



# PÆONIA



A Newsletter for Peony Hybridizers

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### A QUANTITATIVE COMPARISON OF INTERSECTIONAL HYBRID POLLEN PARENTS:

Donald Smith

In the last issue of the newsletter (Vol. 25, No. 2) I reported on the results of a study (field test) comparing the effectiveness of a number of lactiflora varieties as seed parents in the intersectional cross. The varieties compared in that study were all reported to be top producers of intersectional hybrids. (See the update to this report in the subsequent article). This article reports the results of a promised follow-up study comparing the effectiveness of various fertile advanced generation shrub peony hybrids

(referred to by many as Lutea T. P. hybrids) as pollen parents in the intersectional cross. The super seeder *Martha Washington* was chosen to be the single pod parent for this test due to its proven record as a highly effective "I" hybrid seed parent. Unfortunately, this was not possible as one source of pollen was not available for test until after all of the flowers on *M. Washington* had opened. This forced the use of "other" pod parents in order to complete the comparison of all pollens. As in the earlier study, all pollens were stored in a refrigerator between each days pollinations to reduce any deterioration in fertility during the approximately 2 weeks required to make all of the pollinations. All crosses were again carefully protected against contamination from all sources. Five advanced generation shrub peony pollens were selected for this test. These were Reath's A-199 (*Golden*

Era), A-198, and A-226 (*Ruffled Sunset*), Seidl's AL-42 (*Autumn Harvest*) and the Daphnis hybrid *Nike* (D-368). All of these hybrids have been advertised as being fertile both ways. This was the first year *Nike* bloomed in my garden and I was anxious to test its fertility, especially in the intersectional cross. *Nike* is one of the rare advanced generation hybrids with a genetic makeup that is 3/4 Moutan to 1/4 Lutea. Other

shrub hybrids with this same makeup (such as *Leda* and *Zephyrus*) have proved to have very low fertility. This is especially true when used as pollen parents in the intersectional cross. The other 4 shrub peonies tested here all have the more usual 1/1 Moutan/Lutea ratio. The results of this study are summarized in the tables below.

Table 1

Cross	No. of Crosses	Total No. of Seeds	No. of Firm Seeds	Seeds/ Cross	No. of Ruptured Seeds	% of Ruptured Seeds	Germination Rate (%)	Plants/ Cross
M. Wash. x G. Era	20	91	86	4.6	32	35	N/A	N/A
M. Wash. x A-198	7	35	34	5.0	10	29	N/A	N/A
M. Wash. x Nike	4	10	10	2.5	7	70	N/A	N/A
M. W. x A. Harvest	4	10	10	2.5	2	20	N/A	N/A
M. Wash. x All	35	146	140	4.2	51	35	N/A	N/A

Table 2

Cross	No. of Crosses	Total No. of Seeds	No. of firm Seeds	Seeds/ Cross	No. of Ruptured Seeds	% of Ruptured Seeds	Germination Rate (%)	Plants/ Cross
Others x G. Era	11	15	11	1.4	1	7	N/A	N/A
Others x A-198	3	3	3	1.0	0	0	N/A	N/A
Others x R. Sunset	3	9	7	3.0	1	11	N/A	N/A
Others x A. Harv.	2	0	0	0.0	-	-	N/A	N/A
Others x Nike	1	0	0	0.0	-	-	N/A	N/A
Others x All	20	27	21	1.4	2	7	N/A	N/A

"Others" = *Gertrude Allen*, *Alice Roberts*

As these results indicate, my rate of seed production from all of the reported crosses continues to be very high. In addition, there are few if any false hybrids (pure lactiflora) among the resulting seedlings produced so far. This is in sharp contrast to the results reported by many others over the years. Once again, the percentage

of ruptured seeds was also quite high (35% overall). More than 60% of all pods with seeds contained at least one ruptured seed. This is an important indicator of uncontaminated crosses.

The results shown above indicate that Reath's A-198 is an excellent pollen parent of intersectional hybrids (at least as good as, if not better than, *Golden Era*). These two plants (A-

198 and A-199) can probably be used interchangeably as pollenators in the intersectional cross. Other pollens were clearly less effective (on *M. Wash.*), but all pollens gave at least some seed. *Ruffled Sunset* pollen was very effective on "other" pod parents (even better than A-199/A-198), but unfortunately it could not be tested on *M. Washington* for this report. This pollen clearly warrants further evaluation in the future.

