E
C	O	C	P	P	X	H	A	R	V	E	S	T	E	D
R	Q	G	T	Q	Y	R	E	D	E	E	R	B	V	X

Did you know?

- Poultry includes ducks, geese and pigeon, turkeys and chickens.
- Chickens that are raised specifically for meat are called meat chickens or broilers.
- Turkey meat is a very rich source of protein, niacin, vitamin B6 and the amino acid tryptophan.
- Today's domestic turkey is a descendant of the wild turkey which is local to the United States.

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Pigs

Pigs have been farmed in Australia since European settlement began here in 1788. Pigs are raised for their meat.

Female pigs (sows) usually deliver two litters of between 8 and 12 piglets every year.

The piglets are fed and cared for until they are large enough to go to market, which is when they weigh between 45kg and 110kg.

Pigs are omnivories meaning they will eat both meat and plant material. They are generally fed a combination of grains such as wheat, barley, soybeans and corn to help them grow. Like all animals pigs also need plenty of clean drinking water.

Because high quality pork product requires a healthy pig and excellent animal care; pig farmers (producers) in Australia pay strict attention to the welfare needs of their animals. They must take every precaution to provide comfortable housing, bedding and a suitable diet for their animals.

Producers also take care to protect the pig farm from disease. This means that the pigs need fewer medications to stay healthy and will provide a better, more natural product. To safeguard the environment from infections, access of people and animals onto pig farms must be restricted. These restrictions are called "biosecurity" precautions.

Did you know?

- Pork is the world's most widely eaten meat.
- Australia has about 200 pig producers that supply 5.6 million pigs each year.
- Australians eat over 22kg of pork products per person each year.
- Bacon and ham are also pork products.

Activity

Fill in the blanks and then sort the circled letters to complete the sentence below.

P_ _ _ _ TS ARE BORN IN _ _ TT _ _S

PIGS ARE R _ _ S _ D FOR P _ _ K

PIGS EAT PLANTS AND MEAT MAKING THEM OM _ _ _ ORES

BIOS _ _ _ _ _ TY MEANS KEEPING _ _ _ _ SAFE AND DISEASE FREE

A _ _ _ IS A MOTHER PIG

_ _ _ _ _ _ _ _ _

Unjumble the letters

_ _ _ _ _ _ _ _ _!

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Cererals & Grains

Humans have depended on grains since agriculture began in about 10 000 BC.

Grains are dried seeds from plants which are grown for us to eat. Some common grains Australians eat are wheat, barley, oats, rye, corn and rice.

These grains are not native to Australia but were brought by European settlers and have been developed by farmers and scientists to suit Australian conditions.

Even with varieties that are suited to our climate, farmers must take special care with their crops to ensure that they receive the right amount of nutrients and water to yield the best grain in the highest quantities.

Farmers must also monitor and treat their crops for pests and disease, as either of these can ruin a good crop very quickly causing loss of income for the farmers.

Farmers are constantly seeking new and innovative ways to grow consistently high yielding crops without draining their land of nutrients or damaging their natural resources.

Farmers are caretakers of their land and must look after it year after year to sustain it for future generations.

Did you know?

- Wheat is Australia's largest grain crop.
- 75% of the grain grown in Australia is used to feed people in other countries.
- Lentils, chickpeas, kidney beans and peas are other crops grown by farmers.
- Grains are used to make many types of food we eat such as bread, cakes, pasta and breakfast cereals.
- Milling is the process of grinding grain into flour.

Activity

Draw and name 3 foods that you enjoy that are made from grains.
Be sure to list the grain used also.

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Vegetables

Vegetables are plants that are grown for food. The word vegetable means an edible plant or part of a plant.

Vegetables are seasonal, which means different vegetables grow better at different times of the year. Because Australia's climate varies so much across the country, Australian farmers can provide an assortment of vegetables to us all year round.

Plant breeders have used science to help them develop new vegetable varieties that are well suited to the Australian climate. This means we can have the best quality vegetables possible at all times.

Vegetables grow in a variety of ways. Some including zucchini and pumpkin grow on vines that spread out across the ground. Some like lettuce and broccoli grow like flowers out of the soil and others, like potatoes and carrots, grow their edible parts underground.

