

## HYDROPONICALLY YOURS

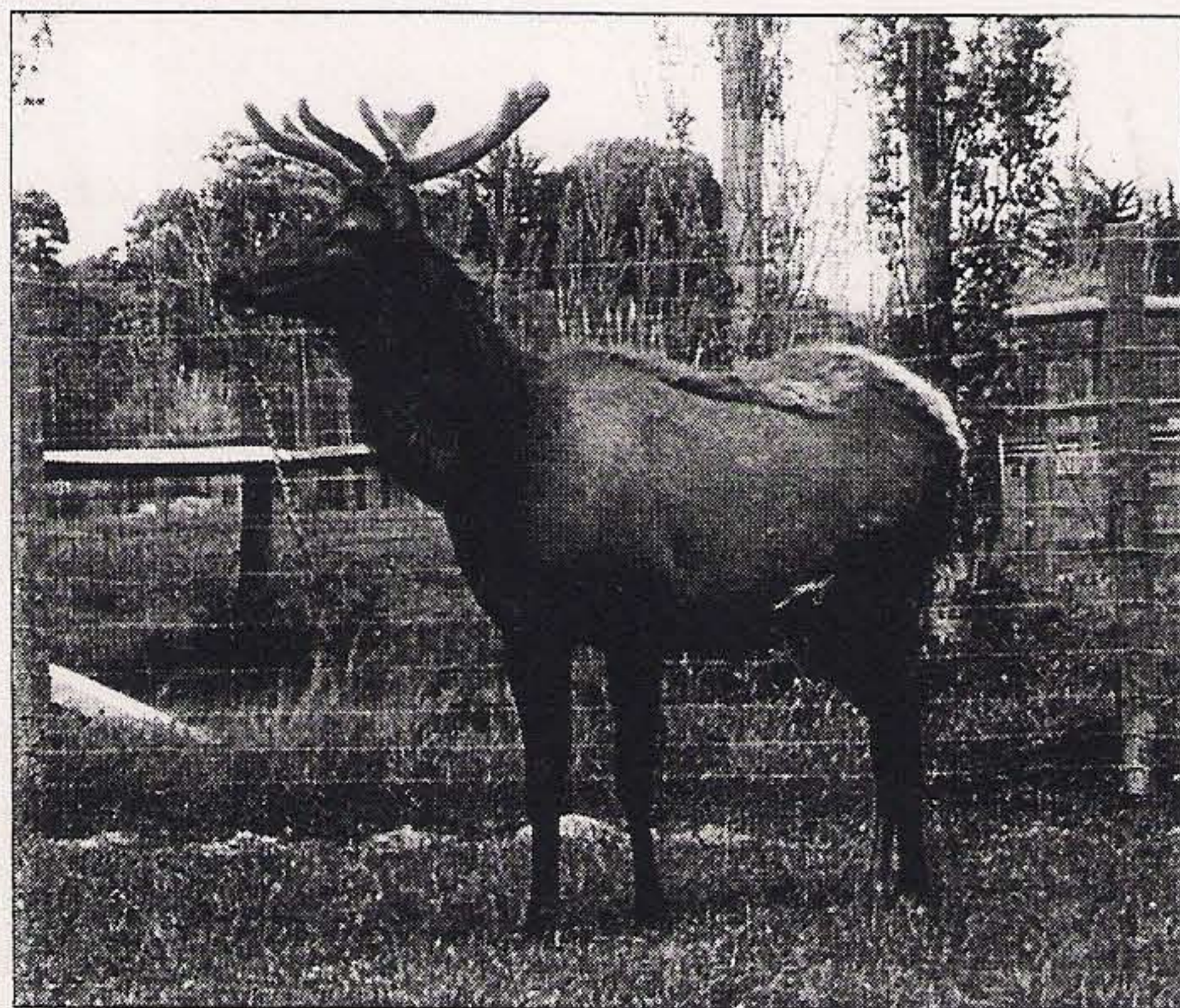
by John Roberts

There would be few, if any, deer farmers in Australia who need to be told that Australia is prone to the occasional drought. On the other hand when we are drought-free we have a bountiful green land, a virtual garden of Eden. Drought is a fact of life. Some deer farmers have tackled the problem of drought head-on and what is more, have won!

Up on the mid-north coast of New South Wales, long time deer farmer Peter Ryan and partner Gary Brown got their drought experience like most farmers, but unlike many others decided to do something about it. So the 'Fodder Factory' was conceived as a long term drought buster.

