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Flowering Abnormalities Observed in Intersectional Hybrid Peonies

By Don Smith

Observations of dozens of intersectional hybrids over several years have uncovered some very interesting and surprising effects. One of the more interesting of these phenomena is the high occurrence of aborted terminal flower buds among the intersectional hybrids. My gardens notes indicate that nearly a third (30%) of my hybrids are listed as having either some (SATB) or most (MATB) main buds aborted. I find this somewhat surprising, since this trait is not particularly common in either of the parent groups (i.e., lactiflora or lutea hybrids). Initially, it sounds as if this would be a very serious problem but, in actual fact, it is not a problem at all. In some ways it may be an important benefit. Obviously, this statement requires further explanation. At first, this phenomenon was completely overlooked. This is because these plants were covered with large beautiful flowers.

Seedling # IC-93-21, Parentage: (Martha W. x Golden Era)

Seedling # IC-94-03, Parentage: (Martha W. x Golden Era)

Only on closer inspection, however, it was apparent that, in some cases, the flowers were almost entirely from side buds. This was not immediately apparent because the aborted main buds were usually hidden well beneath the lush foliage. You would think that this would result in more but smaller flowers and this may in fact be the case. However, the flowers on several of these plants were among the largest (and finest) in my garden, measuring in some cases 6-8 inches across. It seemed generally true that in the few cases where there were flowers from the terminal buds these flowers tended to be much less double (i.e., S-SD), but larger in diameter.

Observations of Progeny from Ruptured Seeds in the Intersectional Cross

By D. R. Smith

In several earlier articles in Pæonia (V25, N1 and V25, N4), I discussed the occurrence of ruptured seeds produced from intersectional crosses as well as a method for increasing the germination rate of such seeds. At the time, I theorized that these seeds might be somehow "special" and thus deserving of some type of special handling that might help bring them to germination and ultimately to maturity. In particular, I speculated that these over-sized seeds might, in fact, be tetraploids. My thinking was that maybe the insides (endosperms) of these seeds were simply to big for the seed coats to contain and thus this caused the coats to crack and split open. As reported numerous times in the past, this is a very common occurrence with intersectional seeds. My experience over the years has indicated that somewhere between 25 and 50% of all intersectional seeds are ruptured, with the average being about 35%.

As a result of my belief, I have, for many years, separated the ruptured seeds from the "good" ones and kept track of the resulting seedlings and plants by adding an R to the seedling identification number, such as IC-95-38R. Using the method described in Pæonia (V25, N4, p1), I have raised to maturity a good number of hybrids from these ruptured seeds. Overall, 20% of my intersectional plants have originated from ruptured seeds. Many of these have now bloomed and some are among the finest that I have produced. The flower from one such plant is shown in the bottom figure on page 5. However, after observing these plants side-by–side with other "normal" plants for several seasons, I must admit that as a group they appear to be no different from other intersectional hybrids in any noticeable respect. As a result, I am forced to abandon my theory, since it clearly cannot be supported by field observations. Consequently, we must conclude that this phenomenon is simply some type of genetic defect associated with the intersectional cross and leave it at that. On the positive side, however, there is no longer any need to separate and track the seedlings from ruptured seeds and thus I have dropped the R designation from my seedling numbers in recent years.

Summary of Hybridizing Results for 2000 and 2001

A summary of my results for the intersectional cross for the years 2000, 2001 and for both combined are shown in tables 1-3 below. The emphasis has been on crosses not involving Golden Era. Two examples of the flowers from double-flowering progeny produced by crosses other than the (M.W. x G.E.) mating are shown on page 6. Other examples can be found on my new web site, *The Wonderful World of Intersectional Peonies* at

www.intersectionalpeonies.com

More about these hybrids will appear in future issues of the newsletter.

Table 1. Summary of intersectional crosses made during the summer of 2001.

Herbaceous Pod Parent	Tree Peony Pollen Parent	# of Crosses	# of Seeds	Seeds per Cross	# of Good Seeds	# of Ruptured Seeds	% of Ruptured Seeds	# of Germ. Seeds	% Germ.	# of Seedlings
M. W.	A in W	11	52	4.7	40	12	23%	41	79%	35
M. W.	SFY	25	10	0.4	5	5	50%	5	50%	5
M. W.	H. Martin	24	6	0.3	5	1	17%	4	67%	1
Total		60	68	1.1	50	18	26%	49	72%	41

Table 2. Summary of intersectional crosses made during the summer of 2000.

