

From Eric Annal
Dear Vireya Vine

Edinburgh. Scotland
September 2007

A Greenhouse Fit for Vireya Species

When White thanked me for my *R. densifolium* article in Vireya Vine #81 he mentioned that I had redone my greenhouse and suggested that I reveal all!

Well I thought about it. What is there to say about a standard 10ft x 15ft 6in timber framed greenhouse with 3 roof vents? And then I remembered that when I first started to grow vireyas species in this greenhouse in 2003, I lost plants quite frequently despite regular watering and keeping them pest free. So now that I have a much higher success rate, I realised that possibly I do have something to say!

I began to appreciate that it was essential to replicate, as far as possible, the environment that vireya species experience in the wild if I was to minimise losses and grow healthy plants that flower regularly. I therefore decided to concentrate on providing high humidity and see what difference this would make.

I didn't really appreciate what I had started as from here on in it became a matter of trial and error! My first job was to get mains water up to the greenhouse and this was no mean task as it required digging a 116ft trench behind my hardy rhodies and along the back of my garden. The trench which was about 20 ins deep and 8ins wide had to be hand dug as there was no way I could get a mechanical digger into the confined space available. My friendly local plumber connected my piping to the water mains and I then had water available in the greenhouse.

Together with a friend, I installed what turned out to be an irrigation system which is excellent for providing watering while I am away from home but much too wet to act as the type of humidity system I was looking for. I decided to retain the irrigation system and we installed a separate misting system with a total of 7 misters fitted as close to the roof as possible and controlled by a programmable timer. I use the term misting to refer to what is in effect the production of very fine droplets of water, the system being set to maintain the humidity at above 80% as measured on a digital hygrometer. Whereas in the summer I have misting set to come on for a short period in both the morning and evening, in the winter I have morning misting only as the drop in temperature in the evening results in natural condensation.

The only problem with the misters was the effect they had on my 2.8KW electrical fan heater. I already had an armoured cable capable of carrying up to 32amps to the greenhouse and protected by a 30mA residual current device (RCD) in my house so there was plenty of power available. However, after about a year of constant use, the high humidity caused the heater to fail and tripped the RCD. I realised that were this to happen in the winter when I am away I could lose the bulk of my vireyas so had to find a practical solution. I considered going over to a propane gas heater but was concerned that vireyas might be adversely affected by the products of combustion in the same way that I have heard that orchids are and I didn't want to have to install both cylinder storage and flue venting. My solution was to remove the greenhouse circuit from the house RCD and replace each power point in the circuit with one having an inbuilt 30mA RCD and a high level of ingress protection (IP 56). I now operate 2 fan heaters simultaneously from separate power points so that when one fails, as it inevitably will, the other will be there as a backup. To ensure that both heaters are not unnecessarily providing heating at the same time, one is set to switch to heating at a lower temperature than the other. Only time will tell if this solution is satisfactory but so far so good!

My vireyas had experienced some leaf scorching from direct sunlight so I have fitted detachable green mesh shade netting, with a 50% shade value, on both sides of the roof. I keep the shading on from March to September and it has totally eliminated the scorching

With misting, heating and shading in place, I turned my thoughts to lighting. As vireyas experience 12 hours daylight followed by 12 hours darkness in the wild, I considered installing strip lighting to provide extended “daylight” during the dark Scottish winter nights. Initially I had planned to install 6 lights but as my vireyas are doing fine without this additional lighting I decided to reduce the number to just 1 IP67 fluorescent strip light which is fitted with a stainless steel reflector to concentrate the lighting for the benefit of high altitude vireya species and to minimise light pollution. The lighting has both warm white and daylight tubes and is set to be on between 6am and 6.30pm under the control of a light sensor which switches the lights off when the ambient light level is sufficient.

So what else could I do that I haven’t done so far? Polythene lining to minimise heat loss in winter would be a possibility however with the greenhouse being in a very sheltered position I am not convinced that the purchase and fitment would justify the expense and effort required. Still not totally rejected but not at the top of my list of things to think about!

I have therefore created a well defined environment, but what if my success is not caused by this environment? What if it is due to the potting medium or feeding? Well, I use Orchid Compost mixed with a little Perlite to retain some moisture and feed very occasionally with a standard ericaceous feed, so nothing special. Therefore I can only conclude that getting the greenhouse environment right is the key to success with vireya species!

How much has this all cost? I shudder to think but if the vireyas are contented and growing exceptionally well, why should I complain?

