



CHAPTER 4

The Cotton Plant



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THE COTTON PLANT

Produced on a plant, cotton is a member of the Hibiscus family and is botanically known as *Gossypium hirsutum* or *Gossypium barbadense*. By nature it is a perennial shrub that reaches a height of 3.5 metres. Commercially it is grown as an annual and only reaches a height of 1.2 metres.

The most common type of cotton grown in Australia is *Gossypium hirsutum*, more commonly known as American Upland. It is a leafy, green shrub that briefly has cream and pink flowers that become the 'fruit' or cotton bolls. There are also 17 native *Gossypium* species that are all members of a distinct group found exclusively in Australia.

Fact Sheet: The Cotton Plant

HOW COTTON GROWS

It takes about four to 14 days for seedlings to appear after seeds are planted, depending on temperature and moisture levels. The cotton seedling grows into a young plant, sending down a long taproot to find water and nutrients. This taproot can grow as deep as 1.5 metres.

The first two leaves that are visible on the young cotton plant are seedling leaves called cotyledons. They are useful for absorbing sunlight into the plant. The sunlight is then converted through a process known as photosynthesis, into nourishing carbohydrates that will help the plant grow. In about two to four weeks they turn over the photosynthetic task to true leaves (leaves produced subsequent to the cotyledons) which continue the feeding process for the duration of the plants' life.

The first flower buds (called squares) appear within about 35 days. As the squares

develop, the bud swells and begins to push through the bracts until it opens into an attractive flower. This happens after a further 25 days, when the first creamy-white, hibiscus-like flowers appear. The cotton plant continues to produce squares and flowers for about half the growing season. The last productive flower opens about three to four months after planting.

Cotton flowers only stay open for 24 hours. During this short time the flower must be fertilised to produce the seed that has the cotton fibre or lint attached. Fertilisation takes place when pollen from the anther (male part) is transferred to the stigma (female part) of the flower. Over the one to two days after pollination the flowers change colour from white to pink to red, mauve or purple and the petals fall.

The fruit, called bolls, then begin to develop. These green, immature bolls are a segmented pod containing approximately 32 immature seeds from which the cotton fibres will grow.

The boll is considered a fruit because it contains seeds.

Individual cells on the surface of the seeds start to elongate the day the pink flower falls off (abscission). The fibres grow, mature and thicken for the next month, forming a hollow cotton fibre inside the boll which becomes approximately the size of a small fig.

Bolls reach full size about 25 days after the petals fall. After a further 35 to 55 days, the bolls naturally burst open along the boll's segments or carpels and dry out, exposing the underlying cotton segments called locks. These dried carpels are known as the bur, and

