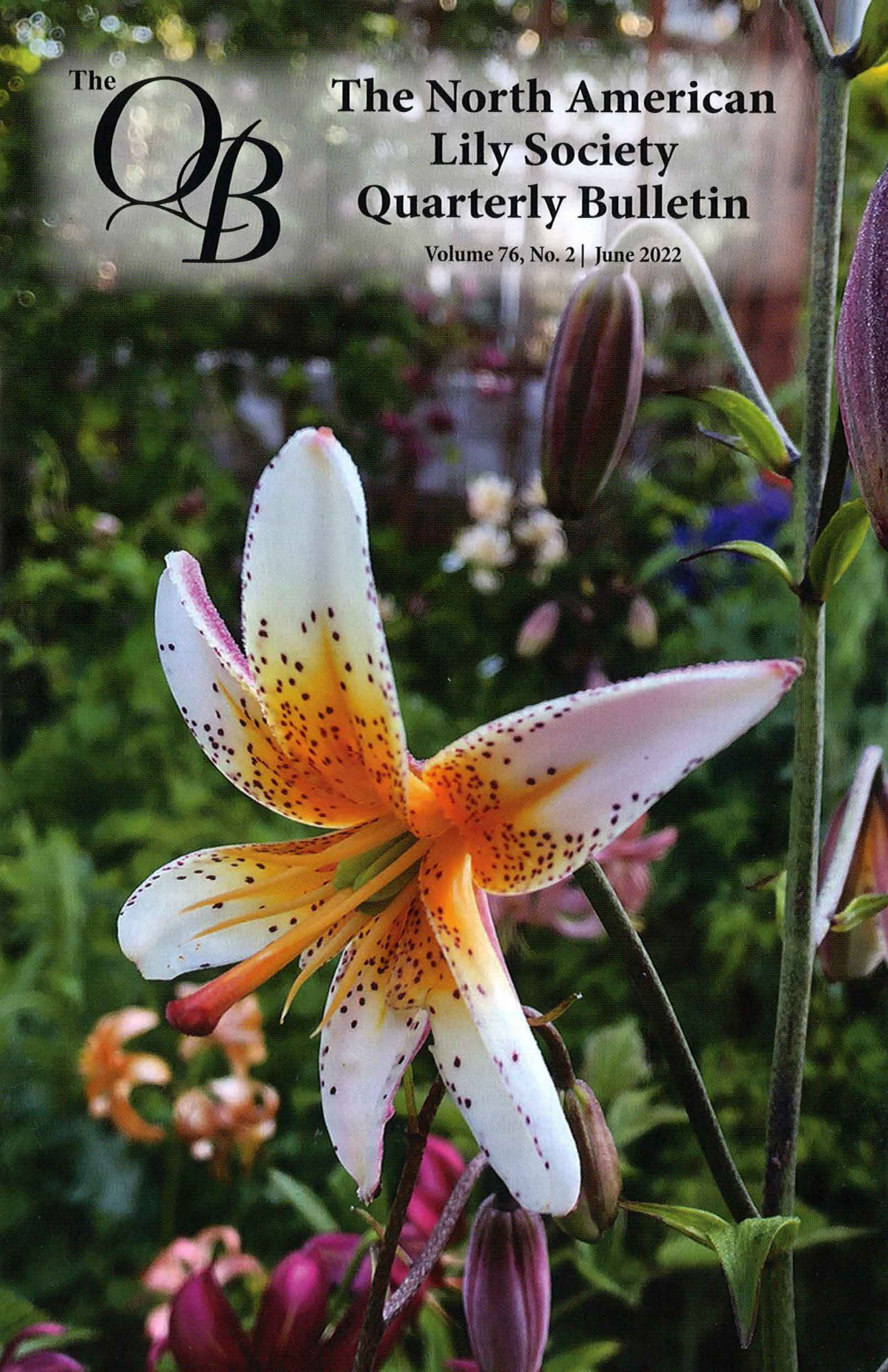

The QB

The North American Lily Society Quarterly Bulletin

Volume 76, No. 2 | June 2022

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Errata

The article on Oregon Bulb Farms in the March 2022 *Quarterly Bulletin* had two mistakes. The editor's note mentioned that Jan de Graaff sold his business in 1966. However, in an article titled "Looking Backwards" in the 1970 NALS Yearbook, de Graaff wrote that 1968 was the last year he managed Oregon Bulb Farms. Sales reached $750,000 that year. In the body of the article, Gordon Flattum was not a brother-in-law to George Heublein.

