

Modelling Sugar Cane Fields

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The Brisbane Model Train Show occurs annually over Queensland's May long weekend. This year I played hookey from Labour Day events and with Yandina modeller Ron Aubrey, promoted Queensland's rail heritage and modelling of the sugar cane/shire railways. The 2009 show was the first, and likely the last, showing of Ron's On24 "Sugar Valley" exhibition layout, set in the Moreton Mill locale. While we were almost alone in modelling the cane railways, Ron's layout stole the show.

Sugar Valley's most striking features are the realism of its cane plantings, followed by the 1:48 scale models of Petrie and Bil-Bil. Built from Badger Bits kits, the models had been regauged from On30 and looked very realistic on true 2' (610mm) gauge scale track. Ron's 4-ton cane bins ran well with lead weights hidden under the chopped Sheoak needle cane billet loads and few questioned why the several locomotives semi-hidden on a track behind a row of cane didn't operate. The reality was that those locomotives were all gauged for On30 and couldn't run on the layout's narrower tracks! However, they did add to the reality of the main scene.

Ron's layout included the best sugar cane I've ever seen, on any layout in any scale except 1:1. This article describes several methods for modelling cane in HO and O scales, including Ron's use of couch grass.

Sugar Cane Cultivation and Harvesting

Sugar cane is a grass with a thick fibrous stalk. It grows to a height of 4.5 metres, although 2-3 metres is more common for modern varieties. Cane can take up to 24 months to mature and in Australia is normally harvested between June and December. Aside from maintenance, the mill, harvesting equipment and cane railway infrastructure lie idle for the rest of the year.

TITLE PHOTO: Almost end-on view of cane field at maturity. Cane in an area that has experienced heavy winds or driving rain will be much more twisted, and may be lying fully on its side. Rob Nesbitt photographer.

Photographs of cane harvesting prior to the 1950s generally show a labour-intensive operation resulting in whole stalks of cane being loaded and delivered to the mill. Mechanisation was introduced after WW II. Today, harvesters trim the tops and cut the stalks off near the base, then lift the whole stalks up to cutting blades where they are chopped into roughly 25-45 cm 'billets'. The billets are delivered into a waiting in-field transporter and the trash (leaves, dirt, etc) is generally blown onto the field behind the harvester.

Manually harvested cane used to be burned to eliminate trash and vermin but today most cane is cut without burning. Cane billets deteriorate fairly rapidly, requiring delivery to the mill in less than 24 hours. Delivery is by train or truck, with the cane in the delivery system ensuring continuous crushing. In practical terms, while cane is harvested during the day much of it is delivered by rail during the night to ensure continuous milling. 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.

From a modelling point of view we need cane plants growing in the field, cane stalks for loading wholestick trucks or chopped cane for loading modern cane bins. Large cane fields may be more easily represented on the backdrop, as creating realistic cane fields is a time-consuming task.

Basic Methods: Broom Straw

I've used the fine end tips from an expensive millet straw broom, mixed with the finer straws from an Asian hand broom, to model small amounts of mature cane on a HOn30 diorama. In retrospect, it would probably have been better to use the Asian broom straw exclusively, and to keep the total height of the cane slightly lower. Broom straw looks very acceptable cut to length for HOn30 wholestick truck loads and chopped (scale 30-60 cm) for HOn30 cane bin billets. Greg Stephenson's wholestick trucks, (photo in NGDU #32, page 27) have broom straw for their loads. Modellers in larger scales would need to develop a way for the straws to realistically droop and bend.



ABOVE: HO scale cane field under construction using fine broom straw, painted with a gloss acrylic paint. The cane rows were glued in place and embedded in plaster.

The 'ground' was then stained with water colours and covered with appropriate shades of commercial ground cover materials. This is still a reasonable method for small patches of cane in HO and smaller scales, however I'd use only fine straws with 'split ends' in any new installations and I'd likely add at least some Yarra or similar grass tips to provide a leaf structure further down the stalks.