Eric Annal

PS. By the way, my *R. densiflorum* has flowered again, this time producing 10 flowers in August 2007.

From Jane Adams

Big Island of Hawaii

Dear VV,

September 1, 2007

Vireya Sunshine Experiment -- Update

It’s been a very warm and dry summer here in East Hawaii -- they even called it “drought” for a month or so, but happily we’re back to more normal rain patterns. Our first vireya stock plants in the sunshine beds have been in place for a year and a half. We planted the vireyas mostly three of each variety, occasionally two or four. This being the second summer, I think they are showing their true resilience. I’ll call this Stock Bed A. The second set of plantings (Stock Bed B) have been in the ground for a little less than a year and are, for the most part, doing well. That bed has one area that gets a bit of late afternoon shade, so I’ll note that for those varieties.

This spring, we planted out a whole new section of the area -- Stock Bed C. Some of these have been in the ground as long as 6 months, others just two months. This group includes not only hybrids, but a good selection of species as well.

A word about watering...we depended on our (usually) frequent rainfall and only watered mechanically a couple of times, and only during June when we had nearly 3 weeks without rain for the newly planted vireyas in Stock Bed C. For the most part, our soil here is very well-draining (75% volcanic rock, the remainder an absorbent peat-like soil), so we dig a shallow area, put the plant in that, and heap locally-obtained fine cinders around it. Beds A and B have been mulched with wood chips. Not the best of times for planting, but they’ve come through like troopers.

Definitions

Doing Great: Good color in the leaves, vigorous growth, adapted quickly to full sun with little damage and blooming if they are ready to do so.

Doing OK: Initially leaves were notably damaged but new growth better, growth lags somewhat.

Doing Poorly: One or more plants died and others weak, little growth, frequent sunburn or typically discolored leaves.

Stock Bed A - 1 1/2 years in their locations, open to sun all day.

Doing Great:

Princess Alexandra, Harry Wu, Terebinthia
Simbu Sunset, Jock's Cairn, Tropic Tango
Vladimir Bukowski

Doing OK:

Flamenco Dancer
Great Scentsations (early significant leaf damage but recovering),
Kisses, Barum Bay, Lucie Sorenson (some stem borer damage)
Birat's Red, Lake Habbema (good new growth and blooms!)

Doing (Very) Poorly:

Cinnamon Pink, Popcorn, Tropic Alpine Ruby

Stock Bed B-1 year in their spots. Note that a few have a bit of shade.

Doing Great:

Triumphans, R. zoelleri 'Island Sunset' X R. viriosum
Aleksandr (a bit of shade)
R. aurigeranum X R. zoelleri 'Golden Gate' (a bit of shade),
Maneau Ra, Showstopper
Queensland (a bit of shade), Tashbaan, Hansa Bay
Cyril, Apricot Souffle, Rocky's Mom, Fireplum
Will Silent, Star Posy, H028 (Red Prince X R. viriosum)
R. laetum 'Strybings Best', Candy, Athenasius
Tropic Glow, Belisar, Little Maria, Saxon Glow
Golden Charm (very glossy leaves)
Superfleur, Cristo Rey,

Doing OK:

Sirunki Lake, Pink Ray, Red Adair, Doris Mossman
Sweet Wendy, Chambrie Lake,

Taylori (mixed: one died, other two look OK)
Narnia, Kiandra

Cara Mia (mixed: one died, one almost, other looks OK)

Highland Arabesque, Satan's Gift X Flamenco Dancer,

Greer's Pink, Red Prince,
R. laetum X R. zoelleri "P. Schick #1"

Doing Poorly:

Pretty Lady, Pink Swan, Evita, Charming Valentino

Emmanual, R. aurigeranum X Pink Delight

Stock Bed C: Newly planted within the past few (2-6) months

Doing Great:

Marshall Pierce Madison, Haloed Gold, Shepherds Warning, Kurt Herbert Adler
R. rarilepidotum, Aravir, R. x planecostatum
Java Rose, John West, Humbolata Bay
Lulu, Little Bo Peep

Doing OK

Pink Mist, DB Stanton, R. zoelleri RSF
R. javanicum (yellow), Orange Maid
Pendance, Gilded Sunrise, Bernadette
Lyon King (unnamed Lyon Arboretum hybrid)
Calavar, R. zoelleri 'Decimus'
Hilo Tan (nick name -- another Lyon hybrid)
24K, Jenna Soojean, Cape Cod Valentine
R. radians, Silver Thimbles (dark mahogany leaves!)