Overall, A-199/A-198 produced more than twice as many seeds/cross as the average of the "other" pollen parents from this study. *Ruffled Sunset* pollen should be used more extensively in the intersectional cross since preliminary indications are that this pollen may be the most effective of all.

Once so difficult it was considered by many to be impossible, the intersectional cross can no longer be classified as a difficult cross. Several excellent pod and pollen parents have been discovered in recent years, such that this cross must now be considered to be a relatively easy one. As a result of this progress, I believe we are now at a point where relatively large numbers of intersectional hybrids can easily be produced using several different pod and pollen parents. Only by traveling this road will we begin to realize the full potential of the genetic variations possible from this cross. I predict that the results of this effort will be truly exciting to behold.

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#### A BRIEF UPDATE TO THE COMPARISON OF INTERSECTIONAL HYBRID POD PARENTS

Donald Smith

The following report is a brief update to my article in the Spring 95 issue of *Pæonia* (Vol. 25, No. 2) comparing a number of the better intersectional seed parents. In that article I reported on my failure to obtain any seed from Dewey's *HP1-61* due to a lack of functioning stigma. This result was unexpected since *HP1-61* had been reported to be a superior "I" hybrid seed parent. Again this year I used *Golden Era* pollen on

*HP1-61*, this time with results that were far more consistent with those reported earlier by Dewey. Although many of the flowers again had only non-functional stigma, two flowers displayed normal-looking stigma and have produced 6 giant carpels swollen with seed. In all, a total of 22 seeds were harvested from these pods (including several badly ruptured ones). This impressive result would seem to put *HP1-61* in a class with *Martha Washington* as one of the best intersectional hybrid pod parents thus far discovered. Although the limited number of "good" stigmas clearly reduces its overall effectiveness as an "I" hybrid seed parent (especially when compared to *M. Washington* which never seems to have a bad stigma), when compared to other pod parents *HP1-61* ranks at or near the top of the list. It should be mentioned here that several of the better "I" hybrid seed parents (for example *Miss America* and *Gertrude Allen*) also exhibit a high percentage of non-functional stigma. This phenomena will naturally cause results to vary significantly from one year to the next. In addition, it is important to remember that *HP1-61* is a white "double" (more correctly an anemone type) thus significantly increasing the chances of producing both yellow and double hybrid offspring.

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#### THE ANDERSONS VISIT NEW ZEALAND:

At my request Roger Anderson has submitted a brief summary of his recent trip to New Zealand

My wife and I had the pleasure of spending two weeks in New Zealand last November (94). It was a combined business/pleasure trip. New Zealanders are great peony enthusiasts. We learned a great deal from them and hopefully we were able to enlighten them as well. They are very interested in the intersectional hybrids. In fact, they already have some of these plants and many more will be going this year.

New Zealand is a beautiful country and there are no words that can describe the friendliness and hospitality of the people we met and stayed with during our visit.

We were there during the peak of their blooming season. John and Julie Allen met us at

the airport. It was a very busy time for them since they open their garden to the public at that time of year. Julie was very apologetic because they were so busy. No apologies were necessary, however, as we also experience the same thing here during our peak bloom.

We arrived on a Sunday and stayed with the Allens until Wednesday when the driver we hired picked us up at the Allens to take us to visit with other peony growers. Julie Allen had set us up with an itinerary, and the driver was able to get us where we were to be on the appointed date and time with lots of time for shopping and sight seeing along the way.

Next, we stayed with John and Janice Nicholas at their beautiful cabin on Lake Alexandrina. They send their cut flowers to the U. S. Then, we stayed with the Hamiltons who were especially interested to learn more about the intersectional hybrids. The Hamiltons were here in 1989 for the APS annual show in Janesville, Wisconsin. We visited with Tony and Judy Banks and saw box after box of dried flowers prepared for shipment to the U. S. We stayed with Dot and John McFarlane who were kind enough to let their son, assisted by our driver, shear a sheep for us. Later, we visited with Derek Ervine who has a unique operation, raising seeds he collects from all over the world. Others visited were Rusty Kampjes, Mr. and Mrs. Dennis Hughes, John McLaren, Paul Simmons and the Wallis'. Three of the homes were opened for neighboring growers to see the slides of our intersectional hybrids.

