SASKATCHEWAN ORCHID SOCIETY
FEBRUARY, 2014 VOLUME 31, ISSUE #5

NEWSLETTER

Editor's Note: The newsletter will be distributed electronically to all members for whom we have an email address. If you wish to switch from paper to electronic delivery, please notify me at robert.lucas@usask.ca.

Future Meeting Dates:

March 23, 2014 April 27, 2014 May 25, 2014

SOS Executive

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Webmaster:	Jennifer Burgess
Mail Address:	SOS, Box 411
	Saskatoon, SK
	S7K 3L3
Web Address:	www.saskorchids.com

February Meeting

The February general meeting of the Society will be held on **Feb. 23, 2014** at John Dolan School, commenting at 1:30 p.m. Cal Carter will present a talk on Croation orchids.

ANNOUNCEMENTS

Cal Carter will present a talk on Croation orchids at the February meeting. Since we do not have a visiting speaker, you are encouraged to bring your own plants for sale.

The February meeting will have a raffle of plants donated by Safeway. Be sure to purchase your tickets from Tracey or Jan at the Library table, $1 for one, $2 for three.

The Society will be entering a display at Gardenscape to be held on March 28-30, 2014. We will need volunteers to help with the display and to serve as ambassadors during the event. We will also sell cut orchid flowers as a fund raiser for the Society. A signup sheet for volunteers will be at the front table at the February meeting. Further details about plant drop off and pick up for the display will be provided at the February meeting.

The February general meeting will feature a vote on the names suggested for the theme of the COC that we are hosting in March of 2015. The nominations are: A World Full of Orchids; For the Love of Orchids; Snow in Every Colour; Orchid Extravaganza; Orchids: A Kaleidoscope of Colour; Orchids: A Feast For the Senses; A Symphony of Orchids; Orchids"Not Just Another Pretty Face"; Orchids for Everyone "They're Everywhere"; Orchids for Everyone "The Survivors"; Orchids for Everyone"Beyond Vanilla"; Orchids for Everyone"Beyond Purple"; Orchids for Everyone "Living Legends; Orchids for Everyone"The Legendary"; Orchids for Everyone"The Celebrities"; Orchid Paradise; Orchid Safari; Orchid Treasures; Saskatoon Shines; River of Orchids; Orchids of Mystery; Orchids in the Mist.

The Victoria Orchid Society Spring Show will be held at a new venue this year at a new time. They will be moving from the Student Union Building at the University of Victoria to Our Lady of Fatima Hall, 4635 Elk Lake Road, Victoria, B.C It will be held on the second weekend in March (March 7-9) , 2014.

The Orchid Society of Alberta will be holding its annual show on April 4-6, 2014. The location is The Enjoy Centre, 101 Riel Drive, St. Albert, Alberta. For further information, check out the OSA website at www.orchidsalberta.com/

The SOS will pre-order from some of the vendors attending the OSA Show. They are Ecuagenera, Ching Hua Orchids and Ten Shin Orchids. In addition, Forestview Gardens will attend Gardenscape. Once plant lists are available from these four vendors, they will be posted to the Society website. The deadline for orders is March 15 and they should be sent to Cheryl orchidcrazy.cheryl@gmail.com or Heather heather.jane.anderson@gmail.com

For those interested, Lori buys her perogies from Nadine Skakun, phone # 382-1371.

Meeting Agenda

Announcements

Problem Corner

Show and Tell

Coffee/Supplies

Carter Presentation

Plant Raffle

Plant Sale

Adjournment

Phal Precious Lauren Rae

JAN. 25 MINUTES

Announcements

Cal welcomed everyone to the January meeting.

A thank you to Cody, Ruthanne, June, Debby, Don and Shirley, Lori and Lisa for providing and setting up treats. Lori indicated that Nadine Skakun is her source for perogies- her contact info will be placed in the newsletter.

