PAEONIA

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Hello again! (See first letter from Irene Tolomeo in Dec. 1988 "Paeonia".

Enclosed are three pictures of the cutting-grown lutea hybrid mentioned to you in June. There is one major error in that letter since I indicated that the cutting did not show growth for two years. Actually, the cutting was taken in Dec. of 1986, planted in soil in Feb. of 1987, and bloomed May 25, 1988 after first showing growth about three months previously. Anyway, one of the pictures shows the same plant last fall with the soil washed from the roots. It is easy to see that the one cutting yielded one strong plant with a healthy root system and a second much weaker plant.

Tree peony seedlings from seed provided by the Society are just beginning to show above ground. Herbaceous hybrid seeds harvested from plants (grown from your seed) in San Anselmo have germinated and are now beginning to show. Tenui hybrid seed from Mr. Seidl germinated well but have not yet begun to show above ground.

Best Wishes,
Irene Tolomeo, 585 Napa Rd.
Sonoma, CA 95476

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A REPLY TO MR. MILLER'S QUESTION, PAGE 26, DEC. 1988 ISSUE OF APS BULLETIN #268

Dear Mr. Miller:

Flaming the ground in an effort to control Botrytis is an old trick which is still being used today. Your method is good for late fall and again in early spring. If an occasional very early peony sprout is burned, that is no major problem — other sprouts will take its place.

Many years ago Wild's Nursery of Missouri would cut the peony stems at ground level in the fall, then cover with straw and set fire to the whole peony field. This was all that was needed in controlling Botrytis (or so I have been told).

Along with this control measure, a spraying program is of value where the spring season is unusually wet. Benlate (Benomyl Fungicide) and Captan are good fungicides that if used every ten days up until blooming season will give added protection in disease control. As a last resort, next fall dig the roots, soak in a bleach and water solution, one part bleach to 10 parts of water, for two hours and then plant in new ground (new area). Discard any plant that is hopelessly prone to the infection.

PEONIES — PAST, PRESENT, and FUTURE

The modern-day peony is old-fashioned. However, it won't stay that way for long! The slow and small involvement in numbers of hybridists is just natural — you can't start at the top and work up. The foundation for the peony revolution has been laid and we will build on that, especially on the work of Professor Saunders. The work of Professor A. P. Saunders as recorded in John Wister's book, THE PEONIES, is recorded here. .

"It has already been pointed out that Professor Saunders was not the first to make crosses between peony species. He was, however, the first to bring together a large assemblage of species — the vast majority of which had never been used before in crossing. He was the first to systematically try to intercross each one of these species with every other one. He created more hybrid races and more new hybrid varieties than all other breeders, past and present, put together. His work in creating these new hybrid races is the greatest peony achievement of this, or any other, century."

Page 41 gives an idea as to his approach to hybridizing, as follows:

"These new plants marked the opening of a new era. 'My main purpose in all this work of cross-fertilization,' Professor Saunders later wrote, 'has been to strike out if possible into new lines that would produce early flowering types in greater variety and beauty than we have heretofore had.' Few would deny that in his thirty years of hybridizing he succeeded admirably in this quest."

The following is information from Prof. Saunders' Peony Notebooks:

This is a Xerox Copy of the Third of five "Big Notebooks" compiled by A. P. Saunders and covering certain aspects of his work with peonies. There is also a Xerox copy of the First Notebook.

Notebook No. 1 contains records of all the herbaceous hybrids having as one parent P. albiflora (lactiflora) in its many varieties. These "albiflora crosses" comprise the very large majority of the Saunders herbaceous hybrids, including some of his most important ones. No. 1 Notebook also contains six pages of Triple and Quadruple crosses: hybrids involving three, or four, species "bloods" in them, respectively.

