

# IPPS

Sharing Plant Production Knowledge Globally

# the Propagator



International Plant Propagators Society (IPPS) Australia

International Plant Propagators' Society [www.ipps.org.au](http://www.ipps.org.au)  
Australian Region - Newsletter Spring 2015 - No: 47

## Who Loves Green Tea?

At this years conference John Robb gave a very good overview of "Green Tea in Australia". It was well presented with loads of great information and pictures but most of all it highlighted the potential of this as a viable crop for many districts throughout Australia. The competition again was excellent but it was the editors choice that John receive this prestigious **Anita Boucher Award**.

It took some time to get the award suitably engraved and to catch up with John with his business commitments with Paradise Seeds. Finally Doug Twentymen our Newcastle conference convenor was able to present the award. You must admit it looks very stylish and attractive. So what made the paper so special, and what would you need to do to receive the award in Adelaide in 2016 or another conference?

John took us through the interesting history of tea, and the different forms grown. Most of the tea drank in the world today comes from *Camellia sinensis*. Although green tea makes up a large proportion of



Photo courtesy of Doug Twentymen

this consumption most Australians are used to drinking black tea rather than green tea.

Teas throughout South East Asia are regionalised to variety and even species. It was only through chance that it really took off and led to the world wide industry we have today.

There is only about 100 ha of Japanese style tea under cultivation throughout most states in Australia, worth about \$500 million of which \$60 million is for domestic use. In Japan there are two main varieties

of *Camellia sinensis* grown: Yabukita and Sayama Kaori (pictured).

The talk covered propagation, growing, harvesting and processing and the needs of customers.

John Robb is currently developing varieties for an Australian style of tea with different caffeine levels and taste. This is to satisfy potential export markets and a growing tourist industry for tea drinkers.

Do you have a story like this to tell? Then just maybe the organisers of a conference in the future should be approached. Contact Pam Berryman for contact details.

Bruce Higgs



### THIS EDITION

Who Loves Green Tea?

How much light do my plants need?

Photoperiodism

Reports

◆ **President's Comment**

◆ **Executive Officer's Comment**

Vale Brian Smith

Calendar 2015

Newsletter Editors Comment

## President's Comment



Business continues to tick over nicely for us here. Winter rainfall has been well below average, but what little rain there's been has been well spread. They say the boom is over, but in my experience over quite a long time in the industry now; I've never been able to tell whether we are in boom or bust. We're not a boom and bust kind of industry. It seems to be steady as she goes. When the media is saying we're in a boom, we're steadily busy and when the boom is allegedly over and it's all gloom and doom we seem to be just as busy as before.

I attended the combined Protea and new ornamentals conference in Perth last week. It was a great conference with some impressive work being done in many fields but especially the breeding of new varieties. With Australia's cost structure being what it is, our best competitive advantage is the wealth of genetic material we have and the new varieties we can come up with to stay ahead of the pack.

King's Park is doing research into creating new varieties by protoplast fusion. If you think that sounds complicated – you're right. Joining cells of different genera using electricity is all a bit science fiction but they are making it work.

Not on the program but under much discussion at the breaks was the issue of plant name changes and the changes that are going to be foisted

upon us in the near future. I am of the opinion that the academics making these changes are making themselves, and the system they are creating, irrelevant. Names are intended to assist in identifying things. When the names are continually changing they become close to useless. Especially if you are going to need extremely expensive equipment and a trained technician to analyse the plant and work out where it fits in the new system.

Most of the coming changes are based on genetics but only part of the genome is being used and no-one is able to take the equipment required into the field and test every plant to classify it.

I think we are eventually going to have to end up with two naming systems. One where the academics can play their games, get their names in the scientific publications and one that is of use in the real world where you can look at a plant, see its obvious features and classify it and use the name to identify the plant and sell it.

Of no interest to the academics but very relevant if you're trying to make your business pay is the cost of these changes with the expense of labels and changes to lists and data bases.