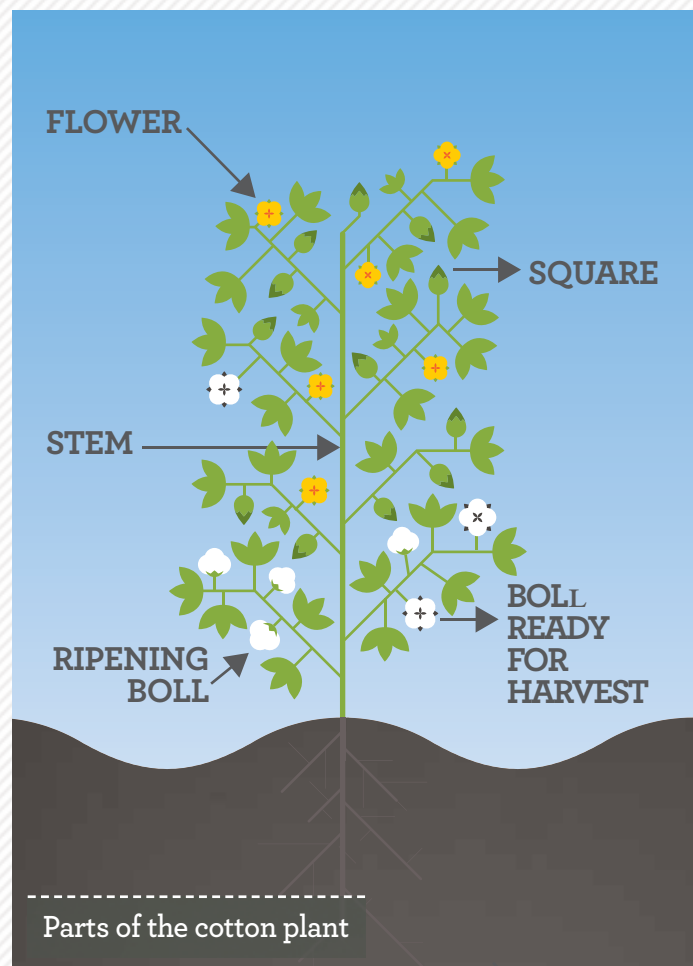


The Beginning of the Boll
photo by Helga Twelbeck

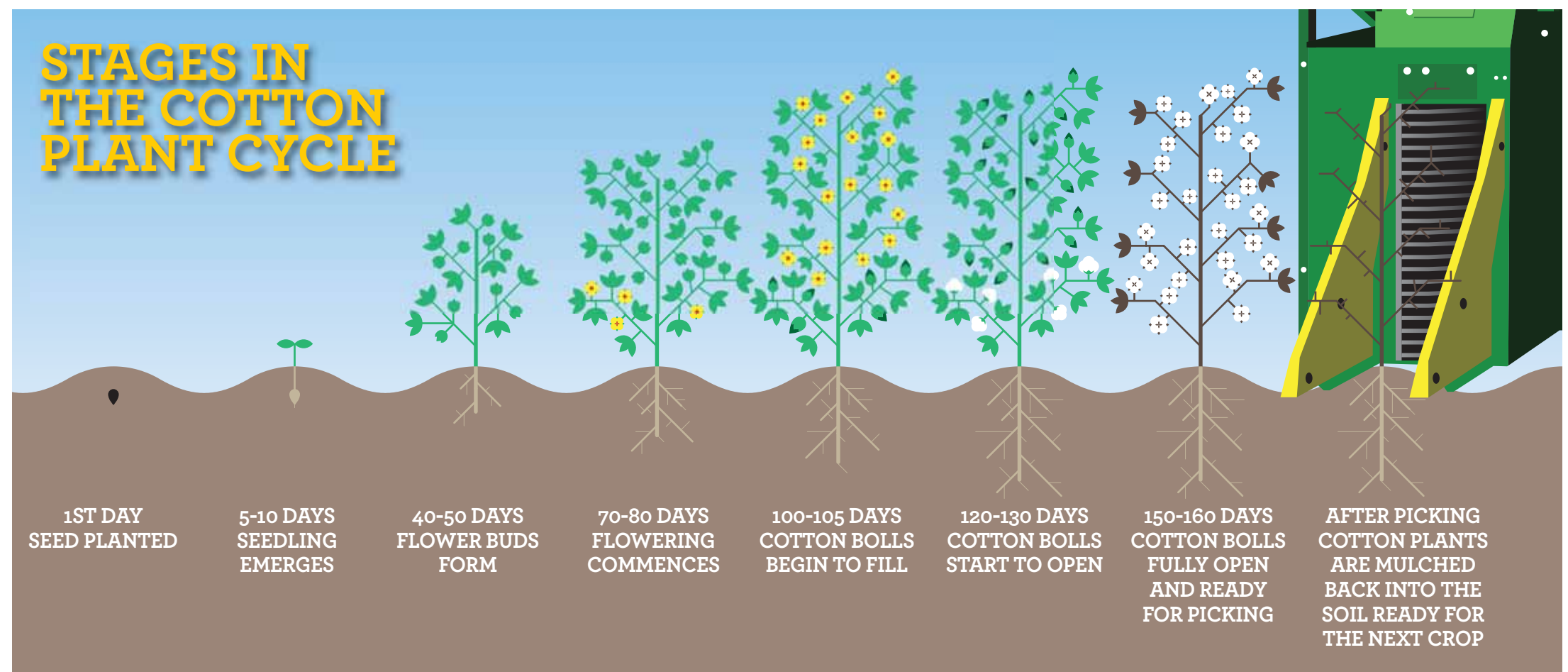
it's the bur that will hold the locks of cotton in place when fully dried and fluffed, ready for picking.