Cal will present after the break on commercial growing, as our speaker is unable to attend

There are now 70 members in our society (up from last year), which is advantageous for programming, and a solid number given downward trending membership numbers in other societies

Resources has many sizes of clear pots(up to 7 ½ inch).

Raffle tickets are available for the many plants today.

We are accepting suggestions for a theme for the COC 2015 and there will be a vote held next month to determine the winner.

March 28-30 is Gardenscape, A sign-up sheet is available for volunteers to man the display. As well, Gardenscape has allowed us to sell cut orchids at our booth as a fundraiser for COC 2015. New ideas are needed for the display as the cut flowers will change our use of space.

The OSA show will be held the 4th -6th of April in St.Albert.

We are planning for elections and a silent auction in April and a speaker in March, though this might change based on the availability of the speaker

We are accepting nominations for president, newsletter editor and anyone interested in web development

Problem Corner

A problem with T5's not coming on or staying on. This could be caused by a loose connection between the cord and light.

A Paph philippinense with malformed pouches was shown.

A Masdevallia has been losing leaves and vigor. It was suggested that it shouldn't be allowed to dry out. Wrap the roots in sphagnum moss to retain moisture

A Nidema (mounted miniature) has been grown for 7 years and has not yet bloomed.It has been watered with tap water. Try watering with distilled water or with reverse osmosis water.

Show and Tell:

Cody H., Pat R., Vickey W., Yvette L., Heather A., Sherida G., Jenn B., Cal C.

Break

Presentation

Plant Raffle

There were 52 plants including phals, oncidiums and a few intergenerics donated by Safeway,

Plant sale

There were 2 plants for sale.

Adjournment: 3:15 p.m.

THE FLOWERING OF ORCHIDS:A REALITY CHECK BY ROBERTO LOPEZ AND ERIK RUNKLE, PHD.

EDITOR'S NOTE: THIS ARTICLE FIRST APPEARED IN THE MARCH, 2004 ISSUE OF ORCHIDS, THE MAGAZINE OF THE AMERICAN ORCHID SOCIETY. REPRINTED BY PERMISSION FROM THE AOS WEB SITE.

Orchid enthusiasts have probably heard and read countless theories on how to induce their orchids to flower by manipulating water, nutrients, humidity, temperature or light. Of these theories, questions may linger about which are based on fact and which on myth. One thing is clear when reviewing the flowering physiology literature: The lack of science-based information on the control of flowering of most orchids limits greenhouse growers and hobbyists from flowering their plants outside of their natural flowering time.

In an attempt to clear the air, we have selected some of the published information on the flowering of orchids, and differentiated scientific facts from observations or hunches. This article also reviews how environmental factors control flowering of many diverse species, including orchids

ENVIRONMENTAL CONTROL OF FLOWERING

Plants often respond to changes in photoperiod and temperature so that they naturally flower when environmental conditions are favorable for reproduction. Plants that flower only in response to photoperiod are often classified by their response to the length of day, or more precisely, their response to the length of the night (dark period). Scientific studies have elucidated exactly how to manipulate the environment so that plant growth and development can be precisely controlled for a variety of floriculture crops.

ABOVE Cattleya mossiae is among the species in this genus that flowers in response to short day lengths. In this species, the plant produces new growths with sheaths during the summer, then it rests before flowering the following May. Shown here is C. mossiae fma. coerulea 'Von Scholl', AM/AOS. Grower: Peter Von Scholl.

For example, an abundance of research has been performed on poinsettia. Poinsettia is a short-day plant with a critical day length of about 13 hours. Thus, poinsettia plants are naturally induced to flower in the Northern Hemisphere around mid- September, when the biological day length decreases below 13 hours. Flower development is then controlled by manipulating temperature so that plants are at a marketable stage for a predetermined date. Commercial greenhouse growers utilize this information to produce millions of flowering potted poinsettias for the Christmas holiday.

Shown here is Poinsettia Chianti Red.