I don't know what anyone thinks about a dual naming system. Perhaps you could let me know.

**Steve Vallance**

## Executive Officer's Report

### IPPS Office

The IPPS Office slows down at this time of the year so not much to report on from the administration side of things, apart from the



**The Australian Region Website has recently been updated so that members can sign in with their password and edit their own membership contact details, and view other society information.**

running of the Office is going smoothly.

### Subscriptions

Maintaining membership is still a challenge as membership continues to decline. The Australian Region of IPPS currently has 190 members.

**2016 Conference - ADELAIDE - "Food for Thought" - Thursday 19<sup>th</sup> May to Sunday 22<sup>nd</sup> May 2016**

Every year IPPS Australia holds a conference, an essential event for anyone in the plant propagation industry. Next year's conference is shaping up to be an event 'Not to be Missed'...

Information on Pre-Conference tour will be available on the website shortly [www.ipps.org.au](http://www.ipps.org.au)

Registration and program details will be available shortly on the website [www.ipps.org.au](http://www.ipps.org.au)

*Make a note of this date in your diary.*

**Pam Berryman**

**Has your Horticultural Business become a member of Horticulture Innovation Australia?**

Is your business a levy payer, for example does it buy pots?

The board of the IPPS Australian Region would like to encourage all members with a horticultural business to apply for HIA membership. It is through membership that industry bodies and research benefiting us will happen.

## Rod Tallis Award

It is that time of year again when our young propagators need to be nudged and encouraged to apply for this prestigious award

A worthy propagator at the start of their career can gain an award that they can be proud of and mark the start of a successful career in horticulture. All you need to do is report on some propagation work you have undertaken.

## Yates Youth Six Pack

Applications are open for the chance to be a 6 pack member in Newcastle. You could have the privilege to meet some of the industry leaders while being sponsored by Yates.

All that needs to be done for either of these is **submit an application**. Contact details are on the IPPS website (see [www.ipps.org.au](http://www.ipps.org.au)).

## How much light do my plants need?

We all know that plants need light for growth, but did you know that the quantity required for many species has been available for some time now. I like the statement made by Paul Fisher at the 2014 NZ conference **“don't grow plants in a cave”**.

That is very true when you come to think of light levels inside greenhouses being often reduced by 40 to 70 percent due to the structure and it's orientation (especially in winter when the angle of the sun can be low), covering material and age, dirt and moisture condensation, curtains, overhead baskets and perhaps even shading from nearby trees.

I have often been told by people with movable screens that the system opens them when it is dark and closes them when light. But if this is how you operate are they set for the requirements of your plants?

Photoperiodism refers to the response of plants to the relative length of daylight and night. This is especially critical for flowering and fruiting. Knowing how to control plant growth flowering and subsequent fruiting times are of great interest to horticulturists. Not only for controlling growth but also for the selection of suitable species to grow in your area or providing information on how to modify growing conditions to get the best out of your crop.

Back in 2013 I wrote that I wondered when we would hear about Daily Light Integrals at a local IPPS conference. In 2014 Paul Fisher presented a talk at the Wellington conference which included the use of the DLI concept with figures for New Zealand. His talk must have been significant as he was awarded the Anita Boucher award for the best paper at the conference. It was then still over ten years since the publication of monthly DLI charts for the United States. An excellent review of the technology up to 2004 can be found in the book “Lighting Up Profits, Understanding Greenhouse Lighting” edited by Paul Fisher and Erik Runkle.

As far as I am able to determine monthly or seasonal charts for DLI have not been published for Australia to date. Fortunately the basic information on monthly solar radiation in terms of mega Joules per square metre per day across Australia have been published by the Bureau of Meteorology. I have used this information and derived some conversion factors into DLI in moles of photons per square metre per day, these units are used by horticultural researchers for the PAR (Photosynthetically Active Radiation) region of the light spectrum from 400 to 700 nm.