Vegetables need lots of water, excellent soil, sunlight and lots of care from farmers to grow well.

Vegetables can be eaten raw or cooked and some are even made into desserts, like carrot cake or rhubarb pie.

The vegetables we eat come from different parts of plants. Here are a few examples:

Seeds	Flower Buds	Leaves	Roots	Bulbs
Peas	Broccoli	Lettuce	Beetroot	Onions
Sweet Corn	Artichokes	Cabbage	Sweet Potatoes	Garlic
Lima Beans	Cauliflowers	Spinach	Carrots	Shallots

Did you know?

- Australians eat about 160kg of vegetables per person each year.
- Rockmelons and watermelons are actually vegetables.
- Mushrooms differ from other vegetables because they grow in the dark.
- More than 5000 varieties of potatoes are grown world wide.

Activity

On the picture below, draw the vegetables where you would find them growing: POTATOES, LETTUCE, ONIONS, ZUCCHINI, BROCCOLI, BEETROOT, PUMPKIN AND CARROTS

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Fruit

Fruit is the seed-bearing part of a plant. It is made up of an outer skin and inner fleshy material that surrounds the seed.

Most fruit grows on woody plants. Apples, oranges, pineapples and stone fruit all grow on trees. Grapes and passionfruit grow on woody vines.

Different fruit requires different growing conditions but all need an excellent water supply, good soil and sunlight.

Farmers in NSW grow almost every fruit imaginable but they are sometimes restricted by the climate of the area in which they live.

Pineapples, bananas and avocados all need a warm to hot climate and thrive in Northern NSW, whilst apples and berries grow much better in the cooler southern regions. Most of our citrus fruit comes from the Riverina District.

Farmers work to a strict schedule during the year and must consider the weather patterns of their region. They must make adjustments to their planting, watering, feeding and fertilising to get the maximum yield of quality fruit from their plants.

Farmers must also care for their land in a way that will allow it to sustain crops for many years ahead.

As fruit must be picked when it is at its best, usually within a very small time frame, harvesting of most fruit is done using large machinery. This allows the job to be done quickly and with little damage to the fruit. Farmers often have their fruit packed at the farm and sent to market, ready for sale within 24 hours.

Activity

Fill each bowl with 3 pieces of fruit.

Round fruit

Red fruit

Vine grown fruit

Did you know?

- Tomatoes and cucumbers are actually fruit.
- There are over 1,000 different kinds of apples in the world.
- Citrus fruit was grown in Asia 20 million years ago.
- A cluster of bananas is called a hand. It usually holds between 10 to 20 bananas, which are known as fingers.

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Eggs

Australian egg farmers produce more than 187 million dozen fresh eggs for consumers to eat every year. Most of these are used in Australia with only 1% being exported overseas.

Australia has a number of different egg production systems, each with its own benefits and disadvantages. Australian **consumers** can choose from cage, barn laid or free range eggs.

Cage eggs: Hens are kept and cared for in cages inside large sheds.

Barn laid eggs: Hens are housed and fed in large sheds where they are free to roam.

Free range eggs: **Hens** are housed in sheds but have access to an outdoor area for at least 8 hours each day.

Cage egg production is the most efficient way to produce eggs and about 80% of eggs sold in Australia are **cage** eggs. **Barn laid** and **free range** eggs, although more expensive, are increasing in popularity, as some consumers prefer to buy eggs that are produced using these methods.

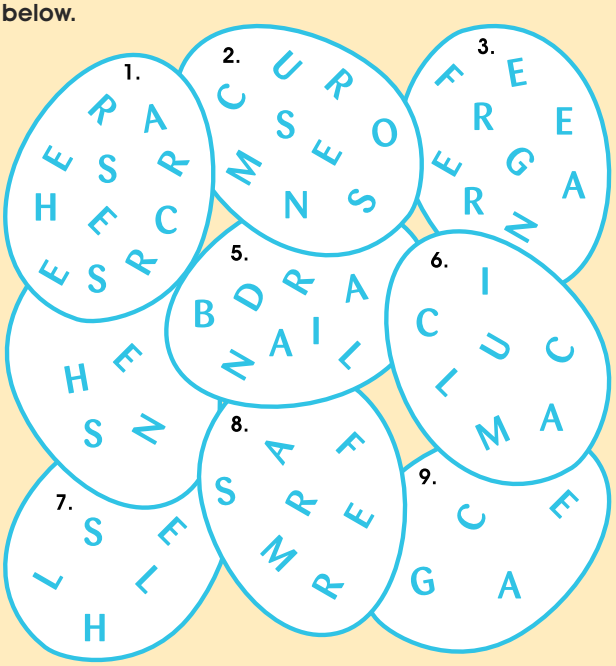
Egg **farmers** use modern production methods and work closely with communities and government to manage their businesses in a way which minimises the impact on the environment.