Herbaceous Pod Parent	Tree Peony Pollen Parent	# of Crosses	# of Seeds	Seeds per Cross	# of Good Seeds	# of Ruptured Seeds	% of Ruptured Seeds	# of Germ. Seeds	% Germ.	# of Seedlings
M. W.	A in W	10	63	6.3	34	29	46%	18	29%	16
M. W.	SFY	11	45	4.1	24	21	47%	9	20%	5
M. W.	H. Martin	24	30	1.3	25	5	17%	18	60%	10
M. W.	Zephyrus	12	16	1.3	9	7	44%	8	50%	4
M. W.	D-67	9	23	2.6	8	15	65%	5	22%	4
M. W.	i-Hyb.	13	0	0	-	-	-	-	-	-
HP1-61	A in W, SFY	6	0	0	-	-	-	-	-	-
Total		85	177	2.1	100	77	44%	58	33%	39

A in W = Alice in Wonderland (Reath, 1994) Tree peony hybrid
SFY = Smith Family Yellow (Smith, unregistered) Tree peony hybrid)
H. Martin = Hélène Martin (Cayeux, 1980) Tree peony hybrid
D-67 = Daphnis unnamed tree peony hybrid
i-Hyb = Morning Lilac (Anderson, 1999) Intersectional hybrid

Table 3. Summary of Intersectional Crosses made during the springs of 2000 and 2001.

Herbaceous Pod Parent	Tree Peony Pollen Parent	# of Crosses	# of Seeds	Seeds per Cross	# of Good Seeds	# of Ruptured Seeds	% of Ruptured Seeds	# of Germ. Seeds	% Germ.	# of Seedlings
M. W.	A in W	21	115	5.5	74	41	36%	59	51%	51
M. W.	SFY	36	55	1.5	29	26	47%	14	25%	10
M. W.	H. Martin	48	36	0.8	30	6	17%	22	61%	11
M. W.	Zephyrus	12	16	1.3	9	7	44%	8	50%	4
M. W.	D-67	9	23	2.6	8	15	65%	5	22%	4
M. W.	i-Hyb.	13	0	0	-	-	-	-	-	-
HP1-61	A in W, SFY	6	0	0	-	-	-	-	-	-
Total		145	245	1.7	150	95	39%	108	44%	80

A in W = Alice in Wonderland (Reath, Tree peony hybrid) from cross of (Alice Harding x Golden Era)
SFY = Smith Family Yellow (Smith, Tree peony hybrid) from (Golden Era x Alice Harding) cross see Pæonia, V29, N3, p 4.
H. Martin = Hélène Martin (Cayeux, 1980, t.p. hybrid) from (P. potaninii var. Trollioides x Gessekai) see Pæonia, V27, N4, p 3-4.
D-67 = Daphnis unnamed tree peony hybrid with single yellow flowers
i-Hyb = Anderson Intersectional hybrid Morning Lilac

Important Reminder to Pæonia Subscribers

This will be the last issue of Pæonia newsletter to be distributed by regular mail. Pæonia will continue to be published only as an on-line newsletter and as such will be available to all free of charge. The website address is **www.paeonianewsletter.com** or **www.paeonia.info** If you would like to be on my e-mail list and receive a notice whenever a new issue of the newsletter is published on-line, please send me your e-mail address at paeonianews@aol.com. If you prefer a hard copy of the newsletter to read and save, you can simply print it out on your own printer from the pdf file. I apologize to those who are not on-line and therefore, will be unable to receive the newsletter as a result of this decision.

As a result of this decision, I will no longer accept money for new subscriptions. Those who have recently subscribed or re-subscribed and would like to receive a refund, please send me a note (by regular mail or e-mail) and I will try to return the appropriate amount that is due to you. To everyone else, I will simply apply your subscription to the considerable costs I have incurred in building the Pæonia website.

Seedling # IC-95-16, Parentage: (Martha W. x Smith Family Yellow)

Seedling # IC-95-26, Parentage: (Martha W. x Golden Experience)