This information for Australia is shown on the following figures for January (summer), April (autumn), July (winter) and October (spring).

## SOUTH AFRICA 2016

### YOUNG PROPAGATORS

### APPLY NOW

For the opportunity of a lifetime, it is now time to apply for the **South African Exchange Program**.

This IPPS project aims to give young propagators at the start of their career the opportunity to gain experience of the industry elsewhere and to build a better understanding of each country.

In March 2016 the young propagator chosen will spend approximately 3 weeks in South Africa, hosted by local Nurserymen, where they will work and visit other nurseries and places of interest in South Africa, including tourist venues, plus attend the IPPS International Conference.

The program as usual is sponsored by Australia and South Africa IPPS. After the trip the chosen propagator will be expected to attend the Australian IPPS Adelaide Conference in May 2016 to talk about their experience.

Now that you are thinking about this or you know someone who may be suitable, check the following to make sure of eligibility:-

- You must be over the age of 18 and in the early years of your career of growing plants.
- You must be able to travel to South Africa in early March 2016 and attend the Adelaide May Conference.
- Your employer must support this application and your time off work.
- You must be prepared to make notes and take photographs of your great experience and report back to the Australian IPPS Conference.

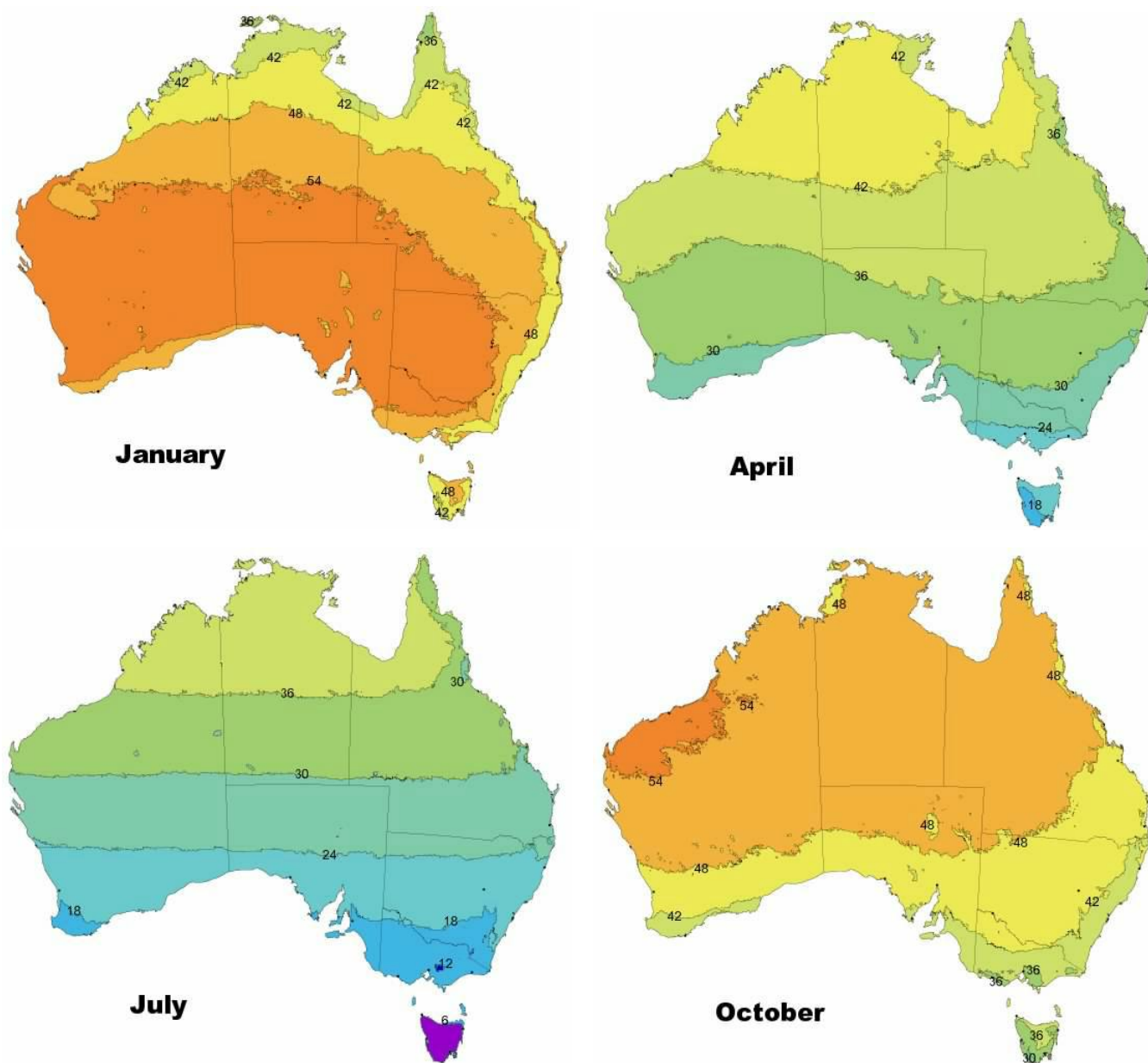
**If all of the above suits you and you would like to be hosted in South Africa (at no cost to you, except spending money) and gain from the experience. Then send in the application form which is available on the IPPS [website www.ipps.org.au](http://www.ipps.org.au) by the end of November 2015.**



