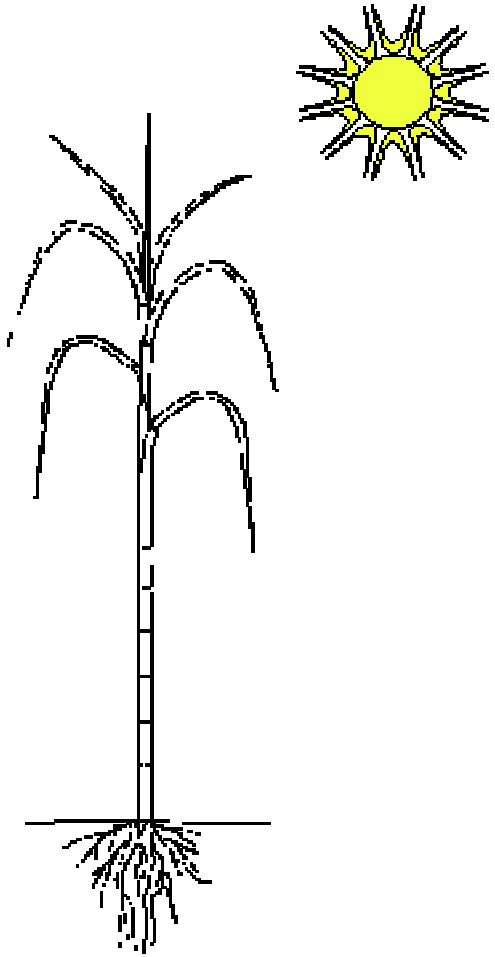
The Sugar Industry

The Cane Plant

All of life's energy originates from the sun. Green plants harness solar energy and store it in the form of carbohydrates. By careful selection and breeding, sugar cane has become one of the most efficient converters of solar energy into food carbohydrates and fibre. The hard rind of the cane protects a softer fibrous centre which transports water and nutrients from the soil to the leaves where they are combined with carbon from the atmosphere to form sugar (sucrose). The fibrous centre serves as a reservoir for sugar as the cane ripens.

Leaves absorb sunlight + CO2 from the atmosphere.

Growing Sugar Cane



Roots obtain water and nutrients from the soil.

The stalk contains:

Sucrose	14%
Fibre	16%
Water	67%
Other	3%

An average cane farm is 56 hectares. Harvested cane yields around 110 tonnes per hectare. Cane is planted between mid-August and October. Cane stalks are cut into 300mm long "setts" and planted 100mm below the soil surface in rows 1.5m apart. Fertiliser is added and weeds are controlled for the next three to four months. The crop is harvested in the July to November crushing season, either one or two years after planting. Most New South Wales crops are harvested as two year old. After harvest, a "ratoon" crop grows from the below ground parts of the previous crop. Two or three ratoon crops are grown from each planting.

