

Special Issue *BRA-the first 5 years Celebrating the Changes*

Tasmanian pyrethrum production today is among the most innovative, high-tech agricultural industries in the world. But five years ago when a management buy out of CIG Pyrethrum led to the formation of current owner Botanical Resources Australia (BRA), things could not have been more different. With an output that has nearly tripled since 1996 and technology that is unique, Tasmania now supplies 30% of the global pyrethrum market, and is the world's second largest producer.



Fields of pyrethrum on the north west coast of Tasmania.



*Ian Folder-
BRA Managing Director*

"We've come a long way," says BRA's Managing Director Ian Folder, reflecting on the company's first five years. "The industry was precariously balanced at BRA's take over, but I could see it could have the potential for great success." Through the commitment of people who shared this faith, Tasmanian pyrethrum has become a thriving, multi-million dollar export industry: and an integral part of the high-value cropping for which the island state is renowned.

But the current strength of Tasmanian pyrethrum belies inauspicious beginnings. The first experimental plots in the 1960s were reportedly more notable for the robustness of their fencing than that of the plants that they encircled.

Only in 1981 with a tripartite agreement between CIG, the University of Tasmania and the state government, and the additional involvement of Glaxo, was the notion of industrial scale production considered seriously. Tasmania's fertile, well drained soils, ample rainfall and mild climate seemed to offer ideal conditions for growing the white daisy with its unique insecticidal property.

Pyrethrum was a challenge from the very beginning. There was no high technology precedent for Tasmanian production to follow. Kenya - then and now the largest producer - splits its pyrethrum bushes for planting and harvests the fresh flowers by hand. As neither method was suitable for Tasmania long term, original solutions had to be found.

When CIG Pyrethrum was sold to BRA by British parent company BOC, pyrethrum in Tasmania still had a number of major hurdles to clear. "We had to work out how we could produce the product at the lowest unit cost," Ian

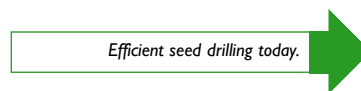
explains, "and that required a lot of new technology." It also demanded a radically different way of looking at pyrethrum: focusing on pyrethrin yield per hectare instead of yield per plant.

At the time of BRA's birth, the industry had yet to develop large scale seed production and direct drilling for crop establishment. Neither had it developed the present method of harvesting. Crucially, the refining process was still conducted entirely in the USA, so that BRA missed out on the final value adding to its crop. "These were the major advances that we had to make to put the industry on safer ground," says Ian.

Fortunately, the culture that soon developed at BRA was well suited to responding to such challenges. Burdened with none of the unwieldy formal procedures of larger organisations, BRA could put change on a fast track. Short and open lines of communication and a relatively flat management structure meant that new initiatives could be implemented almost immediately.



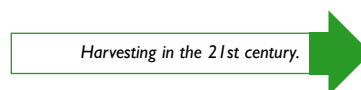
Laborious planting of splits 5 years ago.



Efficient seed drilling today.



Pyrethrum harvester in 1984.



Harvesting in the 21st century.



The Challenge of Change

Perhaps the most urgent challenge facing the infant company was to find an alternative to the propagation by hand splitting of tens of millions of plantlets that, eight years ago, was still the only realistic way to put pyrethrum into the ground. "It was an unbelievably laborious process" remembers Bill Casey, BRA's Planning and Logistics Manager, "We had 1200 people over 12 weeks splitting, planting and replanting the splits." A solution had to be found.



Old Hesston cutter rower



New generation cutter rower

To do this first required advances in seed quantity and quality: only research into improving seed treatment and storage would generate better germination rates. This achieved, and building on the first experimental direct seeding under the auspices of CIG in 1995, BRA was able to begin a major expansion which would have been impossible with hand splitting.

By 1997, BRA's Research and Development team led by Brian Chung had settled on a vacuum precision drill the first of its kind in Australia. Growers were pleased with higher densities of crop establishment and the higher per hectare yields the new method promised. The technique allowed dramatic expansion in the total area planted to pyrethrum which amounted to 750 hectares in 1997, 1000 ha by 1998, 1500 by 1999 and the target figure of 2000 ha as BRA entered the new millennium. It also radically reduced the crop establishment cost from \$2500 to less than \$400 per hectare.

More crop meant more harvest, another area where advances have been huge. In 1996, crop was cut exclusively by Hesston-style cutter rowers, then already 40 years old. Today BRA has a fleet of state of the art cutter rowers and harvesters. In the 5 years between 1996 and 2001, total tonnage increased by 300%. BRA's first harvest employed 10 contractors, the 2001 harvest, 32. The sheer volume of harvested material soon demanded the construction of a \$750 000 pelletiser and a 4000m2 reception shed on the Ulverstone site during 1998 and 1999.

Just as the growing area expanded nearly three fold in BRA's first five years, so too did staff numbers. In 1996, the company employed only 10 people on a permanent basis. At present that number is 34, and people, insists Ian, are BRA's best asset. "The operation is small enough for individuals to see the results of their own work: and that's pretty rare in business these days." Both at the company's Hobart headquarters and its Ulverstone crop reception and processing site, the general consensus is that being so close to the rapid development of such an innovative industry has been a satisfying experience.