The QB Editor Award

The contributors of articles and photographs for the *Quarterly Bulletin* are eligible for the *QB* Editor Award and a cash prize of $100 to be presented at the annual NALS International Lily Show and Symposium Awards Banquet. The awardee need not be present to win. A review committee will pick the winner from articles published in the past four issues of the *QB* (September, December, March, June).

The QB

The Quarterly Bulletin of the North American Lily Society

June 2022
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Cover Photo Credits

Front: Martagon seedling seedling AY-12-386 bred and photographed by Adam Yakabuskie.

Back (clockwise, from top):

'Dowd's Diva' by Leanne Dowd

'Star Gazer' from Johan Mak

Norgart Martschinke's 'Cream Beam' by Holger Kühne

Copy deadline

July 20 is the deadline for articles to be published in the September *QB.* Send articles to **editor@lilies.org.**

Advancement in Martagon Breeding

By Adam Yakabuskie

My adventure with the martagon lily started 16 years ago, when I received my first "Bulbalog" from Fox Lily Ranch in 2006. That fall I ordered eight martagon bulbs, and I had to justify to my wife that it was a great investment.

The following summer I attended the North American Lily Society International Lily Show and Symposium in Edmonton, Alberta. I was enamored with the beauty of all the lilies on the show bench. I could not believe that so many different varieties could be grown in our area. One of the featured gardens for the convention was Terry and Shauna Willoughby's garden in Spruce Grove, Alberta. The lilies were in full glory, and at this point I was hooked on the shade-loving lily with the musky scent that everyone was calling "martagon."

And so my martagon adventure began. That fall I ordered a total of 44 martagon varieties from five growers in Canada. I was pleasantly surprised to find out that Alberta seemed to be the hybridizing hub for martagon lilies. This was great news for me, as I then realized I would be able to grow these with great success. I discovered very quickly that it was not just the lilies that were feeding my passion but also the friends and mentors behind these lilies that drove me to work further with this wonderful plant.

There have been many great lily personalities that have influenced martagon hybrids throughout history, and in my case especially the pioneers who initiated the work with *L. tsingtauense* and its hybrids. It is important to recognize the following individuals: Ed Robinson, Wawanesa, Manitoba; Terry Willoughby, Spruce Grove; Otto Beutnagel, Braunschweig, Germany; Norgart Martschinke, Sulingen, Germany; Jean Erickson, Wauchope, Saskatchewan; Robert Luscher Thedford, Ontario; and Gene Fox, Millet, Alberta. All of them have been instrumental in making huge improvements with *L. tsingtauense* hybrids. While in the early years most tsingtauense hybrids were orange and yellow, today a wide array of colors and forms are possible because of these individuals.

It was the work and encouragement of Terry Willoughby that ignited my passion to proceed with hybridizing martagons, and more so with attempting to achieve specific goals, like out-facing and up-facing martagon orientation. At the time, Terry had been hybridizing martagons for about 17 years, focusing on *L. tsingtauense*

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'David's Goliath' has very dark stems and pedicles. Its white buds flush to burgundy red upon opening, revealing its mahogany red flower with darker burgundy blotches encompassed by a lighter cream pink, red anthers, with burnt orange pollen. It has a flat flower form with a good inflorescence, which showcases upwards of 50 flowers each season. Foliage is dark green and resistant to botrytis. It consistently grows to 6 feet in height with a 1-inch thick stem at the base. No seed to date, some pollen fertility noted, presumed tetraploid. Cross: 'Arabian Knight' x TW-2000-10. Additional parentage: TW-2000-10 = (TW-92115-3 x 'Mahogany Bells'), TW-92115-3 = (*dalhansonii* × 'Hantsing'), 'Mahogany Bells' = (*tsingtauense* × *martagon* var. *cattaniae*).

PHOTOS COURTESY ADAM YAKABUSKIE

The author is finding patterning and colors in his new hybrids not seen often in the martagon group. He says he is excited to see unique colors and patterning, including the nectary region of the flowers. Some seedlings have frosted nectaries. Many of these seedlings have large flowers in a flatter form. With some of the strong patterning and halos, these martagon hybrids resemble American hybrid lilies.

