

The Rice Growing and Production Process

In Australia, rice breeders have developed varieties of rice to suit the environmental conditions in the Riverina. Australia specialises in growing medium grain varieties of rice that are grown throughout the world in temperate climates, like California, Egypt, Japan and parts of China.

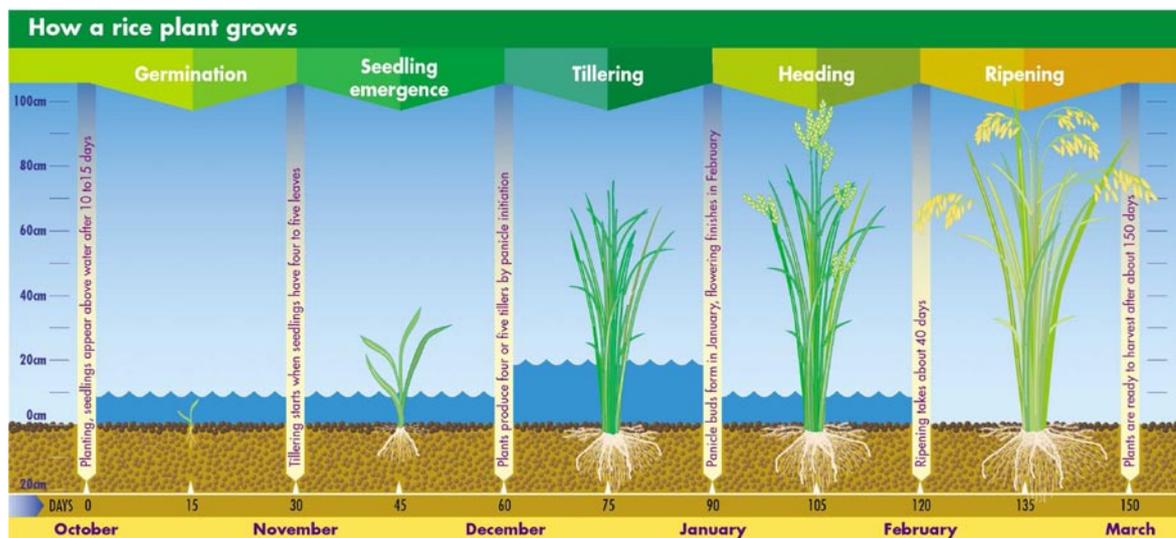
■ Planning

Prior to planting rice, rice growers must ensure their farm meets the strict environmental guidelines for rice production. Once approved, many farmers design a whole farm plan to assist in managing the efficient use of natural resources and to determine the most suitable rotations. Many rice growers have already invested in designing whole farm plans.

Most farms use laser-guided land leveling techniques to prepare the ground for production. Laser leveling is one of the most effective and widely adopted techniques to improve water management. Farmers have precise control over the flow of water on and off the paddock. Such measurement strategies have contributed to a 60% improvement in water use efficiency.

Most of the rice is sown by aircraft in Australia. Experienced agricultural pilots use satellite guidance technology to broadcast seed accurately over the fields.

■ The Cycle of Rice



The Rice Growing and Production Process Continued

■ Growing

Rice can only be grown on soils that are deemed suitable by the irrigation corporations and/or the New South Wales Department of Natural Resources.

Rice growing is concentrated in the Murrumbidgee and Murray valleys of southern New South Wales, with small areas of rice grown in north-eastern Victoria.

It is concentrated in this area due to large areas of flat land, suitable clay-based soils, the availability of water, and the development of storage and milling infrastructure in or near the regional towns.

Rice seeds are planted in September. Through September until February, the rice plant grows a main stem and a number of tillers. Each rice plant will produce four or five tillers. Every tiller grows a flowering head or panicle. The panicle produces the rice grains.

Rice crops are grown in 5 – 25cm of water depending on growing conditions.



■ Harvesting

As the grain begins to mature, the farmers 'lock up' the water on the bays. This means no water leaves the paddock, it is fully utilised by the rice plant. The soil then dries out in time for harvest to commence.

Farmers use large, conventional grain harvesters to mechanically harvest rice in autumn.

Once harvested, the rice is commonly named paddy rice. This is the name given to unmilled rice with its protective husk in place.



■ Storing Rice

Once harvested, a truck transports it to one of the industry's paddy storage facilities, where segregation occurs according to variety. Rice storage bins are fitted with computer-linked sensors that monitor grain storage conditions and keep the rice at a suitable temperature and moisture level.

■ Australian rice mills use the most advanced equipment and are some of the largest and most efficient in the world.

When the storage manager receives orders and shipping instructions, the rice is trucked to one of three industry mills that are strategically located throughout the region. The industry also has three stockfeed manufacturing plants and 21 rice receival depots.

The Rice Growing and Production Process Continued

■ Milling Rice

Step One - Removal of hard protective husk

The rice husk is the protective layer surrounding the grain. Once removed, the rice grain is packaged as brown rice. Brown rice is 'healthy' because it still contains the rice germ and outer bran layers – important for healthy body functions.



■ Step Two – Removal of the germ and brown layers

Gentle milling removes the germ and bran layers from the grain to expose a white starch centre. The polished white starch centre is what we know as white rice.

■ Rice by-products

By-products from the growing and processing of rice create many valuable new products. Rice husks, rice stubble, rice bran, broken rice and rice straw are used as common ingredients in horticultural, livestock, industrial, household, building and food products.

■ Rice husks

The rice husk is the hard, protective shell on the grain. The removal of the rice husk is the first stage of rice milling. Rice husks are the main by-product of rice production. For every one million tonnes of paddy rice harvested, about 200 000 tonnes of rice husk is produced.

Rice husks are used in 3 main ways.

raw - animal bedding, growing seedlings, improving mulch for gardens.

burnt - the resulting ash is valuable for many industries, including steel making, gardening and building.

ground and processed - stock feed, potting mixes and pet litter.

■ Rice stubble

Rice stubble is the stalks and roots of the rice plant left in the ground after it has been harvested.

Rice stubble is very thick and difficult to deal with. Livestock graze on recently harvested paddocks and eat some of the rice stubble. A portion of the remaining stubble is usually burnt off and a winter cereal crop, such as wheat, is planted. On some rice farms, rice stubble is left to break down naturally and is incorporated into the soil, to improve the soil structure.

■ Rice bran

Rice bran is the outer layer of the brown rice grain. The rice bran is removed during the milling process if white rice is to be produced.

Stabilised rice bran is sold as a health food in supermarkets and health food shops, or to food manufacturers who use it as an ingredient in foods such as crispbreads and breakfast cereals. Unstabilised rice bran is used in stockfeed and for other animal and industrial products.

The Rice Growing and Production Process Continued

■ Broken rice grains

Unfortunately, during the rice milling process some of the rice grains break. They are removed from the milling process. The larger broken rice grains are used in pet foods and stock feed, or breakfast cereals. The smaller broken rice grains are ground into rice flour which is used in baby foods, snack foods, including rice crackers, muesli bars, or as a baking ingredient. Ground broken rice grains are also used in manufactured foods, such as sausages and milk powder drinks.

Rice straw

Rice straw is the stalks left over after the grains of rice have all been removed in the milling process. Rice straw is used as a building material because it is easy to work with, inexpensive and good for the environment. Some dairy farmers use rice straw as fibre for grain-fed stock. It can also be used to make paper.