The information would be of no use if there were no means for growers to measure the amount of light received through a day, and without figures for the plants grown. More about that later.

**How much light is there at your location?** You can use the light maps in several ways. For example sunlight transmission into a double-poly greenhouse can drop to 50% in winter because of shading, severely

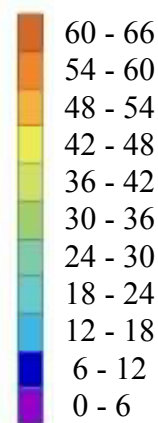
restricting the variety of plants grown successfully. By using a modern greenhouse structure and covering light transmission could be increased to at least 75%.



### Monthly Average Daily Light Integral Outdoors Across Australia

These graphs are based on data from the Australian Bureau of Meteorology for solar exposure (available for any locations across Australia for each month of the year) based on data from the period 1990 to 2011. **Please have a look at these in colour at [www.ipps.org.au](http://www.ipps.org.au).** The data available in units of MJoules.m<sup>-2</sup>.day<sup>-1</sup> have been converted to DLI units for PAR light in the 400 to 700 nm part of the light spectrum for months in the middle of each season (approximately 1 MJm<sup>-2</sup>d<sup>-1</sup> = 2 mol.m<sup>-2</sup>d<sup>-1</sup> of PAR light). As these are only daily average figures variation will occur through more or less cloud cover and inclination of the sun. The further south you go in winter the shallower the angle of the sun and shorter the day length. In Summer the sun is higher in the sky and there is more solar exposure and longer days the further south you go. Total daily Solar Exposure Data for each month across Australia in MJm<sup>-2</sup>d<sup>-1</sup> can be found at : [http://www.bom.gov.au/jsp/ncc/climate\\_averages/solar-exposure/index.jsp?period=apr#maps](http://www.bom.gov.au/jsp/ncc/climate_averages/solar-exposure/index.jsp?period=apr#maps)

DLI (mol.m<sup>-2</sup>.d<sup>-1</sup>)



As an example if you want to grow Cyclamen, from the table on pages 6 and 7 the best DLI is from 9 to 19 mol.m<sup>-2</sup>.day<sup>-1</sup>, good growth from 5 to 9 mol.m<sup>-2</sup>.day<sup>-1</sup> and minimum DLI is 3 mol.m<sup>-2</sup>.day<sup>-1</sup>. Straight away you will see that for most areas of Australia they will need to be grown under shade, the amount depending on your location. In winter in Tasmania they would appear to be marginal without supplemental lighting.