BELOW: The cane field and the wholestick cane truck loads on this HOn30 diorama were modelled using broom straws from a good quality Australian-style broom mixed with the finer straws from an Asian hand broom. The backscene complements the diorama with a photo of the museum's steam locomotive storage track, rather than providing a normal diorama backdrop. The locomotive is a Colonial Baldwin with a scratchbuilt (styrene) plantation-style cab.



Rows of straw-based cane must be painted, as most straws won't take dyes. Flat paints are probably too dull for good results. Glossy acrylic paints work reasonably well when brushed, but need a final application of a dulling spray to remove some of the 'shine' apparent in photographs. Spray painting might provide a better blend of colours, from the brownish lower stems to the bright green (in sunshine at least) tops.

Cane is planted in rows, thus the modelled cane should at least hint at rows. The lack of a row structure, and the typical 'helicopter-style' layout viewing angle means that fake fur, coir mats, carpet and other area coverage methods often fail to adequately represent cane fields. At eye level they can be somewhat better, as the height of the carpet-type strip in HO and smaller scales can realistically hide the train moving through a field.

Sheoak needles

Sheoak needles cut into appropriate lengths make great O scale cane billets. Their colouring resembles some varieties of cut cane and they even have colour variations that imply bamboo-like segment joints. Given that the needles shake down in operation, a fully loaded bin might best be represented by gluing billets in place, perhaps around a small box or weight within the bin.

Yarra Grass

Don Fraser's use of Yarra Grass provides a more realistic method for HO modellers. He harvests the grass when it is in flower and selects out the most life-like stalks for assembling into a cane strip/row which can be glued onto the layout. These strips are sprayed with hair spray and painted with water based paints mixed to match the cane fields portrayed on his photographic backdrop.

Couch Grass

Bill McClanahan in his 1950s scenery book *Scenery for Model Railroads* described two methods of pickling lichen (see sidebar). Ron Aubrey has been using a similar technique to treat couch grass. The theory says that isopropyl alcohol drives out the water from the grass and is replaced by the glycerine. However, two days of soaking followed by draining and drying, doesn't seem to be enough, and some of the grass still crumbled as it aged. Even so, the results are very encouraging and Ron's experiments are continuing.

Ron selects the fine tips of couch grass growing in his yard, 'pickles' them as described above, and then colours them with a bright green paint. Planting the cane is a tedious job; dip the end of a stalk in white glue and place it into a small hole punched in the scenery. Once a few heavier stalks are in place, lighter materials can be placed more quickly as they will be held up by the sturdier stalks.



ABOVE: Close-up of cane close to maturity showing the amount of trash (dead leaves, etc.) around the base of the row and plants. Rob Nesbitt photographer.



ABOVE: A field of immature cane in the South Johnstone Mill area. The rows are spaced for mechanical weeding, etc., and the cane stalks have not yet developed beyond a bushy grass shape. Rob Nesbitt photographer.

BELOW: A field of immature cane near Fairymead Mill, 2004. This partly grown field consists of bush-like clumps of sugar cane plant. Since the photo was taken during the crushing season (the mill is operating, see the stacks) the cane will not be ready to cut for another year. This image is part of a panorama sequence that might work on a layout backdrop with some retouching in Photoshop to eliminate the power lines.



BELOW: The mills seldom own the land that the cane railways run on; the cane railways more commonly run in an easement along a shire road or through a farmer's field. This shot of a cane tram crossing on the Gilles Highway is out-of-season for harvesting, but it illustrates how the cane often grows close to the tracks. David Phillips photographer.



Cane Fields on the Backdrop

Large cane fields and multi-building sugar mills waste valuable layout space and are often more work than they are worth. Fortunately they can easily be portrayed on the backdrop using artwork or photographs. Perspective, lighting and placement of backdrop features is critical, but the best results probably come from a backscene that is viewed close to eye level, rather than one where the viewer has a 'helicopter view' of the layout.