The Australian egg industry provides many jobs in both urban and rural areas. These include farmers, breeders, marketing managers, **researchers**, grain producers and truck drivers among others.

Activity

UNSCRAMBLE YOUR EGGS!

Find the highlighted words from the text in the eggs below.



1. _____ 2. _____

3. _____ 4. _____

5. _____ 6. _____

7. _____ 8. _____

9. _____

Enjoy Eggs Safely

- Don't use cracked or dirty eggs
- Use clean utensils when handling eggs
- Refrigerate eggs after purchase

Did you know?

- Hens produce the eggs you eat, one a day, with no help from the male chickens.
- On average Australians eat 150 fresh or processed eggs per person each year.
- The **shell** of an egg is made from a type of **calcium** carbonate, called calcite.

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Red Meat

Sydney Royal Easter Show Competitions

Beef

Meat from cattle is called beef. Beef is a major type of meat eaten in Australia.

Beef cattle are grazed on over 80% of Australia's agricultural land and produce more than 2.2 million tonnes of beef each year.

Cattle farmers (beef producers) have developed efficient methods of breeding and raising cattle that have enabled Australia's beef industry to become amongst the best in the world.

Because our industry is so strong, producing much more beef than is needed in Australia, much of our beef is exported to countries overseas; such as China, Japan, Korea and the USA.

Beef producers continually strive to improve their breeding programs by using science and selecting animals with good genetic traits. This, along with caring for the soil and maintaining a sufficient level of pasture for cattle to eat, should ensure that our beef industry will stay strong and provide food for millions of people for many years to come.

Lamb

Meat from sheep is called lamb and it is also a large part of the Australian diet.

Sheep first came to Australia with the First Fleet in 1788. Now Australians eat over 11kg of lamb per person each year.

Our sheep industry is very important to our economy and it accounts for approximately 25% of all farms in Australia. Like the beef industry, our sheepmeat industry produces much more than we need in Australia. Our lamb is exported throughout the world and around 25% of it is sold to the USA.

Due to the harsh climate in much of Australia, sheep farmers and scientists are working together to develop environmentally friendly methods to improve the efficiency of their land and animals. In doing so, the health and welfare of the animals is their top priority.

Activity

Find the listed red meat words in the puzzle below. Words appear forwards, backwards, up or down or diagonally.

M	Y	J	J	A	A	R	N	O	X	C	R	N	B	A
E	M	T	K	T	A	U	P	U	N	C	E	U	T	J
A	O	R	L	A	M	B	B	U	B	J	G	S	M	G
T	N	E	M	N	O	R	I	V	N	E	R	T	T	P
E	O	Q	F	P	A	F	E	S	J	E	U	I	F	L
B	C	E	N	H	R	R	I	S	W	R	B	R	F	S
E	E	N	M	O	A	O	R	L	O	T	M	F	G	T
B	Z	A	E	F	I	E	T	A	L	I	A	R	J	F
S	N	A	L	I	C	T	S	E	R	E	H	Y	A	H
H	J	E	R	U	C	T	I	O	I	L	T	X	G	W
E	W	C	D	G	R	S	N	R	X	N	G	D	S	I
E	S	O	N	N	G	E	N	E	T	I	C	S	U	U
P	R	C	A	T	T	L	E	R	Z	U	K	L	G	A
P	Y	H	T	L	A	E	H	E	J	I	N	I	N	V
C	I	S	P	O	H	C	D	O	O	F	L	N	A	A

ANGUS, BEEF, BRAHMAN, CATTLE, CHOPS, ECONOMY, ENVIRONMENT, FILLET, FOOD, GENETICS, GRAZE, HAMBURGER, HEALTHY, IRON, LAMB, MEAT, NUTRITION, PRODUCERS, PROTEIN, ROAST, SCIENCE, SHEEP, STIRFRY

Did you know?