While flowering of some plants is controlled by photoperiod, temperature can also influence flowering. For example, many plants flower after exposure to a period of cool temperatures. Similarly, Easter lilies are cooled for approximately six weeks at40 to 45 F (4 to 7 C) before they are grown in a warm commercial greenhouse. This cooling process is required for rapid and uniform flowering. The optimum cool temperature and duration for flower induction varies among species.

Another short-day Cattleya is Cattleya gaskelliana, although it has a different developmental pattern than C. mossiae. In C. gaskelliana, the new growths emerge early in the spring and then it flowers in the summer, usually in June. The form coerulea 'Katarina's Blue', HCC/AOS, is shown here. Grower: Peter Von Schol

If the environmental conditions that induce flowering of orchid plants were known, then green-house growers and hobbyists could potentially manipulate temperature, photoperiod, or both to flower their crops for a particular date. Today, this is possible for only a few orchid genera (especially Phalaenopsis).

SCIENTIFIC STUDIES ON THE FLOWERING OF ORCHIDS

Controlled experiments are required to unequivocally elucidate flowering triggers of plants. This requires controlled environments so that light and temperature (and often other factors) are measured and controlled. Such studies are generally possible only at universities or research institutions, as numerous growth environments are required. When information is published without adequate controls, precise delivery of treatments, an adequate number of replications or proper statistical analysis, then interpretation of results can be misleading. We've searched the scientific literature on flowering of orchids and have summarized what we've learned about several orchid genera. With the exception of a handful of genera, surprisingly little research has been performed and published.

Cattleya is a genus composed of 60 species native to tropical regions of Central and South America. This epiphytic plant is generally found growing on trees of moist and wet forests from sea level to 4,900 feet (1,500 m) in elevation. Several published scientific studies indicate that flowering of Cattleya species and hybrids is promoted by exposure to short day lengths and cool temperatures. For example, in Cattleya warscewiczii, Cattleya gaskelliana and Cattleya mossiae, flower induction occurred only when plants were placed under photoperiods of nine hours (nine hours of light per day) at 55 F (13 C), while flowering was inhibited under 16 hours of light (per day) at 55 F (Rotor,1952, 1959). These represent but a small sample from this genus, which also contains long-day species, as well as both short-day spring and autumn flowering types.

Cymbidium is a genus of 50 species native from tropical Asia to Australia. Published studies suggest that Cymbidium cultivars are induced to flower by warm-days and cold-night temperaturs (i.e., large diurnal

fluctuations). Day length (photoperiod) has not been found to have an effect on flower induction (Goh et al., 1982; Goh and Arditti, 1985).

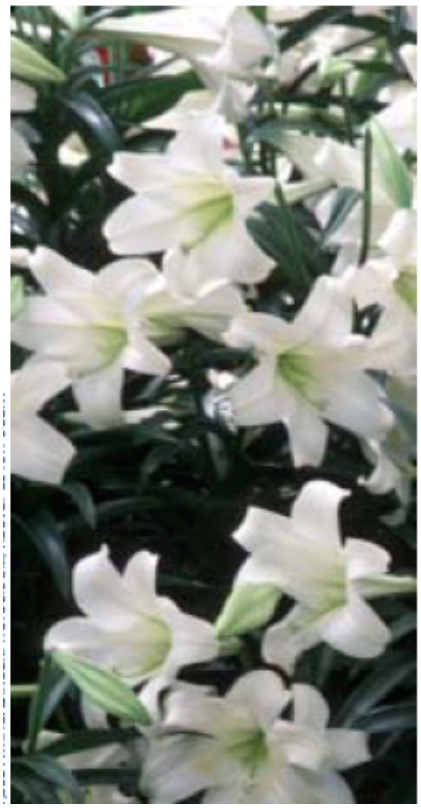
Dendrobium is one of the largest genera within the orchid family, with more than 1,000 species that are native to tropical and subtropical Asia, Australia and various Pacific Islands. The optimum temperature for flowerinduction consequently differs among Dendrobium selections. In Dendrobium nobile, plants exposed to a constant 55 F (13 C) produced flowers regardless of the day length, whereas plants placed at 64 F (18 C) remained vegetative and did not flower (Rotor 1952; Goh and Arditti, 1985). In contrast, Dendrobium phalaenopsis requires short day lengths and warmer temperatures for flowering. For example, flower-bud development and flowering of plants placed under nine-hour day lengths at 64 F (18 C) were accelerated by six weeks compared with plants placed under longer daylengths at the same temperature (Rotor, 1952). A similar response was observed at 55 F (13 C), but flower bud development was slower due to the cooler temperature.

