



SUPPLYING BUILDING SITES ACROSS AUSTRALIA.
■ FIND SHELL LUBRICANTS, WHEREVER YOU ARE



[Home](#) [Digital Edition](#) [About](#) [Article Index](#) [Free Articles](#) [Events](#) [PHGTV](#) [Online Shop](#) [Special Students Offer](#)

Issue 80: "Top of the Range" Truss Tomatoes

January/February – 2005

Author: Steven Carruthers

Work has started on the most technologically advanced greenhouse in Australia, expected to come on-line in September 2005. The new facility will be highly automated and deliver consistently high quality truss tomatoes to supermarkets along the east coast of Australia – all year round.

The NSW Minister for Regional Development, David Campbell, recently announced that construction has started in Guyra, NSW, on a \$24 million glasshouse facility that will be the largest and most technologically advanced glasshouse in Australia. When complete, the 20ha (200,000sqm) growing facility, will supply high quality truss tomatoes to supermarkets from Melbourne to Brisbane, and employ up to 200 permanent fulltime and permanent seasonal staff recruited from the New England region.

"This is great news for the people and the economy of Guyra," said David Campbell. "The project also has the potential to make Guyra a leader in horticultural development throughout the region," he added.

Work begun on Stage 1 of the project in mid-November 2004 with the construction of a 5ha glasshouse and packing shed facility to be operational by May 2005 and harvesting by September 2005. Stage 2 will see the construction of a 5ha glasshouse extension, which will be operational by May 2006. This will be followed with the construction of a 10ha glasshouse with the timing to be determined by market conditions. When complete, the facility will be more than five times the size of the Melbourne or Sydney cricket grounds. According to the operator, Kos Fresh Produce, the development would happen much faster if Australia had the skilled human resources to manage the facility. As a result, the company recently recruited graduate horticulturists to undergo fully subsidised training for three months at a leading greenhouse establishment in Holland.

Kos Fresh Produce is part of the Costa Group, Australia's leading private handler of fresh produce, managing over A\$900 million worth of fresh produce per annum throughout Australasia. The company operates 18 business divisions ranging from fruit and vegetable production, wholesaling and retailing, export and import, pre-packing, logistics, contract procurement and quality management. The company employs nearly 900 people around Australia.

Kos Fresh produce is a joint venture between Michael Shadforth and the Costa Group of companies. It markets hydroponic tomatoes from a network of growers across Australia, as well as provides technical advice and support to help growers increase the quality and yield of their production. The Kos goal is to consistently supply high quality truss tomatoes to markets along the east coast of Australia all-year-round.

Kos Fresh Produce will be the outlet for the produce, which will be sold under the brand name "Top of the Range". The Costa Group believe the new glasshouse facility will demonstrate to supermarkets and consumers alike that the greenhouse industry can reliably deliver a consistent, high quality truss tomato year-round. They believe the new facility will drive the growth of the industry forward, away from the current 'high-low' price situation that depends on what's available.

LOCATION

Guyra was chosen as the site for Australia's largest glasshouse facility because of its cool summer temperatures, and sufficient light levels to grow tomatoes through winter at a cost-effective price. Located 38km north of Armidale, 563km north-north-west of Sydney and 427km south-west of Brisbane, Guyra (population 2000) is the most elevated town on the New England Tablelands. The glasshouse business has been named "Top of the Range" because of its location on top of the Great Dividing Range at an altitude of 1320 metres.

While climate was the decisive factor, the company conducted extensive research which included an assessment of:

- the cost of transport of raw materials
- cost of transport of the finished product to market
- cost of labour
- effect of climate on yield
- cost of fuel for heating
- availability and cost of water
- availability and quality of labour
- government support.

According to the principal of KOS Fresh Produce, Mike Shadforth, the company based its major location priorities on overseas experiences. When European growers were asked what they would do differently, they pointed to climate as the major priority, and that was the approach the Costa Group took.

"I think we are the first group in Australia to look at where the best place is to grow tomatoes, and we worked back from there," said Mike Shadforth.

Of those European growers studied by the Costa Group during the planning phase, they all pointed to size as another important consideration. Most had expanded to sizes that they didn't dream they'd get to and had outgrown their sites quickly. The remote Guyra site is large enough to expand well into the future.