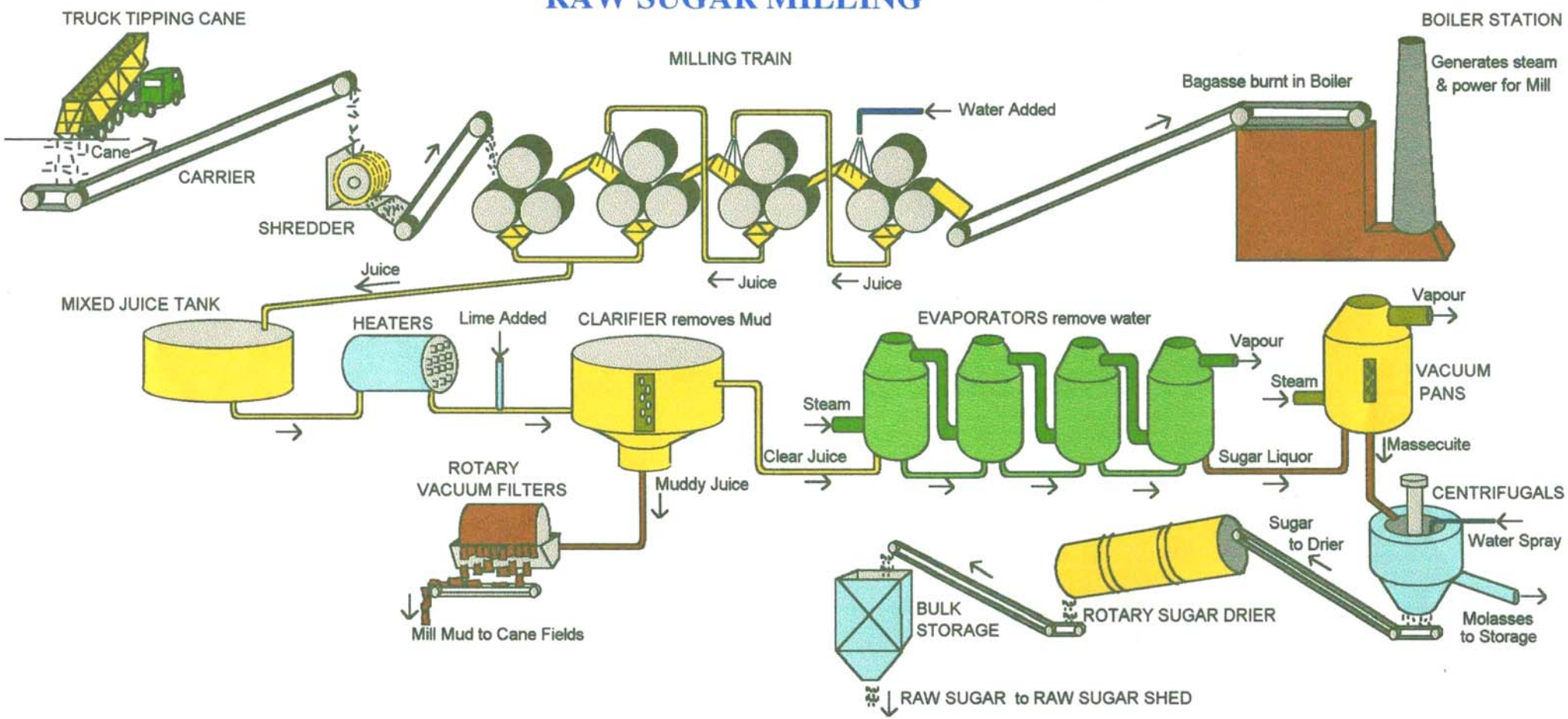
Harvesting and Transport

New South Wales boasts one of the most efficient harvesting systems in the sugar cane growing world. A fleet of modern, high capacity harvesters and in-field cane trans-porters handle the crop efficiently and in all weather conditions. The harvesters cut and load into in-field trans-porters which either tip or elevate the cane into 24 tonne bins at central locations on the farm. These bins are transported to the raw sugar mills by road.

Raw Sugar

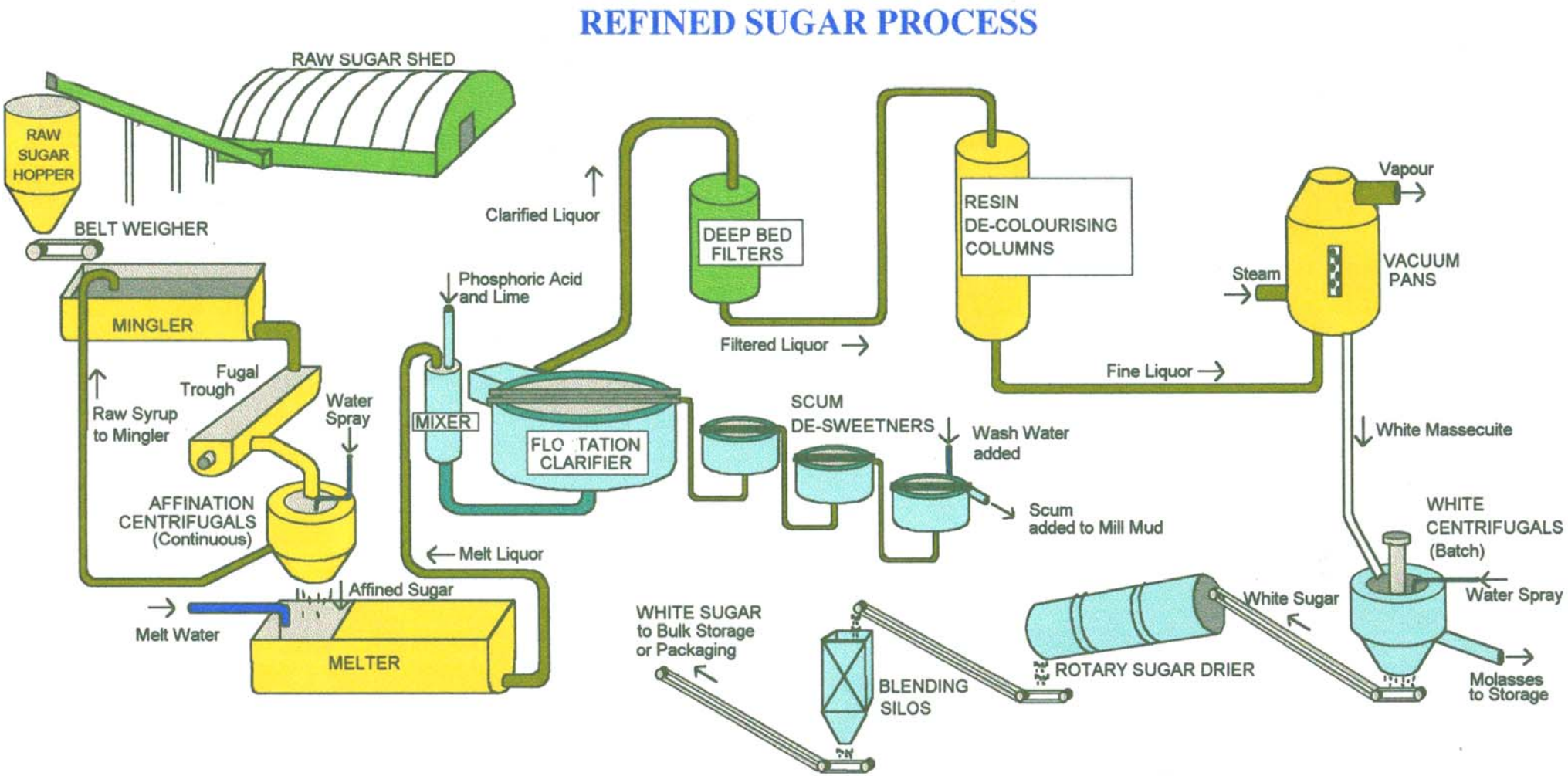
Raw sugar is manufactured from sugar cane at Condong, Broadwater and Harwood sugar mills. Harwood sugar mill, built in 1874, is the oldest operating mill in New South Wales. It is now a modern factory that can process 200 tonnes of sugar cane per hour. The mill also supplies energy and services to the recently completed refinery on site. The three sugar mills produce raw sugar from cane in a series of process stages which include crushing, clarification, evaporation, crystallisation, separation by centrifuge and drying. An outline of the raw sugar production process is shown below.

