



Modelling Sugar Cane



Sugar cane, a tall, fibrous tropical grass similar to sorghum, grows to a height of 4.5 m, although 2 m is more common for the varieties currently grown in Australia. The irrigated (spray or trickle) crop takes up to 24 months to mature and is harvested in the second half of the calendar year.

The stalk is cut off near the base, separated from the leaves and other trash, and delivered to a mill for crushing. The efficiency of the transport system is important as cane quickly loses its quality once cut.



Hand cutting was the norm until after WW II and until recently, cane fields were typically burned prior to harvesting to get rid of snakes and other pests. Hand cutting removed the green tops in the field; the resulting stalks were loaded (by hand or field loader)

for delivery to the mill. Mechanical harvesters cut and top the cane, then chop the stalks into billets roughly 25 cm long.

Cane fields often extend quite close to farm homes, equipment sheds, roads, etc. Cane railways normally ran adjacent to or through the cane fields, thus in early years the often unballasted permanent way seemed to be an integral part of the field. Temporary track laid right into the fields was important in hand cutting days to eliminate a long haul from the field to the track. Today, of course, trailer mounted bins and in-field transporters follow the harvester around the field as it is cutting the cane, and the rail system is generally of a much higher standard.

Burning the Cane

Cane deteriorates quickly once burned to remove trash and vermin, thus only enough cane was burned for the next day's quota.



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Modelling Mature Cane Fields

Late in the crushing season it is quite possible to see a range of cane fields from plowed ready for planting to mature crops ready for cutting and areas recently cut. Large cane fields should likely be represented on the backdrop as creating realistic cane fields is a time-consuming task. The small area on the ANGRMS steam diorama, for example, required a full day to complete *in situ*. Method B is less fiddly, thus somewhat faster.

The modelling materials I've been using include fine millet straw tips from a quality broom, fine whisk straw (oriental hand broom) and jute from a floor mat or the lining of a hanging flower basket. Use new materials as all the fine tips break off when a broom is used.



Method A, *In Situ*

The base in the museum diorama is sculpted expanded polystyrene on foam core board, covered with a thin layer of plaster (a mix of patching compound and coloured grout).

Broom straws were placed in holes punched through the surface (holes 5 mm apart in two rows spaced 15 mm apart). This provided the structure for the rows, with clumps of smaller diameter straws (whispy tips uppermost) set in white glue and clamped in the intervening spaces until they are

secure. Almost any small clip, including old-fashioned hair clips, should work, although wooden clothes pegs are too bulky.



Care must be taken to ensure that the height and colour mix is relatively random, otherwise the finished row will look more like a fence than growing crop. I hold a clump of various sized pieces between my fingers, then roll the clump to distribute the colours before cutting the bottom of the clump square for placement

Spread lots of glue at the base of the row and dip the clump in glue before placing it into the row. Use a toothpick to ensure that the glue is worked between the base of the straws and leave clamped for the glue to set thoroughly.



When the glue is set a base of plaster, putty or wood filler needs to be formed around and between the stalks to protect the row.

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Finally, paint the stalks with a bright green paint or dye to model the green leaves. The mix of materials should ensure variety in colour; the broom straw, for example, does not accept colour readily. I've used a semi-gloss acrylic paint here with good result as a flat paint would not provide the colour intensity required for the green leaves.

This row scales out to 4.5 m height, appropriate for the taller cane varieties grown in the steam era. I also wanted the cane to tower over the equipment on the diorama and lead into the backdrop photo. There may still be a need for short grasses, weeds and other details along the base of the row and in the surrounding fields but they can be provided using conventional scenery techniques.

Method B, Corrugated Cardboard

The materials and basic techniques are very similar to the *in situ* method except that cane rows are assembled on the work bench for later installation.



Extra long straws are slipped through the holes in a narrow strip of corrugated cardboard and then glued to hold in place. Once set, turn the strip over and glue from the opposite side for maximum strength.



Fine straw white glued over broom straw framework

Press a layer of fine-tipped whisk straw into a bead of glue on the cardboard base. Care must be taken to ensure a reasonable top profile and to avoid gluing the assembly to the workbench. Let the glue set and repeat the process for the other side.



Fill in any gaps with additional applications of glue and fine straw as necessary. Leave overnight to set, paint the cane, and trim the bottom edge, leaving some of the thicker straws longer for ease of installation. Punch holes in the scenery shell to accept the cane strip, glue in place and form a furrow with wood putty to provide stability and finish the base of the row.

Artistic sense is required when 'planting' the cane in order to achieve a representative result. The odd

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number of rows and angle of planting, for example, avoid a symmetrical appearance and increase the illusion of size.



The finished diorama has ground cover around the base of the cane and a wrecked cane bin in the creek bed.. The backdrop and models distract from too close a look at deficiencies in the cane modelling.

Wholestick for Cane Wagons

Wholestick (stalk) cane trucks and river barges were used in Australia by the sugar mills from the earliest days until cut cane billets/bins were introduced in the 1970s.



This truck has been loaded with finer stalks (no large broom straws). The bottom row was epoxied to the deck along with the thread representing the wire rope holding the cane in place. Add material as loose clumps pressed into puddles of white glue with a streak of white glue on the 'rope' to hold the topmost layer in place.



In Queensland the trucks were generally loaded crosswise and tied down with wire rope so the cane ends dragged on the ground. Dry brushing the topmost cane with flat black paint disguised the glue and could represent burn marks.

Cut Cane Billets

Billets are quite reasonably modelled with short (3.5-5 mm) lengths of fine broom or whisk straw. A jig is useful to get consistent lengths and care should be taken to 'capture' the billets as they are cut, otherwise they tend to fly around the room.



This bin contains a balsa filler box/block, covered with white glue and billets, to reduce the amount of billets required.

The lead photo in this section shows a newly planted crop with a mature field in the distance. The photo below demonstrates how a mature crop towers over the railway.