From the same reference Tomatoes require a minimum DLI of 9 mol.m<sup>-2</sup>.day<sup>-1</sup>, with good growth from 13 and best growth from 21 mol.m<sup>-2</sup>.day<sup>-1</sup>. So if you want to start to grow plugs in a greenhouse that reduces the light by 20% then by adjusting the figures accordingly across Australia shows it may be difficult to get an early July start in Tasmania or the Dandenong area.

The example may just as easily have been for a shadehouse, even one with a movable screen. If controlled automatically, has this been set on an average control set point of light or for the crops you are growing?

If the shade cloth movement is controlled manually by closing it when it is sunny and opening it when it is cloudy, then do it by measurement of light not by

eyesight which adjusts for low light conditions.

When looking at the charts don't forget potential shading of the crop around winter months when the angle of inclination of the sun is much lower. It is interesting to note the reduced light in Spring and Summer along the Great Dividing Range in Eastern states through presumably cloud cover. The Dandenongs also have lower light in winter than the surrounding region of Victoria.

**Light Units** Lux (lumens/m<sup>2</sup>) and footcandles (lumens/ft<sup>2</sup>) are units of light measurement more attuned to what the human eye sees. They are commonly used in buildings for lighting, and also in horticulture. Fortunately there are approximate conversion factors into PAR units (for the spectrum used by plants - see table below). As they are commonly used relatively cheap instruments are available for an instantaneous reading (change every second).

Watts per square metre are called radiometric units. Environmental control units such as those found in some greenhouses often use the total energy form. As a rough guide 10 footcandles = 107.6 lux = 1 W.m<sup>-2</sup> = 2 μmol.m<sup>-2</sup>.s<sup>-1</sup>.

On a typical summer day at noon in Southern Australia outdoor sunlight may reach 107,600 lux (2,000 μmol.m<sup>-2</sup>.s<sup>-1</sup>, 438 W.m<sup>-2</sup> PAR or 1,018 W.m<sup>-2</sup> total energy). That is a lot of energy. Many light meters designed for indoors use have a maximum display of 20,000 lux and so are useless for measuring light intensity on sunny days.

So take light readings in the sunlight and where the plants are growing every 30 minutes over a day. Convert the readings into the average quantity of PAR light in μmol.m<sup>-2</sup>.s<sup>-1</sup>. For each column (e.g. full sun, greenhouse bench) multiply the per second figure by the number of seconds between readings (1800 for 30 minutes gap) and sum the result in the column and divide by 1,000,000 to get the DLI PAR daily moles/m<sup>2</sup>.

For example if our 30 minute day light readings from 8 a.m. to 4 p.m. in Tasmania in winter in lux were: 0, 2700, 5400, 7500, 7500, 8300, 9700, 10200, 10700, 10200, 9300, 8000, 6400, 5300, 4200, 2700, 0. Divide each by 10.76 and multiply by 0.2 to arrive at average PAR units. Multiply by the number of seconds in the time gap between each measurement (1800 seconds for each of 30 minutes in this example) and add all the resultant numbers and divide by

Conversions Between Different Light Units						
Unit	Type of measurement	Compared with 1 footcandle				
		Sunlight	High-pressure sodium	Metal halide	Cool-white fluorescent	Incandescent 100W
Footcandle	Visible (human eye)	1	1	1	1	1
Lux	Visible (human eye)	10.76	10.76	10.76	10.76	10.76
PAR μmol.m <sup>-2</sup> .s <sup>-1</sup>	Quanta of PAR light	0.2	0.13	0.15	0.15	0.22
PAR mol.m <sup>-2</sup> .d <sup>-1</sup>	DLI PAR	Footcandle x light hours x 0.000718	Footcandle x light hours x 0.000473	Footcandle x light hours x 0.000546	Footcandle x light hours x 0.000524	Footcandle x light hours x 0.000775
PAR W.m <sup>-2</sup>	PAR Energy	0.044	0.026	0.033	0.032	0.043
W.m <sup>-2</sup>	Total energy	0.101	0.073	0.089	0.081	0.567

Adapted from "Lighting Up Profits Understanding Greenhouse Lighting" ed. Paul Fisher and Erik Runkle, 2004 Meister Media

1,000,000 to get 3.6 moles per day (try this and see if you get this result).

