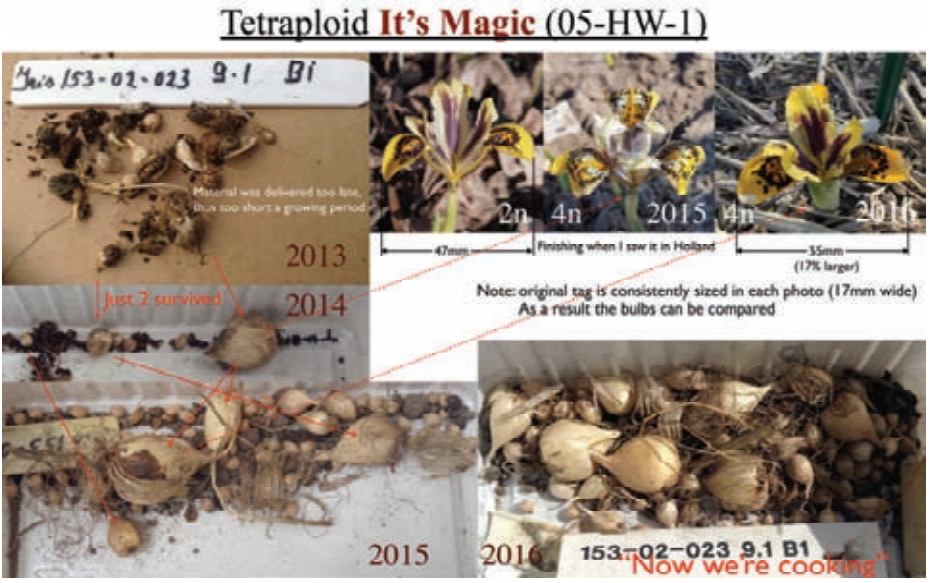
Polyploid Reticulata Iris – Preliminary Results
Alan McMurtrie

[This is a preliminary report about my work with polyploidy Reticulata Iris. A more comprehensive write-up is planned for the 2017 BIS *Year Book*.]

I have wanted to have a lab create polyploid Reticulata Iris since the early 2000s, however it is very expensive. On top of that, you really need to convert at least 3 or 4 to bring a range of genetic material up to the tetraploid (or higher) level. As you will see in the 2016 *Year Book*, I have in particular created some amazing hybrids by working with the currently known 2n=18 species: *Iris danfordiae*, *sophenensis*, and the Çat Retic ANM2175. A Catch-22 is, two of the species are small, so their children tend to be medium in size. Since 70% of the market is for forcing, I really need larger hybrids in order to be successful, and not just be limited to the dry bulb market. My main goal though, is actually to cross *Iris reticulata* clones with my *danfordiae* based hybrids, and most importantly, maintain fertility (which means even more than just 3 or 4 clones will need to be converted)

My original plan was to use profits from the sale of my hybrids to fund the polyploidy conversions. Time is marching on. In 2011 I



Orange Glow (98-00-1)

Eye Catcher (98-NP-4)

couldn't wait any longer and started 6, followed by another 6 in 2012. It was 2 years later, 2013, that the first plantlets were delivered. Problem is, they were delivered in early March when my hybrids were already blooming in the field. The material was handled in a greenhouse, but the bottom line is, it didn't have enough time for root development and bulb regeneration. It would have been better if it had gone dormant, and then gone through a proper growing cycle the following year. As shown below, only 2 of the 40 plantlets of **It's Magic** (05-HW-1) survived – one just barely. The larger bulb then bloomed in 2015. However it was past its best when I saw it.

Orange Glow (98-OO-1)
Left – Diploid Right - Tetraploid

Fortunately **Orange Glow** (98-OO-1) flowers were in perfect condition, and diploid and tetraploid bulbs were close to one and another as you can see in the photo. The diploid flowers on the left are 40mm tip-to-tip. The tetraploids on the right are 50mm – a 25% increase – exactly what I had been hoping for! 50mm is not huge, but it is a nice size.

Tetraploid versions of **Eyecatcher** (98-NP-4) and 05-GQ-1 also bloomed but I can't say for sure how much bigger they were since they too were past their best. One other thing to keep in mind: I think it is important to be measuring flowers from similar sized bulbs. The key point though is, the tetraploid flowers were definitely larger.