The genus Phalaenopsis is composed of 50 species originating from tropical and subtropical areas of the South Pacific Islands and Asia. Environmental regulation of the flowering process in Phalaenopsis is perhaps the best described among orchids. Most Phalaenopsis species and hybrids require a period of exposure to relatively cool temperatures less than 82 F (28 C) to trigger the elongation of the spike (Lee and Lin, 1984, 1987; Sakanishi et al., 1980; Yoneda et al., 1992; Wang, 1995). Lin and Lee (1984) showed that uniform spiking can be achieved when plants are grown at day/night temperatures of either 77/68 F (25/20 C) or 68/59 F (20/ 15 C) for four to five weeks. When induced plants are placed at high temperatures (greater than 82 F [28 C]), a spike can form a vegetative air plantlet, known as a keiki, instead of flower buds, or buds may abort.

A few papers have reported that short days enhance spiking and long days promote vegetative growth or the development of keikis in Phalaenopsis (DeVries, 1950; Rotor, 1952; Griesbach, 1985). However, this short-day enhancement is thought to be a result of the extension of cool-night temperatures and not the day length itself (Sakanishi et al., 1980). Thus, it appears that photoperiod does not influence flowering of Phalaenopsis (Baker and Baker, 1991; Sakanishi et al., 1980).

MISCONCEPTIONS ABOUT THE FLOWERING OF ORCHIDS

Flowering information found in trade and hobby publications often persuades orchid growers, in an effort to promote flowering, to reduce fertility levels (especially nitrogen) when plants are not actively growing. Does this alone control the flowering process? First, we must step back and look at the native growing



In addition to day-length, temperature can also induce flowering. Easter-lily bulbs are cooled for approximately six weeks at 40 to 45 F (4 to 7 C) before they are grown in a warm commercial greenhouse.

environments of orchids.

Orchids are native to a wide array of habitats, including tropical and temperate forests, prairies, tundra and even deserts. Orchids are found growing in soil, on rocks or on trees. In the tropics, orchids are distributed according to elevation gradients, and diversity is greatest in montane cloud forests at elevations of 3,300 to 6,600 feet (1,000 to 2,000 m). Scientifically, the nutrient stress theories have little or no merit because nutrient levels do not drastically fluctuate in natural environments from one season to the other. In addition, studies with other

crops have shown that nitrogen deprivation delays flower initiation in plants that flower in response to cool temperature or photoperiod, particularly when grown under non-inductive conditions (Atherton, 1987). Plants under stressful conditions may flower to reproduce before they die from such a stress. However, as growers, we do not want to stress our plants to the point where they are no longer aesthetically pleasing (e.g., leaf necrosis). In addition, we are not aware of any scientific study with orchids that has shown flowering is controlled by watering or nutrient delivery strategies. As horticulturists, we'd like to induce flowering using environmental manipulations that do not cause physiological stress.

Another strategy found in the trade literature to induce flowering of orchids is to apply Epsom salts (magnesium sulfate).