From the table of DLI values if you wanted to have Lavender growing here then you would need to have at least 12 moles per day of light (nearly an extra 9 moles/day of DLI PAR supplemental light). If you intended making up the deficit with 100 W incandescent lamps over 12 hours; from the previous table you would need  $9 \times 0.567 / (12 \times 0.000775) = 548 \text{ W per m}^2$  (over 5 bulbs per square metre costing about \$1.60 a day to run). You would probably look for a different crop to grow at this time. Looking again at the charts the top north east coast of Tasmania has suitable light conditions in July for Lavender.

### Light Measurement - sensors

There are a number of manufacturers of instruments that will data log and work out the DLI for you such as; the relatively inexpensive Lightscout that can be stuck into pots, or instruments like the WeatherTracker from Spectrum Technologies and Quantum meter from Apogee Instruments. Some of these will give results in moles per square metre per day as well as Watts per square metre enabling you to select the amount of supplementary lighting more easily. There are also other sensor systems available for research purposes.

### DLI and Propagation

For most of us finding the right balance between light and heat in the propagation area has been a matter of trial and error (lots of errors). I encourage you to measure the DLI and record the hours of light, and bench day and night temperatures for the species that you successfully propagate and report your findings at a future conference.

The article by Roberto Lopez and Chris Currey of Purdue University (Shining Some Light on Young Plant Production, e-Gro Alert Vol. 1, 4, Feb

## DLI Requirements for Various Greenhouse Crops

1 = Requires water at high light levels

2 = Requires cool/moderate temperature at high light levels

3 = Stock plants perform well under higher light levels than finished plants

Minimum Acceptable Quality  
 Good Quality  
 High Quality

Species	Average Daily Light Integral (Moles/m <sup>2</sup> /day)																	
	Greenhouse																	
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30			
Ferns (Pteris Adiantum)																		
Maranta																		
Phalaenopsis (orchid)																		
Saintpaulia																		
Spathiphyllum																		
Forced hyacinth																		
Forced narcissus																		
Forced tulip																		
Aglaonema																		
Bromeliads																		
Caladium														1	1	1		
Dieffenbachia																		
Dracaena																		
Nephrolepis																		
Streptocarpus																		
Hosta															1	1	1	
Begonia (heimalis)																		
Sinningia																		
Schlumbergera										2	2	2	2	2	2	2	2	
Cyclamen																		
Heuchera																		
Coleus (shade)																		
Impatiens, New Guinea																		
Iris, Dutch (cut flowers)																		
Kalanchoe																		
Lobelia															2	2	2	2
Primula																		
Impatiens																		
Pelargonium peltatum (Ivy geranium)																		
Begonia (fibrous)																		
Fuchsia															2	2	2	2
Euphorbia (poinsettia)															3	3	3	3
Hydrangea																		
Lilium																		
Antirrhinum																		
Chrysanthemum (potted)																		
Dianthus																		
Gazania																		
Gerbera																		
Hibiscus rosa-siniensis																		
Lobularia																		
Pelargonium hororum (zonal geranium)																		
Rose (miniature potted)																		
Salvia splendens																		
Angelonia																		
Aster																		
Salvia farinacea																		
Iberis																		
Catharanthus (vinca)																		
Celosia																		
Chrysanthemum (garden)																		
Coleus (sun)																		
Coreopsis																		
Cosmos																		
Croton																		
Dahlia																		
Echinacea																		
Ficus bejaminia																		
Gaura																		

2012) is an excellent guide to light requirements for propagation. They say that “during callusing, cuttings are not photosynthesizing very much so increasing light will not benefit growth. Light intensity should be maintained at ... 100 to 200  $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$  “ (about 5,000 to 10,000 lux).