A question you might be asking is, would octoploid flowers be even larger?

At the moment the answer is up in the air. I have been warned octoploids could be slower growing, and consequently their flowers could in actual fact be smaller. Will that be the case with Reticulatas? We'll see!

I now have tetraploid bulbs here in Canada, and have taken measurements of the various bulbs for later comparison to flower size. I was pleasantly surprised to see Jan Ligthart included two bulbs of **Lilac Beauty** (03-AN-3). One of its "claims to fame," beside the unique colour, is large bulbs give 3 flowers, which are excellent for forcing.

In the photo of **Lilac Beauty** bulbs, the 2n bulb pair resulted from a bloom this past spring. The bulbs on either side (both 11mm in diameter) are material that had been grown outside the lab for at least a year. The bulb on the left appears, from its coarse tunic, to be at least 8n, if not 16n.

Keep in mind that although tissue culture is being used to increase the polyploid stock, doing so is 1) expensive, and 2) not that effective (meaning you don't shave that many years off getting to market). It might be different if you had a variety that was going to be in high demand at good prices, and

all the kinks were worked out of the delivery process such that 100 plantlets meant 100 bulbs at the end of the growing season. Or more logically, 10,000 plantlets meant you'd have 10,000 bulbs at the end of the growing season.

Something like this doesn't happen instantly. You first have to build interest (currently the Reticulata market is depressed). It then takes two or three years for the polyploid conversion. Followed by at least 2 years building up material in the lab, followed by another two, possibly 3 years in the field.

At the moment there are still significant kinks in plantlet delivery.

In an ideal world I would want to convert the original 6 clones, see the results including tetraploid, octoploid, and possibly hexadeciploid versions, then move forward with a concerted program. As with most things, the practical reality is trying a few, getting an idea that things are going at least reasonably. Then trying a few more, and "correcting problems as we go."

The 12 additional clones I started this year bring the total to 41. (I'm not getting any younger).

At the moment the aim is to have tetraploids of each. As many octoploids as possible and perhaps a couple of hexadeciploids. Because an octoploid version of **It's Magic** was not originally created, I paid for an extra conversion to explicitly get an octoploid of it. At this point I have no idea of whether that's money well spent or not (certainly the tetraploid looks very nice). Assuming the Lilac Beauty bulbs bloom, I may have an initial answer next spring.

92-FB-1
Cantab x *winogradowii*

89-A-3
hyrcana x danfordiae

I'm certainly not doing this "for the money" (hopefully in the long run I'll recover my investment costs). I'm doing this because I'm passionate, and

because I'm amazed at what I've achieved. What drives me is my accomplishments e.g. this year's **Tequila Sunrise** (09-LE-2), and the wonder of nature's beauty.

Tequila Sunrise (09-LE2)

Wow (03-EK-1)

92-FB-1 and 89-A-3 no longer exist, but were sterile diploid dead-ends. I did think 92-FB-1 was quite nice, and would have loved to have seen what hybrids could have been created using it at the tetraploid level.

We love pure species, but sometimes those species are very difficult to keep in our gardens. This is where a little hybridising can help to make plants that are more robust. A few people are not happy. They want only plants that are found in nature. Everything else is an abomination! It may be that those people thrive on the challenge of growing things that are difficult. If the average person tries something and it does poorly, they're simply going to give up: case in point *Iris danfordiae* "shatters" after 2 years.

In a sense all I'm doing is giving Mother Nature a helping hand. If *Iris danfordiae* and *I. sophenensis* were to come together in the same valley in Turkey, then many of my hybrids would be the result. …and especially so if the Çat Retic drifted over as well.

It is fascinating to wonder how the various species and forms came into existence in the first place.

P.S. It would be nice to do some polyploidy work with Junos, for example to convert *magnifica* x *warleyensis* hybrids, and then see what further breeding the tetraploids would bring. My funds and time are tied up with Reticulatas, but an underlying stumbling block is the fact there was no interest by the Dutch in any of my Juno hybrids. A few have been sold by Janis Ruksans.

Two of Alan McMurtrie's new seedlings for 2016

Dream Catcher (10-AX-2) ©A.McMurtrie

11-GN-3 (94-AT-2 x 98-00-1) ©A.McMurtrie