When most of the bolls are open the crop is ready to pick. An average boll will contain nearly 500,000 fibres of cotton and each plant may bear 15-20 bolls. The growing season from emergence to picking is about 180 days.

A series of photos depicting a cotton plant's growth over a whole season



STAGES IN THE COTTON PLANT CYCLE



COTTON'S GROWTH CYCLE

COTTON IS AN ANNUAL, SUMMER CROP. IT PREFERS HOT SUMMERS WITH LOW HUMIDITY AND LONG HOURS OF SUNSHINE. IN GENERAL, COTTON GROWS QUICKER AS THE AVERAGE TEMPERATURE RISES AND THE LONGER AND HOTTER THE SEASON, THE GREATER THE YIELD.

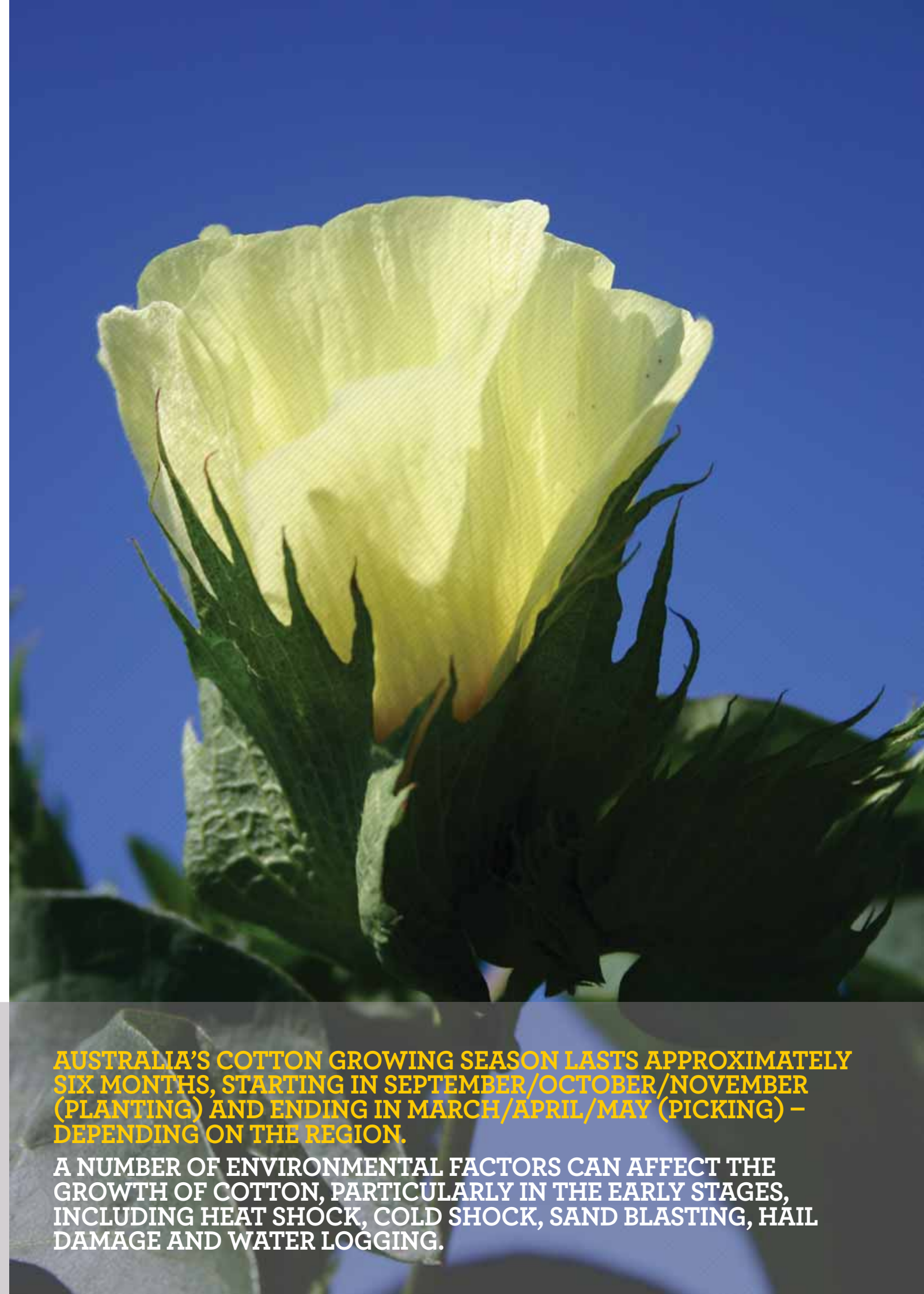


Fact Sheet: Cotton's Growing Cycle



AUSTRALIA'S COTTON GROWING SEASON LASTS APPROXIMATELY SIX MONTHS, STARTING IN SEPTEMBER/OCTOBER/NOVEMBER (PLANTING) AND ENDING IN MARCH/APRIL/MAY (PICKING) – DEPENDING ON THE REGION.

A NUMBER OF ENVIRONMENTAL FACTORS CAN AFFECT THE GROWTH OF COTTON, PARTICULARLY IN THE EARLY STAGES, INCLUDING HEAT SHOCK, COLD SHOCK, SAND BLASTING, HAIL DAMAGE AND WATER LOGGING.



COTTON GROWER'S CALENDAR

AUGUST/SEPTEMBER SOIL PREPARATION

- Soil prepared for planting, weeds removed, nutrients added if necessary
- Soil moisture levels checked, pre-watering if necessary

SEPTEMBER/OCTOBER/ NOVEMBER – PLANTING

- Soil temperature checked
- Cottonseed planted when soil is warm enough for satisfactory seed germination and crop establishment (i.e. soil temperature reaches 14°C at a depth of 10cm for at least three days)
- Cotton seeds emerge 1-2 weeks after planting

NOVEMBER/FEBRUARY GROWING SEASON