Once roots are initiated light levels should be roughly doubled and availability of water increased. They reported a general DLI through to root development of around 10  $\text{mol}\cdot\text{m}^{-2}\cdot\text{d}^{-1}$  which is increased by about 20% during the toning stage, thus increasing the production rate.

Fortunately from the internet there are DLI values available for many species. Percival Scientific are one such company with values (presumably derived for their growth chambers):

[www.percival-scientific.com/Portals/0/docs/IntellusUltra\\_Daily\\_Light\\_Integral\\_Plant\\_Growth\\_Tables.pf](http://www.percival-scientific.com/Portals/0/docs/IntellusUltra_Daily_Light_Integral_Plant_Growth_Tables.pf)

Of interest is the high DLI for grapes and blueberries (50 moles per day) indicating they are best propagated in the third stage without shade in the warmer months in temperate climates. Is that why some growers have struggled with blueberries?

Chrysanthemums, Geraniums, lettuce, peppers and strawberries also have a long light time and high propagation DLI requirement.

Why a long day is necessary for Chrysanthemums is interesting as they are a known short day length plant (for flowering). It is here that we should mention some things about day length requirements.

Firstly, Photoperiodism is really critically dependent upon night length. A brief interruption by lights at night may stop flowering of some plants. **Short-day** (long-night) plants experiencing a long night will not flower if exposed to light particularly containing **red** (660nm) light sometime during the night. **Long-day**

Species	Average Daily Light Integral (Moles/m <sup>2</sup> /day)													
	Greenhouse													
	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Gomphrena														
Hemerocallis (Day Lilly)														
Lavendula (lavender)														
Tagetes (marigold)														
Petunia														
Phlox (creeping)														
Scaevola														
Sedum														
Thymus														
Verbena														
Viola (pansy)														
Zinnia														
Alstroemeria (cut flower)														
Capsicum (pepper)														
Chrysanthemum (cut flower)														
Dianthus (carnation)														
Gladiolus (cut flower)														
Lycopersicon (tomato)														
Rose (cut flower)														

Source: James E. Faust, Ball Red Book

(short-night) plants exposed briefly to a red light will flower even if the total night length exceeds the critical number of hours. That is why Chrysanthemum flowering can be stalled until Mother’s Day in May by exposing them to a little light during long evenings.

Shortening of night length by red light can be negated by a flash of **far-red** (730 nm) light.

In order to partly explain why there are short and long day plants, Phytochromes (that are known to be partially responsible for flowering) interchange form with **red** and **far-red** light exposure (felt as heat).

The form produced from **red** light exposure switches on physiological and developmental changes in plants. With **far-red** light exposure this Phytochrome form is recycled back to the original form ready to be switched on again by red light.

A good listing of photoperiodic responses of annual bedding plants can be found in “Photoperiod and Bedding Plants” by Douglas Cox of the University of Massachusetts.

Phytochrome is also important for a plant to sense the density of foliage from neighbouring plants. **Far-red** light is the main type transmitted

through leaf shade under a plant canopy.

Wavelengths greater than 770 nm (infrared energy) result in the plant warming, which is important for metabolic processes including photosynthesis.

Cryptochrome absorbs energy at the other end of the light spectrum in the **UV-A to blue** (320-500nm) range. It controls phototropism (growth towards light). Increasing blue light absorption reduces stem elongation and darkens leaves.

Unfortunately I was not able to find any research results for DLI requirement or photoperiodism for any Australian native plants. This was a bit surprising given the research effort into establishing new varieties and seeking export flower markets.