The concept was originally developed in 1988/89, about the time when Peter was forced to buy in around \$13,000 worth of feed to keep his herds alive. A hefty blow to the bank balance for anyone. At the time he was running well over 100 head of Canadian elk and red deer plus some cattle and goats on his 200ha property. These days Peter has nearly 200 head of stock and has stopped worrying about droughts.

The 'Fodder Factory' was evolved after several false starts and a few prototypes, into a effective and viable green feed producing unit. The unit itself is built something like a greenhouse with a thin polystyrene ceiling and a double skin of solarweave fabric to help insulate against outside temperatures. The unit has an airlock-type door to enable the atmosphere to be maintained at fixed temperatures and humidity. Inside the building is a system of galvanised steel racks which hold the trays of germinating seed. The whole complex is regulated by a micro-computer climate control which programmes the air temperature, humidity, irrigation, and the exhaust and re-circulating fans. Once the micro-computer is set it requires little if any labour input. Gary – an engineer with skills developed on his own



"Peter Ryan's Wapiti bull 'Nobel' at nine years of age.

hydroponic tomato farm – has trialled many differing types of automatic watering systems and misting units, finally modifying a Japanese system to cope with his exacting standards. The aim of the programme is to produce top quality green feed 365 days a year no matter what the outside conditions. The whole system operates on a staggered seeding regime. Trays containing oat seed are placed on the rack as full trays are removed to feed the deer. The trays are misted with nutrient-enriched water supplies whilst the micro-climate within the unit is maintained using a small amount of gas heating and a linked evaporative cooling system which is both cost effective and efficient.

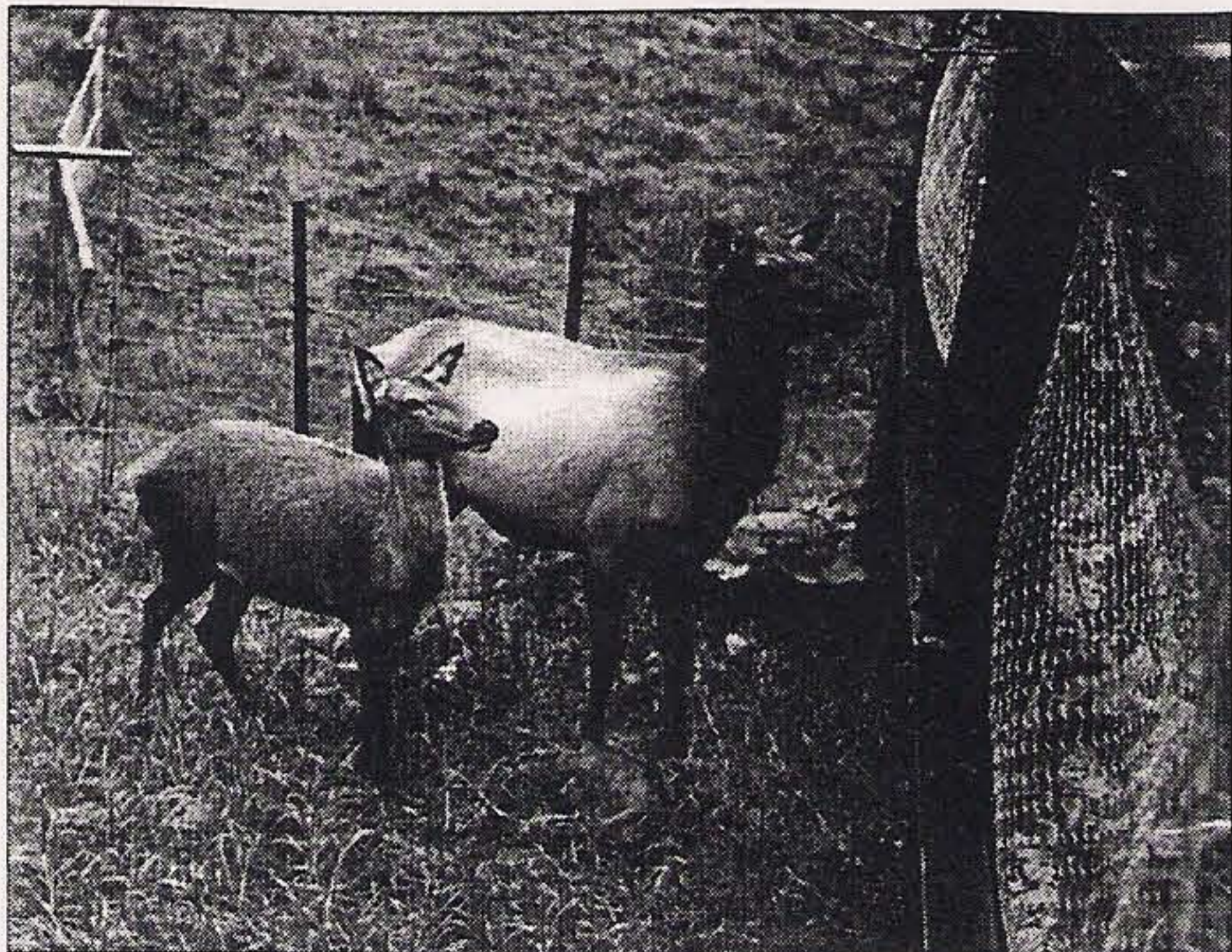
Over the years several types of grain have been trialled to obtain the best results. These included barley, sorghum, oats and corn. After some exhaustive tests for nutrition and palatability, oats have proved to be the most cost-effective and was ranked alongside wheat as the most nutritious feed. The protein level of growing oats rises to nearly 14% during the eight-day cycle and for every kg. of seed over seven kgs of fodder is produced. The green feed reaches a height of between 25 and 30cms and is fed straight from the tray to the deer. An additional benefit is that during the growing process, levels of trace elements and minerals can be selectively enhanced ensuring a balanced nutritional regime.