The AY-11-124 (Cross: 'Pink Taurade' × 'The Dark Knight') has distinctive flowers with superwide petals (10 cm) and out-facing orientation.

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and its hybrids to create new and exciting martagon hybrids that showcase flat flower forms, larger flowers, greater color variation, and larger inflorescences. Walking through his gardens one could see the influence from *L. tsingtauense* in many of his new and exciting martagon seedlings. In the summer of 2008, I was again invited to the Willoughbys' garden to view their martagons. It was a grand affair, just as glorious as the previous year. Terry graciously allowed me to collect pollen from his new hybrids to use on my newly acquired martagon lilies. This is how my first breeding program came to life and really allowed me to successfully advance my breeding program into what it has become today.

Choosing a Direction

When I first started dabbing pollen around, I had no idea what my goal was, nor did I have clear objectives to direct my focus. My immediate inclination was to pollinate plants, produce seed, grow it out, and have novel martagon seedlings. In my first year I collected seeds from 55 planned crosses, using mostly *L. martagon* hybrids as the seed parent × *L. tsingtauense* hybrids as pollen parents.

One of my best seedlings came out of these early efforts; a martagon that I intend to register in the near future: 'David's Goliath,' seedling AY-08-03 ('Arabian Knight' × TW-2000-10). It's named after my son, David, who is 3. He looks up at this martagon like it's a giant!

Martagons can take five to seven years to bloom from seed, a period that gave me lots of time to understand the direction I wanted to take. My goals were refined slightly over the years, based on the results of my crosses and the influence from

These are sister seedlings – AY-12-386 – with large, flat flower form and out-facing flowers. They are fertile both ways. Flowers of seedling AY-12-386-1 (top) starts off cream and fades to orange as the flower matures. An earlier flower is shown on the cover of this *QB*.

others who also were breeding these lilies. I wanted the regal triangular inflorescence of *L. martagon* combined with the large waxy flat flower form of tsingtauense hybrids in an out-facing orientation. Is that too much to ask for? These goals continue

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to form the basis of what I continue to try to achieve:

1. Out-facing and up-facing flower orientation.

2. High bud count with secondary flowers.

3. Novel color patterns.

4. Larger and wider flat flower forms.

5. Disease resistance.

6. Longer arching pedicels that showcase flowers.

7. Plant vigor.

Currently in my hybridizing I am working with fourth- and fifth-generation tsingtauense hybrids and pollen. My own crosses are now showing significant improvements in flower form, orientation, color and patterning.

In the fourth-generation crosses, my focus was to use *tsingtauense* hybrids that demonstrated qualities of larger, flatter flower forms with higher bud counts, up-facing when possible, and unique flower patterns, and cross them with martagon hybrids that displayed taller inflorescences, high bud counts, and unique flower patterning.

In doing so, I selected plants that displayed unique colors and patterns in the central part of the flower, including the nectaries, in hope of enhancing future generations. My other big goals were to produce novel flower colors, larger not-recurved flower forms, higher bud counts like we see in some martagon cultivars,

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Collecting martagon seed.



These seedlings have a picotee edge on the tepals, a unique pattern not often seen in martagon flowers.

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and out-facing orientation. The bulk of these crosses were hybridized in the years 2010-12, and within the past five years I have enjoyed evaluating many of the new seedlings that have come from this work.

The results to date have been very promising, many of the new hybrid seedlings showing all the previously mentioned qualities together in the same stem. This pleases me greatly, as I felt combining these traits would be a most difficult hurdle to overcome. I am now seeing rich hues in the flowers with unique color overlays of pinks and oranges – combinations of colors that are not traditionally seen within the martagon group. I am excited to see that so many of the flower forms have enhanced throat and nectary coloration, and on some flowers the papillary region is raised, giving it a frosty appearance. Secondary buds, as well as picotee edging in orange, white and yellows, are nice features to see in some of the seedlings.

Now I think it is important to step back and talk about some of my processes involved in hybridizing and growing out these seedlings.