Don Fraser integrates his Yarra grass cane and cane fields photos pasted on board. He cuts the sky off the photographs and paints his foreground cane to match the colours in the backdrop. An artist, on the other hand, might work the opposite way and match backdrop colours to these used for the model cane plants.



ABOVE: Ron Aubrey (at right) explains his sugar cane modelling techniques at the 2009 Brisbane Train Show. The On24 Sugar Valley features a small out-depot and Nambour area running.

Pickling Lichen

In the book *Scenery for Model Railroads* Bill McClanahan (pp 44-5) described two methods to "pickle" lichen to preserve the fine structure of the plant.

The first method used a solution of two parts water to one part glycerine, heated to just below boiling point (100° C). The lichen was soaked in this solution anything from 30 minutes to overnight, with a recommendation for the longer time. Water-based fabric dyes could be added to colour the lichen at the same time.

The second method, attributed by McClanahan to Bartlett Frost, used a pickling solution of one part glycerine, one part acetone (or lacquer thinner) and two parts alcohol. This solution should not be heated. The lichen remained in the solution overnight and needed to be completely dried before colouring.

Acknowledgments and References

McClanahan, Bill (1958). *Scenery for Model Railroads*, Milwaukee: Kalmbach Publishing Co, pp 44-5.

Zelmer, Lynn et al. *Modelling Sugar Cane, parts 6 (Basics), 16 (Yarra Grass) and 27 (Couch Grass)* of the CaneSIG Handbook series. Modelling Cane Railways. www.zelmerOz.com/canesig/resources/handbook.htm

Photos not credited are by Lynn Zelmer. Additional information, photos and construction articles can be found on the CaneSIG web site: www.ZelmerOz.com/CaneSIG. Appropriate search terms in the Image Collection would include harvester, transporter, loading, wholestick, bin, etc. →

Such sweet results...



ABOVE: The cane fields on the layout at the Workshops Museum, Ipswich, were created using a carpet-type material. While the base fibres resemble cane stalks in a photo, they are less realistic in person due to the lack of base 'trash' and their too even surface. This is acceptable for HO and smaller scales but such wide area materials don't produce a high enough stalk for the larger scales.



ABOVE: The edge of a cane field and adjoining open bushland on Ron Aubrey's On24 Sugar Valley exhibition layout. The structure of the coarser couch grass stems can be seen, with some intermixed leaf ends. The couch grass was pickled, then sprayed with a glossy green paint. More realism could be achieved by gradually changing from brown to green up the stems and, in this location at least, placing more green leaves in front of the brown stem framework.



ABOVE: A rake of Ron Aubrey's On24 cane bins loaded with billets of Sheoak needles chopped to an appropriate length. Harvesting crews have experimented with a variety of billet lengths but a scale 30-60 cm is quite reasonable. The bins have a weight in the bottom of the load for smooth operation and are close-coupled together with an inverted 'U' of copper wire.

Just like on the cane railways themselves, the billets pack down in transit (especially after a couple of hours running at an exhibition) and occasionally drop onto the track and surrounding area. Unfortunately, the model locos aren't heavy enough to crush the billets under their wheels and a billet lodged in the points will generally cause a derailment.



ABOVE: Rows of sugar cane modelled in HO scale from Yarra Grass by Don Fraser, have been painted to match the colours of the sugar cane in the backdrop photos. The layout and its scenery are still under construction at this point and additional detail is required to blend the cane rows into the foreground scenery. Don Fraser photographer.



ABOVE: 'Petrie', a Moreton Mill 0-6-0 Baldwin DH (from a Badger Bits kit, On24 gauge) and a bin loaded with Sheoak needle 'billets' on Ron Aubrey's Sugar Valley at the 2009 Brisbane Train Show, with some of Ron's couch grass cane growing in the distance.

RIGHT: Yarra Grass, harvested when it is in flower, provides the basis for Don Fraser's sugar cane. Here the grass tips are being attached to lengths of sticky tape to create random heights around the 4 cm mark.

The tape end will eventually become part of the scenery, creating a row of cane roughly eight to ten feet high in HO. Don Fraser photographer.