There are several 'Fodder Factory' models available ranging from the 240kg model up to the 960kg production unit. Peter says that he can feed up to 200 deer a day with the 720 tray model. Apart from the initial cost of the unit itself, on-going costs are minimal, requiring only fresh seed, a small amount of power and a water supply. The system Peter uses requires about 50kg of seed per day to maintain the cycle of supply.

I asked Peter if feeding a concentrate 'green' diet had caused any scouring problems. He agreed that it had been a problem in the early days but they had found that a 50/50 mixture of fodder and hay had solved the problem. I also asked if there were any problems with hinds/cows being on such a rich diet prior to calving but as he said, it was simply a matter of reducing the volume of feed to them for the last five or six weeks before calving. Naturally after calving the diet helps with milk yield giving the calves the best possible start at a critical period in their young lives.

Use of the 'Fodder Factory' system has several side benefits. For example stock may be taken off paddock feed to enable the pasture to recover. It can also be used to help reduce the inevitable weight loss suffered by calves at weaning or it can be used to improve stock prior to turning off for slaughter. Peter also told me that he uses the system to grow-on various grasses like kikuyu and paspalum which is then ploughed into prepared paddocks where it quickly develops into a good sward.

If you're worried about the fact that you're computer illiterate don't even think about it. Peter reckons the



*"Pure Wapiti cow dwarfing her surrogate red hind mother.  
Good feeding certainly pays off."*

system is idiot proof! Labour input is limited to about an hour a day and this comprises the harvesting and feeding of the full trays and seeding and replacement of the new trays. The whole units is 'run to waste' and has a loss factor of about 8% of the nutrient-enhanced water supply. Extra nutrients only require replenishment on a monthly basis.

In the final analysis it would seem to come down to cost effectiveness based on cost per head/return per head evaluation. To give a comparison, at present here in Western Australia feed prices range from:-

Oats and barley	\$140 per tonne
Wheat	\$180 per tonne
Lupins	\$200 per tonne
(Delivered on-farm in bulk)	

At a supplementary feed rate of 1kg per head/per day (red deer) one could feed around 150 deer per week/per tonne plus hay to appetite. Peter's figures suggest that 'Fodder Factory' can produce it's green feed for less that \$40 per tonne plus hay to appetite. Each kilogram of green fodder is rated as equal to 3kg of lucerne.

It would appear that hydroponic fodder production is an economically viable alternative to bulk grain/hay feeding It would particularly appeal to deer farmers with limited acreage or short growing seasons. It would also do away with the need for grain silos and the army of costs required to grow field-grown crops. It would also be a great back up system for drought prone areas and who knows what it could do for your returns per acre?

If you would like further information why not give them a call. Peter might also sell you a few Canadian elk as well!

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