Hybridizing and Growing Processes

My process for planting seedlings has been very simple over the years. The germination of martagon seed is hypogeal, which means it requires a two-stage process before the seedling will send out its first leaf. First, I put the seeds in a damp soilless potting mix for three months at room temperature in a plastic container. This is followed by another three months of cold temperatures. A standard fridge works best for the second step.

After this process I transfer the small bulblets into planting pots and almost immediately the tiny bulbs send out their first leaf.

In the early years I would use plastic sandwich bags to germinate my seeds. This worked fine, but I changed to a clear 250-ml plastic containers with lids on the recommendation of Dr. Ieuan Evans. Leaving a 1-cm (3/8-inch) air gap between the lid and soil content improves air circulation. Young bulbs grow quicker with minimized root damage. These containers can readily be stacked on top of each other and placed in a box or on a shelf out of the way, which is convenient when one has a large quantity of seedlings.

In my opinion, the plastic containers method works better because the root disturbance is minimized during the transfer

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to pot process. One only needs to tip the container over and transfer all the contents out, repotting in the same orientation it was growing previously, roots down. The key is not to disturb the mass of roots and small bulbs during the transfer. This method also works well when you wish to increase your martagons by scaling.

Planting Seed

I choose to plant my seeds in December each year. This gives the seeds ample time to germinate indoors during winter months before I transfer them in early spring to a 5.5-inch square pot, 6 inches deep. I have found out that growing seedlings in these pots for three years works best for me.

During the summer I grow all my seedling in a shaded location where I can monitor moisture levels, and in the fall I heel the pots into the soil and cover them with 3 inches of soil. In early spring the pots are uncovered and cared for in the same manner. This process is repeated for three years. After the third growing season the bulbs are large enough to withstand fluctuating growing conditions and are planted directly into the soil in fall.

Mainly due to a lack of space, I have tried to rush this process on a number of occasions by planting the young seedlings directly into the field during their first growing year. I tried planting them in early spring, and then I tried planting in early October, when days were cooler and moisture levels were more consistent. The results were the same in each case: nothing survived, and a whole year's work was lost. Not every idea is a great idea, but as long as we draw conclusions from our mistakes, it's called learning. Needless to say, I have gap

The author uses clear 250-ml plastic containers with lids to germinate seeds. They are stackable and can be stowed on a shelf out of the way. His labeling convention is to start with the hybridizer's initials followed by a hyphen and the year of the cross and then another hyphen and the cross number.

years in my hybridizing work.

There are many detrimental factors that affect young seedlings during their first growing year, with moisture being the most important. At this stage of its development, the bulb is the size of a grain of rice and it does not have sufficient food stores or a large root system to support being dried out for any length of time during the growing period. Excess rainfall for young

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plants equals root and bulb rot, followed by botrytis, which again equals losses. Soil condition, location of site and drainage are other things that need to be considered when planting out young seedlings.

Many people have asked what I do to protect my crosses in the field. When I first started breeding martagon lilies, I would protect all my crosses with tin foil over the stigma. During this period of my hybridizing, it was OK because I would only do a few hundred crosses each season. As time progressed, I was doing wider crosses and more of them. In a single year I could do well over 600 crosses. This was a huge endeavor and took so much more time to protect each cross, so I modified my views on protecting crosses going forward.

I do all my pollinations in the early morning because the main pollinators for my area are not as active during this time. One big pollinator for martagons are moths, which mainly come out during the evening. We do have honey bees and flies,

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Martagon seedling AY-12-150 the author calls 'Show Stoppa'.' It is a *tsingtauense* hybrid with 26 side-facing flowers. This martagon has a nearly perfect stem, and is fertile both ways. It is named for his mother, Theresa Yakabuskie, whose maiden name was Stoppa.

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but these insects are less attracted to martagons in any big way. By my reasoning, the fertilization process maybe takes two or three hours at the most after I apply the pollen. Since I only use unopened flower buds when doing my hybridizing, I have a high degree of comfort that the pollen I applied will be the pollen that fertilized the flower. Needless to say I do not protect all my crosses when hybridizing.