Search & Hit Enter

Popular Posts

[Issue 117: Comparing Growing Media](#)

[Issue 63: Hydroponics as an agricultural production system](#)

[Issue 70: Green Feed – Livestock Fodder Shed](#)

[Issue 103: Sustainable Aquaponics](#)

[Issue 119: Importance of ventilation in commercial greenhouses](#)

[Issue 06: Planning Commercial Hydroponics Part 1](#)

[Why Not Organic Hydroponics?](#)

[Issue 07: Planning Commercial Hydroponics Part 2](#)

[Issue 40: Lisianthus: A Specialty Cut Flower](#)

[Issue 98: Greenhouse Production In Japan](#)

[IPM in Hydroponic Strawberries](#)

[Issue 114: Rabbits, Rabbits, Everywhere Rabbits](#)

[Issue 118: 'Truss Me' Tomato Campaign](#)

[Issue 35: The Fodder Factory](#)

[Issue 85: Challenges Faced by the Hydroponics Industry Worldwide](#)

[Index by Issue](#)

[Issue 02: Sand Culture](#)

[Issue 91: Chilling The Root Zone](#)

[Issue 51: OH-Farms – Tropical Greenhouse Growing](#)

[Issue 14: Nutrient Management in Hydroponics Systems – Part 2](#)

[Issue 101: Aquaponics Revisited](#)

[Where have all the ladybirds gone?](#)

[Issue 12: Running Strawberries](#)

[Issue 94: Field Vs Glasshouse Tomatoes](#)

[From Seed to Supermarket](#)

[Issue 11: Gibberellins – Plant Growth Hormones](#)

[Issue 44: NFT Lettuce – Californian Style](#)

[Future Urban Farming](#)

[Issue 80: "Top of the Range" Truss Tomatoes](#)

For the Costa Group, sufficient water supply was a bigger issue than indicated by European growers. “For a 20ha site, you need a minimum of 200 megalitres of good, clean water, and that’s hard to come by in Australia,” said Mike Shadforth.

The Guyra site will be supplied by on-site spring water that will be treated before use in the growing facility.

Another important location priority set by the Costa Group was a sustainable workforce, which will be recruited from the Guyra and Armidale regions. The closure of the local abattoir nine years ago is a big factor in the region’s high unemployment, and nearby New England University is expected to play an important role in skills training for future workers.

The NSW Government through the Department of State and Regional Development, and the Guyra City Council, have been highly supportive of the project, which was another critical reason why Guyra was chosen for this project.

TRUSS TOMATOES

Truss tomatoes are presented with their stems connected in the same way as grapes grow on a vine. Besides their deep red colour and near perfect appearance, the green stem gives off a tomato scent that consumers identify with freshness. When the first tomato on the truss ripens, the fruit is left on the vine until the last fruit on that hand starts to ripen. Typically, there are 3-6 tomatoes on a truss.

To meet quality standards, the following guidelines have to be adhered to:

- All tomatoes on the truss must have colour so they are truly vine-ripened, allowing their full taste to develop.
- The tomatoes on the truss must be free of blemishes, spots and cuts.
- A truss consists of at least three tomatoes.



As the truss tomatoes are vine ripened, they develop their full taste, while the extended shelf-life of two to three weeks leaves very little loss due to fruit decay for the supermarkets.

Truss tomatoes are harder to grow because they can only be harvested when the last tomato starts ripening, thus making them truly vine-ripened. This could lead to the first tomato splitting or becoming over-ripe for growers with less experience, or poorly equipped greenhouses. There is some competition but most growers struggle to achieve the quality necessary as they do not have the necessary operational experience.

Truss tomatoes are almost impossible to grow in the field because of their delicate nature. Unsuitable weather patterns also means poor pollination and yields of poor quality trusses. The delay in harvesting, the difficulty in gassing, and the delay in ripening without a heating system are also obstacles for field growers to overcome. This is an important competitive advantage for glasshouse-grown truss tomatoes.

GLASSHOUSE SPECIFICATIONS

Packing Shed

One of the key features of the new facility is the location of the fully automated packing shed, which will be linked to the glasshouses. The ‘H’ design streamlines the flow of tomatoes, which will follow the central walkway in the glasshouse to the packing shed without having to go outside. State-of-the-art packing machinery will automatically unstack trays of tomatoes from the picking trolleys coming from the glasshouse, direct the trays through automatic conveyors, check and weigh product, then automatically palletise the trays ready for transport.

The picking trolleys will be self-powered and use an automatic guidance system to move between areas of the glasshouse and packing shed. The packing shed will also house a cool room, boiler room, irrigation room, lunch room with toilets, and office space.