Doing poorly

Mt. Pire (surprised, but just doesn't seem to be thriving)

Larissa

R. kochii (heavy lacewing damage plus some sunburn)

Too soon to tell:

R. javanicum (orange), R. x coriifolium (tiny plants)

Some interesting things from the internet. EWS

In the soviet republic of Georgia a person is 36 times more likely to live to be 100. Researchers attribute this to their environment and a unique source of nutrients in their daily regime. The source of nutrients are found in a powerful super antioxidant extracted from the Georgian *Rhododendron Caucasicum* Ungern.

Health food stores across the Canada and the US have promoted capsules developed using *R. caucasicum* extracts for about a decade now. For an example, follow the link below:

<http://www.evolutionhealth.com/supplements/Rododendron-Caucasicum.htm>

Bruce Clyburn, New Waterford, NS, Canada, Zone 6a

--- In rhodo@yahoogroups.com, Vijay Chandhok wrote:

In the area around Mukteshwar India, the forest area consists of *R. arboreum* and Live Oak. There is local Rhodo flower extract sold in the area which is made from the flowers and sugar and is recommended for lowering blood pressure. Vijay

On Thursday 20 September 2007 21:26, Susan Clark wrote

As a classicist, I read both Xenophon, Pliny and Dioscorides on the poisoning caused by rhododendrons. Much later I got interested in rhododendrons, but didn't wonder about these old accounts until the late Dick Brooks and I had an series of conversations about honey toxicity. So I dug out my old books and happily did some research, producing a small essay for him. I also discovered that the web supplied lots of information of a much more modern sort on grayanotoxin poisonings and intoxication caused by honey from various *Ericaceae*.

I thought I would post my essay for Dick here, since so many accounts of the ancient poisonings make a lot of assumptions that may be correct or may be very bad botany.

Xenophon's *Anabasis* viii 18-23

"All the soldiers who ate of the honeycombs lost their senses, and were seized with vomiting and purging, none of them being able to stand on their legs. Those who ate but a little were like men very drunk, and those who ate much, like madmen and some like dying persons. In this condition great numbers lay on the ground, as if there had been a defeat, and the sorrow was general. The next day none of them died, but recovered their senses about the same hour they were seized. And the third day they got up as if they had taken a strong potion."

Pliny the Elder's *Natural History* Book 21 xlv 77-

(my rough translation): "Another kind in this same area of the Pontus, by the tribe of the Sanni, a honey which they call 'maenomenon' from the insanity which it produces. This is thought to be collected from the flower of the 'rhododendron', with which the

woods abound. The tribe does not sell the honey, because it is toxic, when they would present the wax in tribute to the Romans.”

The key words are ‘maenomenon’, which is just Pliny’s transliteration of the Greek word, and is a participle modifying the word honey and meaning ‘making mad’. Lewis & Short, the definitive Latin dictionary, translates ‘rhododendron’ as *Nerium oleander*, ‘rosebay’ or, or possibly rhododendron or azalea. Liddell & Scott, Greek Lexicon, translates the original Greek ‘rhododendron’ as the equivalent of ‘rhododaphne’, the oleander --no azaleas or rhododendrons. The word itself just means ‘rose tree’ or ‘reddish tree’.

So ancient botany is pretty murky and this whole discussion is a series of interpretations of a pretty vague original Greek story from 400BC, interpreted (with who knows what other sources no longer extant) 450 years later by a Roman, and then retold and reinterpreted endlessly until now. Since *Nerium*, *R. ponticum* and *R. luteum* are all common in the Pontus, any of them could be a source of toxic honey. And Xenophon himself was only guessing that the honey accidentally made his soldiers sick. Deliberate poisoning of the honey left in quantity in the abandoned villages is quite possible, as was suspected 400 years later when Pompey’s soldiers were not only poisoned but massacred while sick. Why would the predecessors of the ‘Sanni’, whoever they are, have been unaware that their honey was toxic, but collected it for consumption anyway? Sounds like very bad beekeeping. It seems the Sanni knew their honey was toxic, but collected it for the beeswax only, which they paid in tribute to the Romans. Probably their ancestors extracted the beeswax and kept the honey to refeed their bees, as some modern beekeepers do whose bees feed on *Kalmia latifolia*. Perhaps the Greeks didn’t know that and got poisoned.