RAW SUGAR MILLING



Refined Sugar

Harwood Refinery produces refined sugar under the brand name "Sunshine Sugar". The refinery operates all year round, and purchases sugar from the growers' Co-operative The refinery supplies 25% of the Australian domestic sugar market. "Sunshine Sugar" is supplied mainly to the domestic industrial market comprising food and beverage manufacturers, and repackers.



Caring for the Environment

Sugar cane is a most environmentally friendly crop. The industry is based on a renewable source of natural energy and food; sugar cane. There are practically no waste materials from the sugar industry. The fibre (bagasse) from the cane is used to fire the mills' boilers, providing self-sufficiency in energy. Mud extracted from cane juice and fly ash from the boilers are mixed and recycled to the farms as a soil conditioner and fertiliser. Thus, the industry is a "closed loop" from an environmental point of view. Another by-product, molasses, is sold to farmers as a valuable feed supplement for dairy and beef cattle. It is also used as a feedstock for fermentation industries. The New South Wales sugar industry is conscious of the need to preserve the environment and to protect and maintain the land which provides the basic raw material, sugar cane. The mills and refinery are constantly reviewing their environmental control systems. The industry is energetic in ensuring that the nation's most important resource, prime agricultural land, is preserved for the benefit of present and future generations.

Recycling of Nutrients

During the milling process, dirt and other impurities, which form part of the cane supply, are separated from the sugar stream as "filter mud". This mud is highly sought after as it contains the essential nutrients nitrogen (N), phosphorous (P), potassium (K) and calcium (Ca). It is mixed with fly-ash from the boilers, which also contains K, and is returned to the fields for use as top dressing. The mixture provides a ration of N, P, Ca and K for the next crop.

Green Power

The three New South Wales sugar mills generate electricity for their operations from a renewable fuel source – sugarcane bagasse. Surplus electricity is exported to the state grid and sold as "Green Power". Consumers can choose to purchase "Green Power" with an assurance that it is generated from renewable fuel sources.

Sugar & Health

Essential blood sugars and the energy required for an active and healthy lifestyle are provided by a moderate intake of foods containing sugar. The brain requires blood sugars for its normal daily function. Sugars are the simplest form of carbohydrate. They are found in foods throughout nature: in fruits, vegetables, nectar, honey and milk. The simple sugars - glucose and fructose - are found in nearly all plants. Sometimes they occur together as sucrose, which is simply a combination of glucose and fructose. We know sucrose as sugar, the major source of which is sugar cane. Carbohydrates are broken down and used by the body as glucose, a major energy source. After digestion, the body does not distinguish between sugar derived from sugar cane and sugars which are found in fruits and vegetables.

From the earliest days, sugar has been a popular food ingredient and part of a healthy diet. These properties have earned sugar its rightful place as the Gold Standard of sweeteners. It is reassuring to know that unlike synthetic sweeteners, real sugar does not need warning labels. It's sweet and it's natural.

Reference:

http://www.nswsugar.com.au