Gutter Height

A unique feature of the Dutch-designed Van der Hoeven glasshouse will be the 6.3m gutter height, the highest in Australia. This is now the international standard for new glasshouses. According to the Greenhouse Manager, Godfrey Dol, even though Guyra is cool in winter, light intensity and summer temperatures at 30°C latitude from the equator can still be quite extreme and there will be a tendency of heat build-up inside the glasshouse.

Godfrey Dol has over 20 years experience growing greenhouse products in the Middle East, North America and Australia. From his experiences, he said that taller greenhouses consistently stay much cooler. He believes that while a 6.3m gutter height may seem extremely high at this point in time, future greenhouses will be even taller.

“To get cooling in the greenhouse you need proper air movement with plenty of air around the crop. If you have enough air above and underneath the crop, there’s better air circulation in the greenhouse and it doesn’t heat up as much and as quickly, and you don’t need as much ventilation,” said Godfrey Dol.

The Dutch-born grower said that the ventilation capacity of the glasshouse is very important in the summer months and the only cost-efficient means of cooling is through air exchange with the outside air, which will be achieved by computer-controlled roof vents on both sides of the peak of the glasshouse.

Heating System

The heating system will be from gas and coal-fired boilers, which will provide heat to plants during cold weather and

Breakthrough technology improves
lettuce harvest yields

You have better
things to do

rackspace
HOSTING



**Practical
Hydroponics and
Greenhouses** on

Facebook

Like

230 people like **Practical Hydroponics
and Greenhouses**.

Facebook social plugin

dehumidify in humid weather. The heating pipes double as railway tracks for picking trolleys. Flue gas from the gas boilers will be injected into the glasshouse to enrich the atmosphere with CO₂. Levels of CO₂ and CO will be monitored and controlled by a computer.

Growing System

There are no surprises in the hanging gutter growing system, now considered the standard system for growing truss tomatoes to maximise light, air movement around plants and plant yields. The grower does not plan to inter-plant in the first year of production to minimise potential pest and disease problems. Godfrey Dol predicts a yield of 50kg/sqm in the first year, and the potential for 60kg/sqm in subsequent years.

“There is enough light in Guyra to grow through the winter to get yields that are substantially high enough without increasing the cost of production,” explains Godfrey Dol. “Theoretically, there is enough light to inter-plant and continue yielding 12-months of the year. It’s a big investment and that’s an option,” he added.

Irrigation System

The fertiliser injection and irrigation frequency is computer controlled. The irrigation system will have many features that allow irrigation to continue even when pipes are broken or a pump unit is not operational. Once the glasshouse is fully established, the run-off water from the growing slabs and from rainwater will be sterilised and re-used, reducing both water and fertiliser costs. The grower does not plan to recirculate in the first year of operation, again, to minimise potential disease problems.

ON BIOLOGICAL CONTROLS

The grower’s approach to integrated pest management (IPM) strategies highlights the technological gap in greenhouse production between Australia and other countries with developed greenhouse industries. Australia does not have the same inventory of beneficial insects to control all the pests that can affect a tomato crop compared to overseas, because of Australia’s unique biodiversity and strict quarantine regulations.

“My advice has always been towards biological control, but we don’t have enough tools there to guarantee that we’re going to make it to the end of the line,” said Godfrey Dol. “We will certainly start off biologically, but I can not eliminate the possibility of having to use sprays.”

Godfrey said the industry is not big enough to warrant enough research funding so that we can have enough beneficials.

“I appreciate the problems producers of natural predator insects have because it’s such a small market and it’s a huge outlay to get even one successful insect working in the greenhouse. It’s a big problem, and one that needs an industry approach,” he said.

On bumblebees for pollination, it is the grower’s view that Australia needs to get bumblebees if it ever hopes to match European and New Zealand production yields. “Here we are, 15 years after bumblebees were first used in Holland, and we still can’t use them,” laments Godfrey.

Godfrey highlights that even with bumblebee technology, Australia needs a full program of biological insects to avoid using sprays that will also kill bees. “Once you need to use sprays, all biocontrol and bee pollination programs go out the window,” he said.

ON MARKETING

Currently, the Australian greenhouse industry is in its infancy. The industry is characterised by small producers with less than a hectare (10,000sqm), mostly under plastic. Of the 243ha of protected cropping, only about 40ha are high technology glasshouses. However, the greenhouse market, particularly tomatoes, is on the verge of expanding dramatically. This is being driven by three factors:

- Consumer demand for greenhouse products arising from increasing affluent, discerning and health conscious consumers;
- Production has reached or is reaching critical mass, allowing the development of dedicated marketing chains, specialised marketers and stocking of product by major supermarket chains;
- Supermarkets are looking for increased opportunity to provide customers with innovative, high quality and attractive products.

