

HOPS ON THE FAR SIDE

— NEW ZEALAND'S CONTRIBUTION TO THE HOPS INDUSTRY

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Hop production in New Zealand is a relatively young industry and has origins in both European and American traditions, but the cultivation of the hops differs significantly from what we know from other regions of the world in a number of ways.

The taste for beer has spread around the world with exploration and with it also a need for local production. Hops, however, are a very specialised product and apart from some niche applications, such as in pharmaceuticals, their use is for brewing beer. However, the climatic conditions for growing hops with high brewing value restrict the areas suitable for commercial production.

New Zealand has a relatively small production, in 2008 producing 718 MT out of a world total of 110,021 MT. In comparison, Hallertau alone in Germany produced 33,230 MT and the total for P.R. China was 15,050 MT, which is considerably less than required to supply the world's largest brewing industry producing 395 million hectolitres. However, as befits the position of New Zealand far from the major hop production regions, the combination of climate and

geography has led to the cultivation of hops in a manner not seen elsewhere.

Hops were first grown in New Zealand about 150 years ago and over time production was concentrated around Nelson on the South Island. Today, the Tasman region is the only area of production. Here, the day length and rainfall together with protection from winds proved ideal. Many of the local inhabitants were from Germany bringing with them their knowledge of European hop cultivation to supplement the English methods. About 390 ha are cultivated, and the harvest lasts about four weeks from late February into March.

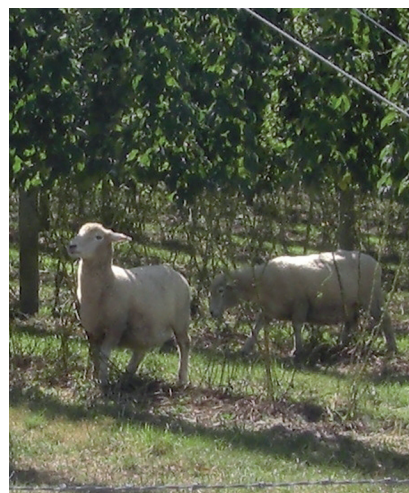
Important progress was made with the introduction of Late Cluster from California in the 1920s, which gave greater yields than the older varieties from Europe, but unfortunately



Hop field in scenic New Zealand



Male hop plant



Sheep grazing among the hop vines

it succumbed to *Phytophthora*, a root rotting disease. A New Zealand Hop Research Station was established in the late 1940s by the New Zealand Brewers Association to address this problem.

VARIETIES

The initial approach was to cross Late Cluster with *Phytophthora* resistant species from Europe producing the varieties Smoothcone, First Choice and Calicross, which were well established by the late 1960s. This period was, however, characterised by a change in the market with the popularity of lighter lager beers giving rise to a demand for seedless aromatic hops, and in Europe, the Common Market implemented a hop cultivation policy eliminating male plants.

New Zealand responded with a different approach. The trend in plant breeding was towards plants with increased numbers of chromosomes, and research produced triploid varieties that, despite their virtual sterility, were similar to their diploid ancestors in brewing value.

Male hops were eradicated due to the formation of seeds in the female cones, which had to be removed in the brewing process. Also, the brewing value of the hops was judged to be lower with a less delicate aroma, which is of importance for lighter lager beers, but less important for ales. Farmers, however, judged that the female plants were healthier and gave better yields in the presence of male hops.

Today, the region produces 11 major varieties as cone hops, pellets and CO₂ extracts. Bitter varieties such as Pacific Gem

achieve 13-15% alpha acids, and aroma varieties such as Riwaka contain about 1.5 ml oil per 100 gram cone weight. Between these, lie varieties such as Nelson Sauvin with 12-13% alpha acids and 1.1 ml oil per 100 gram cone weight. This is clearly a dual-purpose hop and gives a distinctive wine fruitiness. The name is in fact derived from the Sauvignon Blanc grape which is widely grown in the area.

ORGANIC HOPS

Cultivated hops are susceptible to many diseases. These include fungal diseases such as mildew and verticillium wilt and the viral diseases nettle-head, mosaic and split-leaf blotch. These diseases are not a problem in New Zealand and, as already mentioned, the problem with *Phytophthora citricola* root rot was resolved by breeding resistant varieties.

In addition, there are at least forty different species of insect recorded as living on hop plants, although not all are harmful. The only significant pest in New Zealand is the two-spotted mite which has been controlled with the introduction of a predator mite *Phytoseiulus persimilis*.

In addition to advantages with regard to these traditional aspects of disease and pest control, New Zealand has another advantage – sheep. The sheep graze around the hop vines clearing the ground. The hop vine is also cleared of foliage including weed to a height of about a metre without damage to itself. Thus, no herbicides are needed and the sheep also provide natural organic fertiliser. It is encouraging to observe that in practice a positive management system combining several different aspects can lead to a sustainable organic →

business for a product traditionally subject to natural difficulties.

The New Zealand Biological Producers and Consumers Council provides certification under the trade name Bio-Gro New Zealand Ltd.

PRODUCTS AND MARKETING

Hops in New Zealand are processed and marketed by New Zealand Hops Ltd, a grower-owned company based in Richmond near Nelson, New Zealand. The freshly harvested hops from the fields are dried using hot water radiators as the heat source to avoid any contamination from exhaust gases. The dried hops may then be pelleted or hop extracts produced at a modern supercritical CO₂ extraction facility sited next to the hop pelleting plant.

Hop products are available as cones in traditional bales or vacuum packed, Type 90 pellets, nitrogen flushed and vacuum packed, or CO₂ extract.

CONCLUSION

New Zealand has developed a different approach to hop cultivation. Although based on European and American traditions, the style today is markedly different, especially regarding organic hops. For those contemplating a visit to the South Island of New Zealand, February is a good summer month. A trip through the vineyards should be

followed by a tour of the hop gardens and rounded off with a cold handcrafted beer produced from the local South Island ingredients from a microbrewery such as Golden Bear Brewing Company at Port Mapua on the edge of the Abel Tasman National Park. ☺



Golden Bear Brewing Company at Port Mapua, a microbrewery hand-crafting beer from local ingredients



Processing and marketing takes place at the grower-owned company New Zealand Hops Ltd