After nine days of traveling we returned to the Allens to find them still very busy with their many visitors.

Last year we sent our first intersectional hybrid plants to New Zealand. These plants were well received and with much interest generated by our trip this years orders have already exceeded last years. Shipping to New Zealand seems to be more difficult than to any other country to which we have shipped so far. Plants must be free of all soil and dipped. Once they arrive they must be kept in quarantine for 6 months or more. This is far different than shipping to Germany, Austria, Switzerland, Holland, England and Canada and of course the U. S.

Demand for these plants is now exceeding the supply. Every year we sell out our allotted number of plants, usually by the end of September. This year at the present rate we will likely be sold out by the end of July or early August. Each year many nurseries contact us to ask whether we can supply them with

intersectional hybrids---- which of course we can not. So this year, we will increase our supply for the future by propagating more plants.

Roger Anderson

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#### LETTERS TO THE EDITOR OF PÆONIA:

The following letter was sent by Irene Tolomeo of Sonoma, Ca.

Dear Donald

In the Spring '95 Pæonia you expressed interest in additions to your list of proven intersectional hybrid parents. My considerable efforts with this cross over the past six years have yielded 25 seedlings in various stages of maturity. (Several should probably be rogued.) In addition to pollen from several of the parents you list, there are plants from Boreas, High Noon, Icarus, and a seedling with the garden name "Seidlite" (the seed having been sent to me by Bill Seidl). There have been plants from Infanta, one of which may have exhibited Infanta's leaf color, but none survived past the first year. On the pod parent side, there has bloomed one plant from Minnie Shaylor with decent blossom and foliage, and Jules Elie seems to set seed by Seidlite. (This spring there was one J. Elie x Seidlite seed germination which produced four thread-like stalks and then died.) Additionally, there are eight lacti. seedlings which have occasionally produced viable hybrid seed.

You'll notice Icarus on the list of successful pollinators. While it may be felt its very single flower renders it unsuitable for intersectional hybridization, there may be two things in its favor: (1) Its offspring seem to have pollen, sometimes generous amounts, and (2) the seedlings sometimes bloom the third year. On the negative side, Icarus doesn't much care for this yard, and some years, including the current one, there are no blossoms at all. I was really surprised when one pollen bearing seedling (own lacti. seedling by Icarus) produced an empty seed

this year. Pollenation was by Golden Era (the only pollen available at the time). Unfortunately, this plant will be a very very slow increaser.

Since we were spared any major disaster (No quakes, no floods, no hurricanes) I shouldn't complain but, if I were in the Thompson and Morgan seed catalog I'd read "Crop Failure." Weather this spring was disastrous for the peonies and seed harvest will be close to nil. One mini-success stemmed directly from your newsletter Vol. 25, No. 1, concerning the reciprocal intersectional cross. Presently, there are two fat carpels on a young Helios x a pink, double, lacti. seedling. I understand that it's unlikely that the seed will be viable. Ditto with respect to a Ludlowii x moutan pod. Ludlowii x Lutea does not cross so readily as anticipated, but there may be several seeds and past experience indicates they may be viable. There may also be a seed from Canary by High Noon.

Your description of the leaf pattern of a "typical" intersectional hybrid seedling was very helpful and your method of obtaining images was positively ingenious.

Cutting back Dewey's HP1-61 resulted in several decent looking carpels; however, the only one that looked promising proved to hold an empty seed by Golden Era. Perhaps next year I'll try Alice Harding.

I'm bedeviled by miserable foliage on one otherwise lovely plant and am reluctant to believe it is purely a matter of genetics (I've tried several fungicides). If you have any ideas they will be appreciated.

Enclosed are a couple of pictures (of two intersectional hybrid seedlings), which I don't expect to get back.

You are much more efficient than I in successfully germinating and rearing seed. I'll continue to read every word.

Irene Tolomeo

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#### OPEN REPONSE TO IRENE TOLOMEO'S LETTER:

Thank you for your thoughtful letter and your inputs to my lists. It is always nice to hear that people are learning from the information and articles in the newsletter. I have added the names you provided to my lists of intersectional hybrid parents.