- In Australia there are more than 40 different breeds of cattle.
- Goat meat is also red meat.
- Australian meat is produced with one of the lowest carbon emission profiles of any major meat producing country in the world.

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Working Yard Dogs

Sydney Royal Easter Show Competitions

Australian Kelpies are a distinctive breed developed to work sheep and other livestock. They are used by farmers all over Australia.

Kelpies are medium-sized dogs that come in a variety of colours and are bred for their working ability rather than appearance. They are loyal, friendly, energetic dogs that are extremely alert and highly intelligent.

Kelpies need plenty of exercise, a challenging job and mental stimulation to remain healthy and companionable, and are at their best whilst working.

These dogs have a natural instinct to work sheep both in open country and in stockyards; they enjoy great success at mustering and droving sheep and their natural ability means they need little or no guidance from the farmer.

Kelpies are used to round up sheep whenever the farmers need to gather their flock together, for example: shearing, tagging, hand feeding and drenching (a treatment to guard against internal parasites).

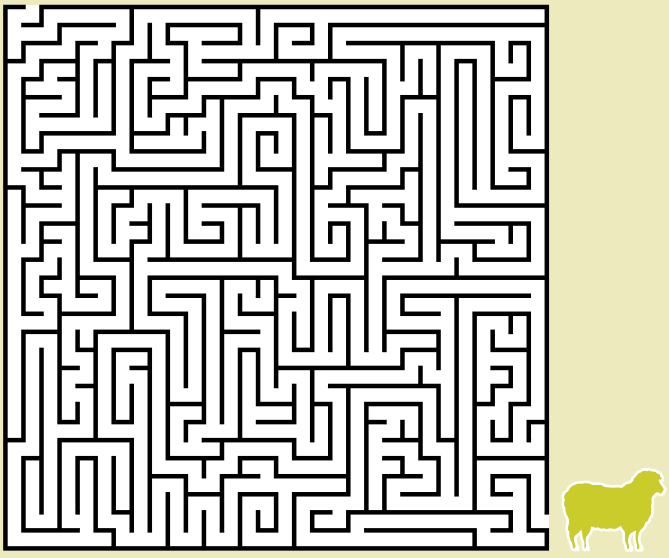
Working dogs require a high energy diet, to provide the carbohydrates necessary for sprinting.

Did you know?

- Other breeds of working dogs that are used to move livestock include Blue and Red Cattle Dogs, Border Collies and Koolies.
- Maremma (Italian sheep dogs) are sometimes used to guard livestock such as sheep, chickens and goats from predators like foxes.

Activity

Help the dog round up the sheep!



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Little Diggers

Horticulture, the science of cultivating plants, plays an enormous role in Australian farming.

To be successful, crop farmers need to have a thorough knowledge of horticulture. They must understand their crop and other plants that may compete with their crops for water and nutrients i.e. weeds.

Farmers who raise animals also need to have an in-depth understanding of plants, as they rely on pasture and crops to feed their animals. They must also be familiar with the plants and weeds that can be harmful to their animals.

Plants, like animals, are suited to different climatic conditions. Different plants grow and develop better in different regions.

Many plants and crops have been developed or evolved to cope with the harsh conditions of the Australian climate, whether that be floods, drought or extreme heat.

At Little Diggers, you can see the beginnings of a plant and then take it home and watch it grow into a beautiful sunflower over the coming weeks.

Remember, sunflowers, like all crops need care and attention to grow to their very best.

How to Care for your Sunflower Seed at Home

Make sure the pot is placed in a very sunny spot in your garden. It is best if they can receive about 6 hours of sunlight each day.

Once the sunflower begins to grow, remove the dead leaves so the new ones grow stronger.