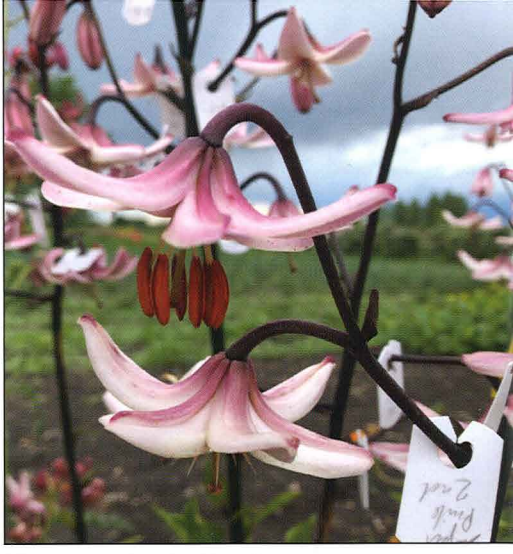
On many occasions I use mixed select pollen on my *tsingtauense* hybrid crosses, especially those with side-facing orientation, as some of these seedlings do not accept specific pollen easily. This gives me a greater chance of obtaining seed. At the end of the day, I am still selecting for specific genetic traits that I hope to transfer to the next generation.

Labeling Crosses

All my crosses are labelled in the field. I have used different ways to label my crosses over the years, with mixed results.

What works best for me today are standard bread clips and a Staedtler Mars Lumograph 100-2B pencil. This pencil is softer, and writes more easily on hard plastic without fading badly in direct sunlight.

One can eat many loaves of bread over the winter months in hopes of having enough bread clips to use in one's hybridizing efforts, or one could purchase these in bulk. The company I purchase my bread clips from is Kwik Lok. These clips are sold in 5,000 count and come in many colors and sizes and hole openings. The clips which work best for hybridizing lilies are Series A, hole opening of 0/1. The clips cannot be reused because the sun breaks down the plastic and they get very brittle by the end of the season.



The author is selecting for martagon seedlings that display secondary buds consistently from year to year. He has four seedlings that produce secondary flowers each season. He crosses these with each other in hopes of isolating this trait. This seedling, 'Bubble Gum,' showcases up to four to eight secondary flowers per mature stem, which extends the blooming period. The dark black stem and light pink flowers are interesting.

Important note: Always label your seed parent as well, especially when working with groups of sister seedlings, because you could lose track of the seed parent name once you cut the stems and bring them in to process the seed.

Seed Collection

I catalog all crosses that produce seed on my computer and sort alphabetically by seed parent. Sometimes I wish I had the time to catalog the hundreds of crosses that did not produce seed, but this is a huge time commitment, which I don't have.

This is what a typical seedling number might look like: AY-21-01 (Hybridizer's

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initials-Year-Cross number). Cross 01 represents Arabian Knight × TW-2000-10, the cross number is increased based on how many crosses were completed that season. This number will remain with the seedling as it grows, and I only assign a name if the seedling shows unique characteristics or if I plan to register it with Royal Horticultural Society.

My hybridizing focus going forward will be to continue to work with the seedlings that display out-facing and up-facing flower characteristics. Fertility has not been lost on many of the new hybrids and I look forward to what is possible in the next few generations of *tsingtauense* hybrids.

To view more of the seedling from my work, you can visit my website page: https://ParklandPeonies.com/Martagon-Gallery/

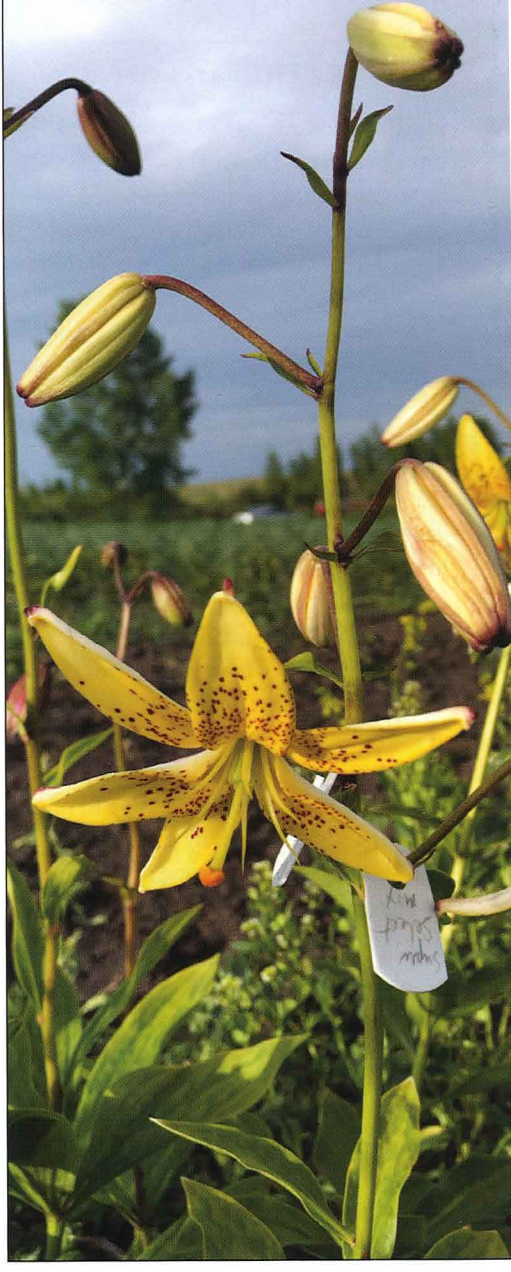
There is nothing more pleasing to my eyes then a large grouping of martagon lilies growing tall and strong in the garden. As one of my lily mentors Fred Fellner always said, "The best is yet to come." ***QB***