As evidence of toxicity of the honey of *R. ponticum*, these old accounts are interesting stories but hardly conclusive evidence. Trying to determine the identity of plants mentioned in classical accounts is a remarkably difficult task on the whole.
Susan Clark

I believe there is something in the history of the US Civil War where Union troops were intoxicated/poisoned by such honey in the South. (who ???)

The item below may be of interest. Regards, Lyn Craven

Title: Poisoning by mad honey: A brief review. **Authors:** Koca, I; Koca, AF

Author Full Names: Koca, Ilkay; Koca, Ahmet F.

Source: FOOD AND CHEMICAL TOXICOLOGY, 45 (8): 1315-1318 AUG 2007

Language: English. **Document Type:** Review. **Abstract:**

Several plants of the Ericaceae family produce grayanotoxins which can poison humans. The best-known of these intoxications involves the eating of ‘mad honey (deli bal in Turkish)’ contaminated by Rhododendron nectar grayanotoxins. Accounts of mad honey intoxication date back to 401 BC. It is still one of the common food intoxications encountered for humans and livestock in Turkey. Mad honey intoxication’s symptoms are dose-related. In mild form, dizziness, weakness, excessive perspiration, hypersalivation, nausea, vomiting and paresthesias are present and close follow-up is

enough. However, severe intoxication may lead to life threatening cardiac complications such as complete atrioventricular block that can be treated intravenously. In this review, properties and sources of grayanotoxins, their detection methods and mad honey intoxication are discussed. (c) 2007 Elsevier Ltd. All rights reserved.
Lyn Craven, A.C.T Australia

Again from Susan Clark on -- rhodo@yahoogroups.com Back in the late 19th century a German chemist P.C. Plugge isolated the toxic compound in the honey from the area where the poisoning occurred which Xenophon reported. He identified it as andromedotoxin, now known as acetylandromedol, a type of grayanotoxin. This toxin occurs in Mediterranean oleander, as well as some of the Ericaceae, including *Rhododendron ponticum*, *maximum*, *chrysanthum*, and *luteum*, several *Andromedas*, and the mountain laurel of the Eastern United States.

While Mountain Laurel and the Rosebay rhododendron are hardly favorite bee foods, perhaps in the absence of other food flowers, bees would in fact use enough *Kalmia* or *maximum* pollen to make their honey toxic. That sort of problem has happened in this country with other toxic flowers, like *Datura*, for example. I don't know of any Civil War poisoning, tho. Susan Clark

From Hans Eiberg

I visited Turkey this year close to the Georgia border and collected seeds from *ponticum*, *caucasicum*, *luteum*, *smirnowii* and *ungernii*.

<http://www.rhododendron.dk/spec/Turkey07/> -- Interesting I found at least 3 places with bee hives in the middle of many hundreds of *R. luteum* plants--perhaps they only eat a small portion of the honey? They don't know that it contains toxins!!!

Another thing!--

At the moment I think that antioxidants is only good for the seller's wallet. There is no proof for its benefits--only that it could give cancer if you take extra. It can not prevent the second hit (a new mutation in *BRCA1,2* and *polyposis*) and the second hit (new mutation in one of these genes) gives cancer.

Some people have a better protection against specific cancers (genetics) than others have!

Interesting that Inuit (in North Greenland) have the highest amount of POP's (PCB, DDT..) in their blood, but their sperm quality is very high--Only special protection genes could explain that!! 15% of the population carry an *BRCA1* mutation and only a few develop breast cancer (in Caucasians about 80% develop cancer carrying the same mutation)

Hans Eiberg, from Inst. Medical Genetics Department, Copenhagen,
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See Chris Callard's wonderful Web site at www.vireya.net. Get into this group and let's talk about Vireyas www.groups.yahoo.com/group/vireya

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Catalog on the internet (Mail Order)

Glendoick Gardens (Kenneth & Peter Cox)
Glendoick, Perth Mail Order

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White Cloud Nursery, Pete & Jane Adams,
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They have bought and are growing John Kenyons plants in Kerikeri
where they have established a wholesale tree and shrub nursery.

Pukeiti Rhododendron Trust
Carrington Rd. RD4
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New Zealand web site at www.pukeiti.org.nz

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Pacific Island Nursery (Sherla Bertelmann & Richard Marques)
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www.pacificislandnursery.com They also handle the Vireya seed exchange.

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