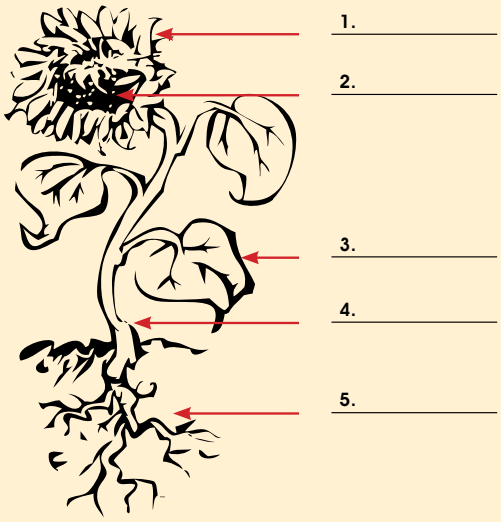
Remember to give them a little drink every few days to help them stay healthy. Some can grow up to 1.5 metres tall.

When it reaches 5cm high, put it into a bigger pot – be careful not to damage the roots.

Sunflowers take about 100 days to grow, so be patient and you will have a great flower in no time.

Activity

Fill in the part of the plant: ROOT, LEAVES, SEEDS, STEM, FLOWER



As your seed grows, write down it's growth and characteristics

Date	Growth/height of plant	Characteristics/ Colour
—/—/——	Seed planted	No growth can be seen yet

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Growing Vegies

Let's get started!

1. It is important to choose the right spot to plant your vegies, so think about the following before you start planting.

Often when choosing a spot for a vegie garden, there are some factors outside of your control. Such conditions include existing soil type, using raised garden beds or garden beds in close proximity to fences or buildings. This may cause shading at certain times of the day and walls can be great traps of radiant heat. While this may raise the temperature of surrounding soil and be good for germination in the late winter/early spring. During late spring and summer, this may increase the need for irrigation due to water loss from evaporation.

Raised garden beds can be created on top of concrete as long as the soil you add to the garden beds is of good quality and you will need to add water and nutrients on a more regular basis throughout the plant growing cycle.

2. You also need to think about your climate and the impact on the plant growth:

- What is the best time of year to grow vegetables?
- When are the temperatures consistently over 18 degrees?
- Is there adequate rainfall during the growing season? Ideally 12-20mm of rainfall per week is required or irrigation will be necessary.
- Is there a water source close by? If not, how far will it be necessary to run pipes or hoses?
- Who will monitor the water available to the plants and apply fertiliser and remove the weeds when required?
- Does the garden site have an ideal northerly aspect (ie faces north)? This promotes maximum sun exposure during the growing months in the southern hemisphere, allowing your plants to photosynthesise for as long as possible throughout the day.

3. If you have less than ideal conditions you can still grow plants, it just means matching the plants with your conditions so you have the best chance of success.

Trouble shooting

4. If you have heavy clay or predominantly sandy soil or perhaps only concrete, raised garden beds are a great option for you as you can add your own soil mix.

5. If you have buildings that create a lot of shade and block your aspect to the north, grow more shade resistant plants such as herbs.

6. If rain or water is in short supply, pick drought tolerant plants for your garden.

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7. If you have a water supply, but can't always be there to turn it on; purchase good tap fittings and a simple water timer that is powered by 'AA' batteries. This will keep plants growing if you go away on a holiday for a couple of weeks or so.

8. While you are on holidays, the weeds are not. So before going away (a day or two before you leave), give the entire vegie garden a good soak, then apply a thick mulch of newspaper (up to 10 sheets) and overlay the newspaper with straw and water down again.

9. If you remove all weeds in the first 4-6 weeks there will be less competition for your vegies. Once the vegies grow and take hold, they will shade out the weeds, resulting in less weed plants to take over the vegie garden late in the growing season. So don't plant very young vegies just before going on holidays if you can avoid it.

10. What's the soil like? Do I need to improve it? If so, how can this be achieved?

11. If the soil is very sandy it will have good drainage but dry out readily and have very poor soil nutrients. To overcome this, add lots of organic matter such as cow or horse manure or mushroom compost, even straw will help. Chook poo is a bit too strong and should only be applied sparingly around plants once they are established.

12. Do you have soils high in clay? When it's wet, is it sticky? To test this, put the equivalent of an ice cream scoop of soil in the palm of your hand and close your fist. Does it stick together in a round ball when you open your hand? If it stays in a ball it has too much clay.

This is a problem for 3 reasons:

- The clay makes it difficult for your plant roots to penetrate the soil and plant growth is retarded.
- The clay holds onto all the nutrients and won't easily release them for your plants to use; and
- The clay also binds water molecules making them less available to the plants.