I am sorry to say I have no solution to your "I" seedling foliage problem. In fact, I am convinced that the problem (poor quality, disease susecptible foliage) is genetic and therefore can not be contolled by any fungicide. Although intersectional hybrids are, in general, characterized by excellent foliage which is extremely healthy, some percentage of the seedlings will undoubtedly inherit inferior foliage that is, on average, more susecptible to disease. I would estimate that about 20% of my "I" seedlings have rather poor quality foliage which, unfortunately, does not seem to improve with age. It is doubtful whether any of these seedlings will ever become acceptable garden plants. I believe this problem is similar to the "measles problem" which afflicts most of the red intersectional hybrids currently in existence.

Don Smith

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The following letter was recieved from Will McLewin of Stockport, Australia.

Dear Mr. Smith

An item in the most recent volume of *Paeonia* prompts me to offer you the following 'response' for publication in the next (issue).

#### THE TAXONOMY OF BABEL

I am inspired by the article from Nancy Hallas in (Vol. 25, No. 2) Spring 1995 to go a bit further in the same vein.

1. An important characteristic distinguishing peonies from other plants is their morphology (form).
2. The Chinese species, *P. lutea*, *P. delavayi*, *P. suffruticosa* and so on have persistent woody stems quite unlike the herbaceous species and are therefore not peonies.
3. The Asian and European species, *P. lactiflora*, *P. mascula*, *P. tenuifolia* and so on are herbaceous and quite unlike the tree peonies and are therefore not peonies.

4. This leaves *P. Californica*; but *P. Californica* is closely allied to *P. brownii* which is not a peony but a hellebore.

Hence there are no peonies!

I suspect there are other complex genera that could be simplified in the same way.

Will McLewin

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#### RANDOM THOUGHTS AND MISC. TOPICS:

##### Rules for Pæonia Membership

Pæonia is not a publication to which one simply pays to subscribe. It is instead a newsletter for the exchange of information and ideas among peony hybridizers and enthusiasts so that we all can learn from each other. In order for this to work, everyone in the group must contribute from time to time. Everyone has observations that he or she can report on. Certainly over the last few years, each and everyone of us has been surprised by some result we didn't expect. Send me a short note and tell me about it. I'm not just talking about your great successes, for we can learn much from our failures as well. Maybe you just have a question which has bothered you for some time. Someone in the group may have an answer. Or maybe you are looking for a certain plant to help you achieve your particular breeding objective. Perhaps one of our readers can supply it. For example I am looking for the shrub peony hybrids *Mrs. Ben Gilbertson* (*Hakuo Jishi* x *Alice Harding*) and *D-63* (*F<sub>2</sub>B* x *CHONI*). Whatever it is, send it along to me. You don't have to write an article or a long account, just a brief report (letter). Tell me what you are doing, what you are trying (hoping) to achieve in your work, are you having any success? If you are corresponding with a peony friend, send a copy to me so that others can share your thoughts and ideas. I will only publish the parts you indicate. You can even send colored pictures of your best seedlings, I might be able to publish some of them in the not to distant future.

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I am encouraged to see that someone is having at least some success with breeding advanced generation shrub peony hybrids such as *Zephyrus*, *Leda*, *Hephestos*, etc. (see Registrations section in the **APS Bulletin** No. 295, Sept. 95). I continue to be surprised and frustrated by my lack of success with this group over the years. Each year I make many crosses among these hybrids trying to produce plants which are more than 50% Moutan in their genetic makeup. These efforts have produced very few seeds and to date I have only two surviving plants from such crosses. One is from an Exotic Era x *Zephyrus* mating, the other is from Age of Gold x *Zephyrus*. This year I have only a single "good" seed from a total of 34 shrub peony crosses. The successful combination was *A-198* x White Moutan.

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While working on the update to my earlier report on intersectional pod parents (see page 4, this issue) concerning the effectiveness of Dewey's *HP1-61* as an 'I' hybrid seed parent, an interesting thought occurred to me. Shouldn't this unique plant be named and registered because of its importance as a superior breeder of intersectional hybrids? Maybe we could call it *Dewey's Great Find* in honor of the man who discovered this unusual variety and brought it to the attention of the peony world.

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