- Flower buds develop a few weeks after the plant starts to grow, then flowers appear a few weeks later. The flowers then fall off leaving a ripening seed pod that becomes the cotton boll (the fruit)
- Ongoing checks for pests, soil moisture level tests and weed removal
- On irrigated cotton farms the initial irrigation (watering) is usually followed by a further four to five irrigations, at two to three week intervals, from mid-December to late February. This differs depending on the region and on natural rainfall levels
- Approximately fourth months of growing is needed for the cotton bolls to ripen and split open
- Cotton growers use a range of natural and soft chemical options to control the pests that attack cotton (called Integrated Pest Management, or IPM)

MARCH/APRIL/MAY DEFOLIATION, PICKING AND TRANSPORTATION TO GINS

- Crop checked by agronomists to make sure it is ready to pick
- Large mechanical cotton pickers are used to pick the crop
- Growers usually choose to pick the cotton crop once most bolls have opened and fully matured. It is extremely important that cotton is picked dry or discoloration may occur and reduce quality
- Cotton is packed onto trucks and sent to the 'gin' where it is ginned – a process separating lint (raw cotton fibre), cottonseed and trash
- The cotton lint is tightly pressed into bales, each weighing 227kg – these are then sent to ports for shipping to overseas markets

MAY-AUGUST (OFF-SEASON)

- Classing and marketing activities undertaken
- Growers plant winter crops and/or graze sheep and cattle
- Growers make improvements on-farm for next season
- Farm maintenance



Experience the ups and downs of being a cotton farmer via this blog from young grower Bess Gairns