This can be overcome by adding organic matter and gypsum over time; this breaks the bonds that bind the clay to the water and nutrients. The soil might also be slightly acid ie pH 4-6 which can be corrected, again over time, by applying lime and forking it into the soil (pH is measured on a scale from 1-14; 1 is very acid, 7 is neutral and 14 is very alkaline). Plants ideally enjoy a pH of 6.5-7 to optimise growth.

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Growing Vegies

Hints and Tips

Making up a seed raising Mix

Some plants can be grown directly from seeds in the plant growing bed. Often times you may want to buy seedlings, as this will speed up the time you have to dedicate to the growing period. Alternatively you can start your own seedlings; this saves money and is not hard to do. When growing seedlings you need a different growing medium (soil mix). You can buy products prepared by horticultural suppliers or you can make you own. A good seed raising mix can be equal parts of peat moss, sand, perlite and vermiculite. The idea of a seed raising medium is that it's friable (crumbles easily). This is very important at the transplanting stage. When trying to remove plants from the seed raising mix, you want the whole plant and ALL the roots to disengage from the soil easily; this will minimise root damage and optimise plant survival in the new plant bed.

Some common soil deficiencies seen in plants:

- Low nitrogen levels can present as yellowing of the leaves, stunted growth and leaves may fall
- Low phosphorus is displayed by poor growth and can have a blue/green/purple hue
- Low potassium in leaves may be seen as spots surrounded by pale zones

You can buy simple soil test kits at your local hardware. To rectify a soil deficiency you can get fertilisers that are specific such as urea that is nitrogen only; or Muriate of potash that largely contains potassium. But most soils require a good balance of nitrogen, phosphorus and potassium to optimise plant growth and there are many products on the market. Most animal manures are nitrogen heavy, so if you are going organic, you need to consider how your plants will obtain all its nutrients if deficiencies present themselves.

Making your own compost

You can buy commercial compost bins that are static and sit on the ground or raised and have a tumbling capacity to speed up bacteria infiltration, thereby the decomposition process.

A quick and easy method of constructing you own, is to use discarded wooden pallets. Creating 3 sided bays out of the pallets, some chicken wire and a few star posts; you attach the pallets to the star posts with tie wire, nail the chicken wire inside the bays to prevent manure falling through the pallets and this still allows air flow around the heap. You can erect three bays alongside one another with the intention to have one for current additions of vegetative material, the second which is occasionally being turned and watered if you have very low rainfall and a third which has previously matured compost. As you rotate through these bays you can ensure that you always have a constant supply of compost for your garden beds. Each compost bin can service an area approximately 20m x 20m.

If you are experiencing prolonged heavy rainfall, compost heaps can fail if they get too wet; so having some landscaping plastic or a tarp on standby with a few bricks will be needed to cover the compost. You will note if there is too much water, your earth worms will start to drown and will come to the surface.

Compost is generally not as hot as synthetic fertilisers. That is, the nutrients are released at a much slower rate and will not burn the roots as readily. When fertilising before sowing, always turn your compost through the soil a few weeks before planting. When fertilising at the time of sowing or during the growing period; it is always advisable, particularly with synthetic fertilisers, to lay the fertiliser 10-20 cm from the seed or plant to offset the chance of root burn. Not forgetting that chook poo is the hottest of animal manures and care has to be exercised when using this on young plants.

Healthy plants are more robust against insect attack. However that being said, bugs proliferate particularly where there is a monoculture (growing a lot of only one type of plant).

In commercial horticulture, insect and bacterial attack can be tackled by a number of measures including pesticides, seed inoculation or physical barriers. Hormone traps or creating undesirable conditions for pests; such as increased wind or fog via use of machines can work in plant/pest specific cases. For the humble vegie garden, simple measures such as a garlic spray can offset or dramatically minimise the attack from a variety of insects.

Garlic Spray recipe

100 grams of garlic cloves
2 teaspoons of paraffin
500ml of water
8ml oil based soap

Method:

- Crush garlic and soak in paraffin for 48 hours
- Add water and soap and store in a labelled safety screw cap topped container; within a chemical stores cupboard
- To dilute, use concentrated mix: 1 part mix to 100 parts water when spaying onto plants

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Growing Pumpkins

Sydney Royal Easter Show Competitions

Hints and Tips

1. The seed bed should be loosened up and ideally have organic manure compost added and turned through the soil with a fork.