But one aspect with which no one was satisfied when BRA took over Tasmanian pyrethrum, was the lack of a refinery. Product was still being exported in the form of the dark, treacly oleoresin, denying Tasmania the final value adding refining stage. One of the company's first steps, therefore, was to design, commission and build a refinery of its own. Conceived by John Boevink, Director of Manufacturing, together with colleagues from CIG, a large pilot plant was experimented with in 1996. By the following year, a commercial prototype had produced BRA's first high quality saleable pyrethrins within three months of its construction. An environmentally friendly process involving subcritical CO₂, BRA's pyrethrin refining method was practically a world first when it was adopted. The refinery now prepares all BRA's pyrethrins to the exacting specifications required for export across the globe.

A new supplier stabilises the market

Crucial to BRA's success in the first five years has been the ongoing support of customers. Significant customer pre-payments helped to finance BRA at the very beginning, and long term supply agreements have guaranteed the company's market. "We are indebted to them," explains Ian. "They had faith in us right from the start and could see we had the potential to deliver on our promises." Overseas customers still make up the bulk of BRA's clients, with 98% of its product exported: 85% of that to the USA and the remainder to Germany, Holland, Spain, Italy, Hong

Kong, Singapore, Korea, Japan, India and New Zealand.

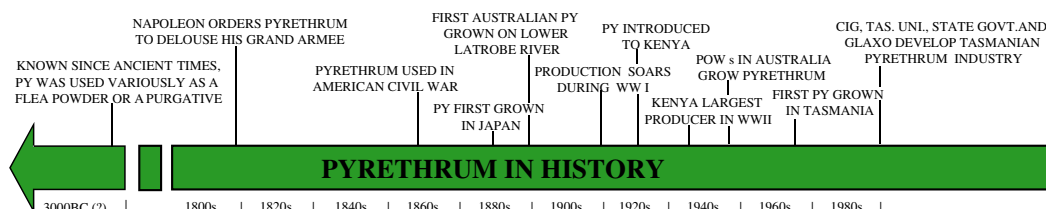
On a world scale, East Africa, and especially Kenya, still dominates the pyrethrum market with 90,000 farmers hand tending their cash crop in the tropical highlands of this country alone. There is little rivalry, though, between Tasmanian and East African pyrethrum production. When East African production slumped in the mid 1990s due to seasonal and other factors, world confidence in supply was severely shaken. Above all, therefore, the growing Tasmanian presence has served to stabilise the global pyrethrum market, benefiting consumers, clients, and pyrethrum producers everywhere.

East African delegations have visited growing and production area in Tasmania, and BRA employees have been received

as honoured guests in Kenya, Rwanda, Tanzania, and have also travelled to Canada, Chile, the USA, the UK, Spain, Germany and Italy on company business. BRA looks forward to further international co-operation in the future.



John & Joseph in the refinery.



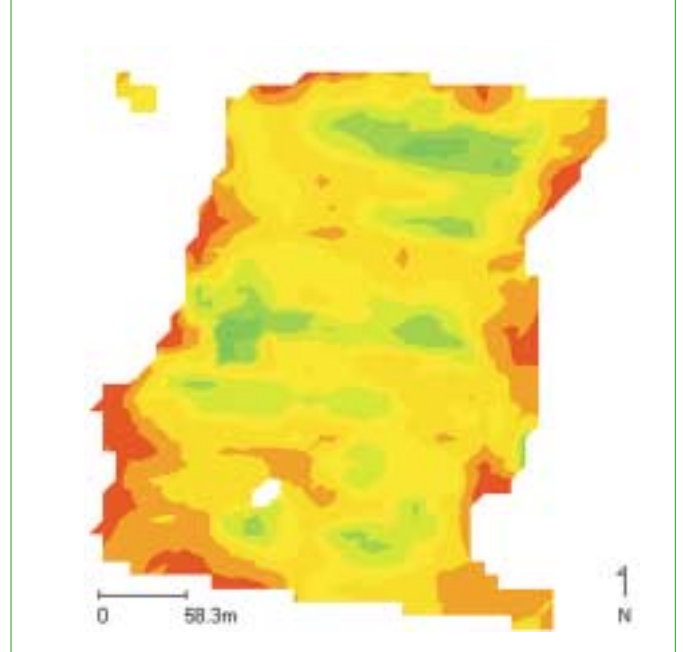
BRA looks to the future

"The strategy for the first five years was very clear," Ian says, "we had to build the physical infrastructure and do some intensive R&D. The next few years will be all about consolidation, streamlining, and capitalising on our existing resources and I believe this will provide many new challenges for the team"

Accordingly, the focus of R&D in the near future will be to gain a more detailed understanding of crop biology and physiology, with the aim of producing increased pyrethrin assay. With a 2000/2001 budget of \$1.3 million, R&D is clearly BRA's strength and priority and research collaboration will continue with CSIRO, the University of Tasmania; and government and private consultants. A crucial aspect of R&D input is also that of the growers who contribute a voluntary 2.5% levy for the purpose. Managed by an enthusiastic committee with a grower majority, these R&D funds can quickly be channelled where they are needed most, achieving rapid and measurable results.