In the European market, truss tomatoes (also known as ‘Tomatoes on the Vine’) established themselves in a relatively short period of 7-10 years. The same thing happened in the US market; and initial response to truss tomatoes indicate the same will happen in Australia.

Despite the construction of large greenhouse projects such as “Top of the Range”, smaller growers will still play an important role in the market. Many of these small growers produce good yields and excellent quality tomatoes, and Kos Fresh Produce will continue to work with these growers to build a strong and vibrant base for hydroponic tomatoes. This market assessment is also supported by overseas trends.

“We see places like New Zealand where the small growers drive the industry,” said Mike Shadforth. “We think low technology greenhouses are going to be our biggest problem in the market because they have low inputs, chop from other crops to tomatoes, and don’t have a business plan or formal business structure,” he added.

For those growers who turned to greenhouse tomato production as a semi-retirement or retirement plan, Mike believes the changing market environment will create opportunities as the demand and range of high quality greenhouse tomato products grow.

“Supermarkets don’t want to see \$8.99 truss tomatoes any more,” said Mike Shadforth.

“They’d rather run them at a price where they continually sell, but they don’t have the confidence in the greenhouse industry to deliver because of consistency and quality problems,” he explains.

He said that supermarkets and consumers see quality variation in greenhouse tomatoes which range from very good to really poor. He points to problems where the truss won’t set properly, or the heat brings on smaller tomatoes as the reasons why the industry can not deliver a consistent, high quality product all-year-round. He cites the ‘high-low’ marketing situation for the industry’s poor reputation.

Prices are highest in September and October because of the lack of tomatoes from the field. Prices then level out with February, March and April as the most consistent months. Mike Shadforth believes the industry needs to produce a consistent, high quality truss tomato year-round to restore supermarket and consumer confidence in hydroponic greenhouse tomatoes and the "Top of the Range" facility will help overcome this important industry issue.

There is also a concern that a lack of consistency or quality, or a large enough hole in the supply chain brought about by growers switching crops or leaving the industry, will invite aggressive overseas competition in the Australian market.

"Our biggest problem will be that we can't grow quick enough to keep them out of our market," said Mike Shadforth. "If we can get on a constant, be prepared to grow consistent, high quality truss tomatoes year-round, and other growers invest in their operation, then we will have a strong and dynamic industry," he said.

For the moment, it appears Dutch growers are not interested in filling gap markets; rather, they are looking for consistent, year-round opportunities. Dutch growers are currently fetching 15 Euros/kg for their tomatoes, or around A\$0.21/kg. While the cost of shipping to the antipodes may be a repellent for Dutch growers, this situation could change if big enough gaps appear in the Australian market.



ABOUT THE GROWER

Godfrey Dol is Dutch-born Greenhouse Manager who has grown tomatoes for 20 years in the Middle East, North America and Australia. When the greenhouse industry first kicked off in Australia around 10 years ago, a group of investors got together and built what was then known as the Bundaberg Tomato Company. At that time, Godfrey frequently visited Australia with his Australian-born wife and kept in touch with the progress of the industry. When the Bundaberg Tomato Company failed, some of the shareholders bought the company and contacted Godfrey to invite him to work for them. Godfrey accepted the challenge, leaving a successful 16ha greenhouse operation operated by Village Farms in the United Kingdom (see *PH&G July/August 1993 – Issue #11*).

His first encounter with anyone in terms of Australian conditions was saying he wanted to put a heating system in the Bundaberg greenhouse. Although his approach was met with some scepticism, the shareholders stuck with him. In the first year the greenhouse broke even. Given that they had already lost a bucket of money, the shareholders were impressed and for the next seven years the greenhouse operation rewarded the shareholders with substantial profits. Today, the Bundaberg farm has expanded to 3ha.

Godfrey sees his move to the "Top of the Range" facility as an opportunity to realise his dream to manage the most technologically advanced glasshouse in Australia.

Tags: [advanced](#), [Australia](#), [automated](#), [greenhouse](#), [quality](#), [supermarkets](#), [technology](#), [tomatoes](#), [truss tomatoes](#)

[Increases Tomato Harvests](#)

Age-Old Trick Increases Your Tomato Harvest And Keeps Plants Healthy
[GrowingTomatoTips.com](http://growingtomatotips.com)

AdChoices ►

Copyright © 2012 [Casper Publications](#). All Rights Reserved.



2