2. The soil should be slightly acidic (pH 5.8 to 6.5). If it is lower than this, you can add some lime by sprinkling it over the seed bed and turning it through the soil with a fork. This will raise the pH depending on how much lime you add.

3. Each seedling will grow into a vine that may require an area 6m x 6m in diameter. So remember when selecting your site, allow adequate room for this amount of growth. Also remember your plant won't do well if there are other plants too close by, as they will be competing for water and nutrients.

4. Sow seeds (pointing down) in a seed raising mixture about 10mm below the surface, keep moist but do not over water. Most fertile seeds will germinate in about 5 days. Soil temperature is important and if you want to ensure germination try to maintain soil temp at 15-18 degrees; this can be achieved either in a hot house or some people just find a warm spot like on top of the house water heater for example.

5. When the first true leaf appears (the third leaf), transplant the seedling into the desired garden bed (this is usually 7-10 days after germination). Decide the direction in which you want the vine to grow and place the seedling with the true leaf on the opposite side of the plant to where you want the pumpkin to grow. Be very careful when transplanting your seedlings, as they are sensitive and can get root shock so handle the tender plants gently.

6. Seedlings are like babies. They need protection for the first 6-8 weeks, particularly from wind and frost, but also from slug and snail damage. To protect them, construct a mini hot house around the individual plant by using 2 litre plastic bottles with the top third cut off and up ended over the individual plant. As soon as the seedlings touch the sides of the bottle, remove the bottles and erect wind breaks with tomato stakes and shade cloth to assist further growth.

7. The first female flowers will appear 8-10 weeks after the seed germinates. Female flowers can be recognised by the small pumpkin (about the size of a 20 cent piece) at their base.

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If you want to have more growing time, or compare the effects of naturally pollinated versus hand pollinated pumpkins; you can try hand pollinating a few female flowers. Hand pollination usually results in earlier pollination than would occur naturally and as a result, provides a longer growing season and potentially bigger pumpkins.

To do this, find a newly opened male flower early in the morning, pick off the outside petals exposing the stamen covered in pollen; find a female flower, gently prise apart the petals and swab the female stigma with the male stamen.

8. After 12 weeks the plant will have a main runner with side vines coming off at approximately 90 degrees. It is best if you can set a pumpkin on the main runner as you see fruit forming; curve the vine into an S bend with the fruit on the outside. This will reduce tension and stop the fruit growing over the vine and crushing it. Select the best pumpkin to keep and remove the rest. You can leave two or three pumpkins, but they will not grow as big as one by itself.

   To determine the best one, measure the diameter of each pumpkin for approximately 3 weeks with a cloth tape to see which one is growing the fastest. Also look at their shape, the best ones are rounded, not asymmetrical.

9. Ideally prune your vines early (in the first 6-8 weeks) to discourage them overtaking your whole vegie garden. Don't let the vine grow more than 3-4 metres beyond the set fruit and don't let side shoots grow more than 3 metres. When pruning the vine, put the cut end into the soil to reduce water loss from the plant.

10. Feed the plants with fertiliser once or twice a week and keep moist but do not over water. Seedlings especially like a bit more phosphorus, but as the plant grows a more balanced fertiliser with nitrogen, phosphorus and potassium is fine.

    Water soluble fertiliser will be best and most quickly taken up by the plant. Be wary though, if you feed your vines too much, the fruit will literally split open. When it comes to fertilising, a little bit often, is what works best.

11. As the pumpkin grows, it may need to be turned 90 degrees away from the vine; otherwise it will grow over the vine and tear itself off. Move it a little bit each day, before it gets too big. As the pumpkin gets larger, you may need to cut some roots away from the vine that emerges from the stem, so the vine can lift over the pumpkin stem.

12. Pumpkins can sunburn, so it is a good idea if you can shade them during the hotter parts of the day; just throwing a white sheet over them can suffice.

13. If the vine is showing signs of rot when the pumpkin is mature, harvest it onto a pallet and store it in a dry place with good air flow.

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