As a company with a technological emphasis, BRA is a staunch supporter of e-commerce. With a 1999 grant from the Tasmanian Electronic Commerce Centre, the company was able to offer growers financial assistance in purchasing computer equipment and software. Following a training program in which more than 70% of growers participated, they now communicate with BRA and with each other online, and are increasingly managing business affairs electronically. It is an area all those involved with pyrethrum expect to see expand in the future.

Another computer based technology that should give the Tasmanian industry a competitive edge in the global marketplace is the use of the satellite based Global Positioning System for farm mapping and yield forecast. Harvesters mounted with computerised GPS facilities can map paddocks to an accuracy of 40cm during harvesting, and, using mobile technology, such



Computer generated yield patterns at harvest.

information can even be received in real time at company headquarters. The precision of this system allows the farmer to treat one part of a paddock differently from the rest of it, for example with extra irrigation or top-dressings, thus maximising yield.

The future for BRA will also be about diversification. Firstly, Ian intends to extract some extra value from pyrethrum's by-products. There are plans for a mosquito coil plant at the company's Ulverstone site which would utilise some of the straw-like spent marc which is left over after extraction. And raffinate - that portion of the oleoresin that remains after pyrethrin extraction - may be made into nuggets to be used as a solid fuel source.

BRA is already trialling echinacea, the herbal immune system stimulant, and is looking into other botanicals that could utilise the existing infrastructure. "We could have the refinery active all year with imported plant extraction products," says Ian, explaining that BRA's bulk handling and processing facilities at Ulverstone aren't necessarily specific to pyrethrum. "If someone decides that there's a way to put polymer into canola, we might well be extracting plastic from canola. The cost per unit is much lower if you've already got the facilities, and that's an attractive proposition for clients."

Apart from expanding into other markets, there are ambitious growth plans for pyrethrum. By 2006, BRA aims to supply 40% of existing global demand. Trials on the Australian mainland in every state except Western Australia are promising, so mainland pyrethrum could soon be included in the Australian total.

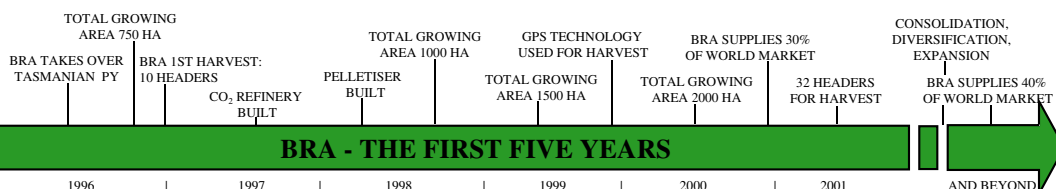
The next few years will be all about consolidation, streamlining, and capitalising on our existing resources...
By 2006, BRA aims to supply 40% of existing global demand.



Growers at computer classes.



Loading pellets in the new storage shed.



People - Our core resource

The permanent and casual staff of BRA can be justifiably proud of their achievements over the last five years. The company looks forward to providing increased training and opportunities for career development in the future.

"We've got a lot of irons in the fire and we don't know which will be successful, but we do know we'll need a lot more good people to carry BRA forward," says Ian. Already the field production team under Matthew Greenhill has increased from three to ten highly qualified staff while the R&D and seed sections now employ six permanent staff. Similar levels of growth have occurred in all the other sectors of the business, and it is becoming a challenge to attract quality people.

To this end, the company has begun a program to finance \$50,000 of scholarships at the University of Tasmania. There are four scholarship holders at present, in the disciplines of chemistry and agricultural science, and

BRA hopes to increase that figure to eleven in the near future. Students can apply for the competitive \$3000-a-year awards at the end of their first year of study, with the successful candidates enjoying this support throughout their undergraduate degrees. They also have the opportunity for 6-8 weeks work in their discipline in BRA's commercial environment during the summer vacation.

BRA aims to select the very brightest students - and challenge them. "They'll have to go to someone with their great ideas," says Ian. "Hopefully they'll come to us."

The program builds on the productive relationship the industry already enjoys with the university - there have been five pyrethrum related Honours theses and two PhDs in the last five years as well as two new PhD students and a Post Doctoral researcher starting in 2001 - and is also a way to give something back to the Tasmanian community.

Ian notes the extraordinary level of

goodwill across the spectrum from grower to government, and has no doubt this has been vital to the success of Tasmanian pyrethrum. "The level of cooperation and support from all segments of the community has been incredible," he says. Funding bodies have been generous: government support for R&D, especially via the Horticultural Research and Development Corporation and AusIndustry, has been invaluable and will continue to assist in the future. Growers have also demonstrated commitment, even when things have not gone quite to plan. "There's little question that we could have done this without their loyalty," says Ian.

"When we took over the industry we took on some enormous calculated risks," Ian concludes, "and progress hasn't always been easy. But we've thrived on a culture of challenge."

With the company now set for consolidation, diversification and expansion; challenge - and success - will surely be in ready supply in the future.



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