Adam Yakabuskie grew up on a small farm in Ontario. He moved to Calgary in his 20s. That is when he began growing and breeding Asiatic and martagon lilies on a piece of land that he rented from a farmer. In 2016 he was offered the chance to purchase a peony business from Bob Yaremko, who had owned Parkland Perennials for nearly 40 years and had a collection of 450 peony varieties. Now called Parkland Peonies, Yakabuskie's collection has 650 peony varieties and just over 50 named martagon lily varieties and many new seedlings.

AY-12-183 (Cross: pink martagon seedling x TW2000-09 ('Mahogany Bells'× 'Brotsing') has a large, flat flower form with long pedicles with side-facing flowers. Nice inflorescence, with attractive flower coloration of pink and yellow.

AY-09-174 (Crossing records lost) is very tall with dark maroon red flowers and a dark stem. The dark coloration carries through to the whorled leaf. It is a good multiplier but has poor fertility.

Orange up-facing seedling (Cross: under the snow) has large up-facing flowers in orange/red hue on a dark stem. It is very tall and flowers late in the season. No seed fertility to date.



AY-12-115 (Cross: Ieuan Evans pink seedling × TW9401 ('Claude Shride' × Ed Robinson mixed pollen, six different seedlings) has yellow flowers with small maroon spots. The flowers are large, flat and side-facing. Pollen is fertile.

North American Lily Society Directors

Terms ending 2022

Brian Bergman
51 Woodcrest Drive
Toronto, ON M9A 4J3
bfberg@rogers.com

Pam Hardy
19 Gast Place
St Louis, MO 63147
msp_a_hardy@yahoo.com

Jim Daniel
16 Maravista Road
Worcester, MA 01606
gymbob@yahoo.com

Terms ending 2023

Alicia Boyd
28775 Streamwood Lane
Southfield, MI 48034
248-349-3267
aliciasdesigns@aol.com

Marianne Casey
P.O. Box 16
Upperville, VA 20185
540-955-2889
mariannecasey@verizon.net

Tracey Nelson
3911 Wilnor Drive
Oregon, WI 53575
tcnelson19@gmail.com

Terms ending 2024

Joe Astarita
8 College Hills Drive
Farmingville, NY 11738
joeastarita@gmail.com

Kristin Jurik
5658 195th St.
Ames, IA 50010
k.jurik@yahoo.com

Tim Zimmerman
22560 Fawn Trail
Rogers, MN 55374
763-370-7373
tsunz63@gmail.com

Seed Exchange

NALS operates a seed exchange for members, offering seed from hybrid and species lilies. The exchange provides members with a unique opportunity to obtain rare and unusual seed that is impossible to obtain elsewhere. All seed is donated by members, and is sold at a nominal cost to defray expenses. If you haven't grown lilies from seed, why not give it a try? The seed exchange is open to NALS members only.

For more information on the seed exchange, visit Lilies.org

Check out the NALS Website

You can find these things and more at Lilies.org:

- Information on caring for lilies, propagating lilies, types of lilies, growing them from seed and hybridizing lilies.
- Bound and digital yearbooks, show DVDs, and books for purchase.
- Information about regional chapters of NALS.