As one grower of Telopea told me earlier this year they just depend on the weather, knowing flowers will be around some time in late September or October “when the days are long enough”. The potential for significant horticultural research with tangible grower benefit exists for native species and others. Who will undertake this research and report on it in the future?

Bruce Higgs



Photo courtesy and some referenced content from Cassandra Mast NGINA



### Vale Brian Smith

Brian passed away on the 16th of September following a heart attack. Unfortunately the stroke he suffered last year within weeks of retiring left him requiring care since. At 74 Brian is survived by Margaret his wife of 51 years, five sons and eight grandchildren.

Most of us knew Brian for his lifelong passion for plants. He was a long term member of the IPPS Australian Region and served on the membership committee as well as presenting papers at a number of conferences. His last paper on "Propagation of Bougainvillea" can be found in Vol. 55 of Proceedings.

At 15 Brian was introduced to Mr Paul Sorensen at Leura and started work at the nursery in February 1956. He completed a Horticultural Certificate at Ryde in 1958 during a five year apprenticeship that included all the aspects of nursery work as well as being part of a landscaping team that travelled to many parts of NSW. Propagation

was successfully done on top of compost heaps in frames. He learnt grafting of many varieties of Acer, Fagus, Picea and Cedrus as well as root grafting of Wisteria. Last year he offered some advice on the rehabilitation of the old arboretum.

Over 58 years the industry had changed greatly from nurseries making their own mix from topsoil, propagating and potting into kerosene or prune tins in the early days. "Modern production nurseries are now supported by many allied traders like bulk potting mix companies, pot companies, label companies, and even marketing and specialist transport companies."

In 1972 he opened Lawson Garden Centre on the Great Western Highway. They stocked a range of cold climate trees and shrubs. At the time hardware stores closed at midday on Saturday and they were able to trade without much competition over the weekend.

They sold and moved to Coffs Harbour where they operated the nursery at the Big Banana, selling to tourists. This was quite a change to tropical plants. In 1984 they moved to Moorland and developed Greenlight Nursery which specialised in Bougainvilleas, Frangipanis and tropical stock. Brian was well known for his participation at the Sydney and Newcastle trade days.

"I see the range of plants shrinking due to the big hardware outlets putting pressure on production nurseries to produce less varieties and more volume. The likes of Greenlight Nursery which is a boutique nursery will diminish and fade into the past". The site has now

been sold and the family move back to Coffs Harbour will happen soon.

### Newsletter Editors Comment

It was sad news to hear of the passing of Brian Smith. I remember many chats with him near the end of NGINA trade day. I can especially remember his reminiscences of the time at Sorensen's Nursery at Leura.

I hope that the article on Light requirements of plants proves useful, and that I get some feedback on your experience. In the next issue I intend to have information on the upcoming conference, the experience of some of the past 6 pack and an exploration of mobile phone apps. There should be comment on the IPPS conference in Florida from some attending members.

If you are not already a member join up to the region's **facebook site** - search for "**International Plant Propagators Society (IPPS) Australia**" and start contributing by "liking" it and posting. We now have over 190 likes.

On the Facebook page we try to cover recent trends in horticulture both locally and overseas. There are a number of photo albums of events as well as video footage from Australian and other regions.

Don't forget that this newsletter and many past copies are available on the IPPS website at [www.ipps.org.au](http://www.ipps.org.au)

**Pass your extra printed copy of the newsletter around at work.**

Bruce Higgs - editor  
"the Propagator" (02) 4736 5004  
[bruce.higgs@bigpond.com](mailto:bruce.higgs@bigpond.com)

## 2015 IPPS Diary

Japan Region	September 19 - 20	Maebashi Town, Gunma Prefecture
Western Region	September 23 - 26	Modesto, California
Eastern Region	September 25 - 28	Cincinnati, Ohio
European Region	October 7 - 9	Exeter, Devon, England
Southern Region	October 10 - 14	International Tour and meeting Tampa, Florida