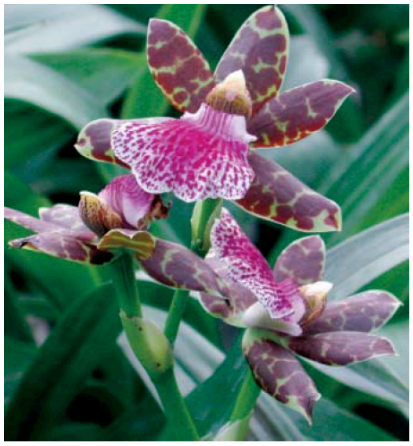
Magnesium is an essential plant macronutrient. It occupies a central position in the chlorophyll molecule and therefore plays a fundamental role in photosynthesis. Both magnesium and sulfur are involved in plant metabolic functions and enzyme processes and are essential plant nutrients. However, there is no scientific evidence that suggests the application of Epsom salts to orchids or any other plant will induce them into flower.

These are just a few examples of information that has been published on flowering of orchids that has essentially no scientific basis. Myths about flowering tend to spread, and certainly there is more misinformation about orchid flowering than is based on scientific studies. We can only separate fact from fiction by increasing the amount of research performed.

WHAT THE FUTURE HOLDS

In recent years, orchids have become the second most valuable potted flowering plant in the United States, with a wholesale value of US $106 million in 2002. More than 12.7 million orchids were sold in the United States last year, with Phalaenopsis accounting for more than 75 percent of sales. Why are so many Phalaenopsis being sold and purchased when there are well over 25,000 described species of orchids from which to choose? One reason is that we understand how to regulate the flowering process. As mentioned earlier, growers can prevent flowering by maintaining the day and night temperatures above 82 F (28 C). To induce flowering, plants need to be grown at cooler temperatures.

Unfortunately, there is virtually no information available on the flowering of many other orchids, such as Miltonia, Oncidium, Vanda and Zygopetalum. As a result, growers cannot reliably flower an orchid such as Zygopetalum for a holiday such as Valentine's Day or Mother's Day, which is when consumer demand is greatest. We do not know if we can manipulate temperature, light or perhaps some other factor to control flowering. Without this information, growers are not able to produce a flowering crop when demand — and likely profit — is greatest.



Zygopetalum Redvale 'Fire Kiss' (Titanic Å- Artur Elle) exemplifies the exotic, fragrant and beautiful flowers of the genus.

NEW ORCHID RESEARCH

In collaboration with Royal Heins, PhD, we initiated a research program at Michigan State University to investigate how environmental parameters (primarily temperature and light) influence growth and flowering of several orchid genera, including Miltoniopsis and Zygopetalum.

We're adapting our orchid research strategies based on successfully elucidating the flower induction requirements of more than 200 herbaceous perennials and potted flowering plants at Michigan State University over the past 10 years. We already know of several orchid genera (e.g.,Phalaenopsis) that flower in response to environmental factors, and surely many other orchid genera have similar responses.

Our goal is to elucidate the flowering triggers of some orchid hybrids so that growers and hobbyists alike can predictably flower their crops to meet specific dates, whether for holiday sales or for an orchid exhibition. We've already obtained limited funding for this research, but are seeking additional support to enhance and expand the orchid research program at Michigan State University.

Dendrobium nobile plants exposed to a constant 55 F (13 C) produce flowers regardless of the daylength. Dendrobium Star Sapphire 'KOS', AM/AOS (Friendship Å- Sancyao) is shown here. Grower: Max C. Thompson.

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Roberto Lopez is a PhD student in the Department of Horticulture, Michigan State University. Roberto's Masters thesis research focused on the effects of photoperiod and temperature on growth and flowering of six orchid hybrids. (email lopezro4@msu.edu).

Erik Runkle, PhD, is an assistant professor of horticulture and floriculture extension specialist in the Department of Horticulture, Michigan State University.

Erik has given several national and international talks on the flowering of orchids. (e-mail runkleer@msu.edu). A288 Plant and Soil Science Building,

Dendrobium phalaenopsis requires short daylengths and warmer temperatures for flowering. Dendrobium Doctor Poyck 'Ryan's Grand Slam', AM/AOS (Udomsri Beauty Å- Thailand), is shown here. Grower: Art Stone Orchids

Michigan State University, East Lansing, Michigan 48824.

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