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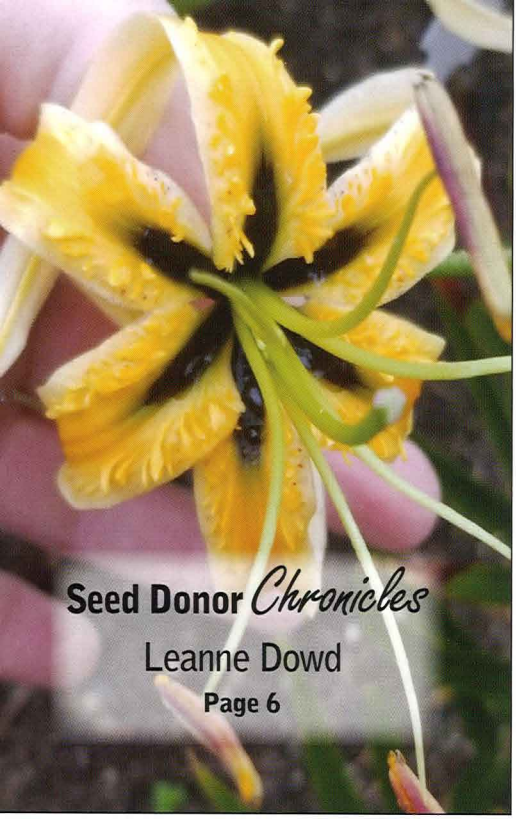
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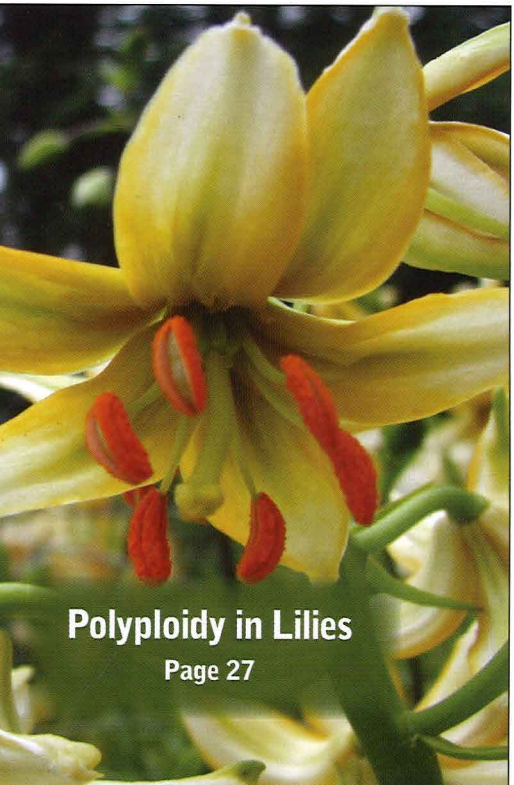
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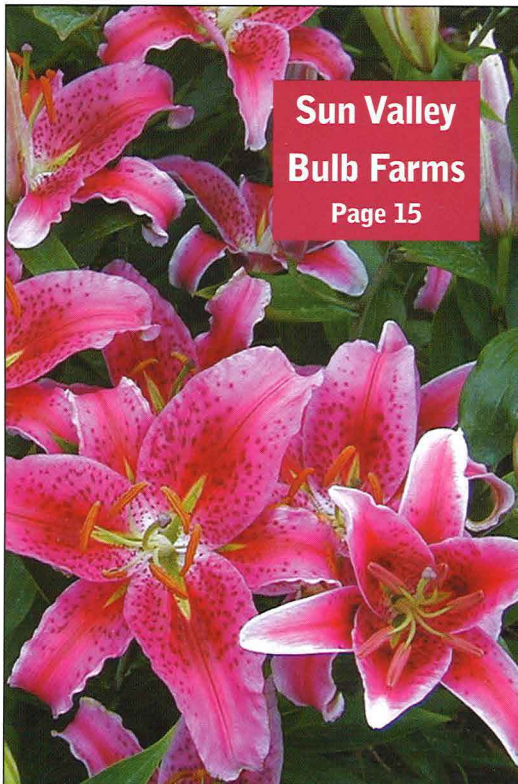
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