Notebook No. 3 contains accounts of all the herbaceous hybrids not having P. albiflora in their parentage at all. Books 1 and 3 together, therefore, cover virtually his entire work with the herbaceous peonies.

anomala	x tenuifolia
	x mlokosewitschii
arietina	x decora
	x macrophylla
	x mloko.
	x officinalis (several forms)
	x Otto Froebel
	x triternata
	x Willmottiae

Bakeri	x Mloko
	x officinalis
Beresowskyi	x Emodi (Late Windflower)
	x Mloko
Broteri	x Emodi
	x Mloko
	x triternata
Browni	x Veitchi x Otto Froebel
Corallina	x macrophylla
	x Mloko & reciprocal
	x officinalis
	x tenuifolia
	x Woodwardi
Coriacea	x officinalis
Corsica	x macrophylla
	x Mlokosewitchii
	x triternata
Cretica	x Mloko
	x officinalis
	x Otto Froebel
decora	x macrophylla
	x microcarpa
	x officinalis
	x peregrina
Emodi	x Veitchi (Early Windflower)
	x Mloko
	x Otto Froebel
	x tenui
false lobata	x Mloko
	x macrophylla
	x Wittmanniana
(tenui Hybrida	x Wittmanniana
lobata	x officinalis F2
macrophylla	x microcarpa
	x Mlokosewitschi
	x officinalis F2
	F3 and back-crosses
	x Otto Froebel F2 F3 back-crosses
	x Russi major
	x Willmottiae
	x Wittmanniana
microcarpa	F2 x officinalis
	x tenuifolia hybrida
	x Willmottiae
	x Wittmaniana
Mlokosewitschi	x obovata japonica
	x officinalis
	x Otto Froebel
	x peregrina
	x Russi major
	x tenuifolia
	reciprocal F2 Mloko x tenui
	F2 tenui x Mloko
	F3 Mloko x tenui
	F3 tenui x Mloko
	x tenui rosea
	x triternata
	x Trollius, Orange Prince
	x Veitchi F2
	x Wittmaniana
	x Woodwardi
obovata Japonica	x tenuifolia
officinalis	x officinalis (various forms)
	x Otto Froebel
	x peregrina
	x tenuifolia hybrida
	x Veitchi
	x Willmottiae F2
	x Wittmanniana F2 reciprocal
Otto Froebel	x tenuifolia
	x tenui hybrida F2
	x tenuifolia latifolia
	x triternata
	x Veitchi
	x Willmottiae
	x Wittmanniana
	x Woodwardi
Ozieri alba	x tenuifolia
tenuifolia	x tenuifolia (various forms)
	x triternata
	x Veitchi
	x Woodwardi

Tenui hybrids	x Wittmanniana
Veitchi	x Woodwardi
	x Willmottiae
Willmottiae	x Wittmanniana

Notebook No. 1

albiflora
- x anomala
- x arietina
  - F2 reciprocal
- x Bakeri
- x Beresowskyi
- x Broteri
- x Browni
- x Corallina
- x coriacea
- x corsica
  - F2
- x cretica
- x decora
  - F2
- x decora alba
  - F2
- x Emodi
  - F2
- x "false lobata"
  - F2
- x lobata Perry
- x lobata 5267
- x lobata reciprocal
- x lobata F2
- x macrophylla
- x macro. reciprocal
  - F2
  - F2's of reciprocal
  - F3
  - back crosses, etc.
- x microcarpa
- x Mlokosewitschi
- x obovata Japonica
- x officinalis alba plena
  - " alba single
  - " F2
  - " anemoneflora
  - " Blanda
  - " Ceres
  - " Charmer
  - " Etoile de Pluton
    - F2
  - " Fire King
    - F2
  - " Lize van Veen

albiflora
- x officinalis rosea plena
  - F2
  - " rubra plena
    - F2
  - " Sabini
    - F2
  - " Crimson single
    - F2
    - F3 back-crosses
  - " The Sultan
  - " 3738
    - F2
  - " 004
- x Otto Froebel
  - - reciprocal
  - F2 albi x o.F
  - F2 reciprocal
  - F3 albi x o.F
  - F3 reciprocal
  - back crosses
- x Ozieri alba
- x paradoxa
- x peregrina
- x pubeus
- x Russi major
- x sessiliflora
- x tenuifolia
  - F2
  - reciprocal
- x tenuifolia hybrida
- x triternata (albiflora x Veitchi)
- x Willmottiae
- x Wittmanniana
  - reciprocal
  - F2 albi x Wittmann.
- x Woodwardi
  - F2
  - F3

Triple and quadruple crosses at end.

PLANTS of the PRESENT GENERATION

We don't have access to the records of Mr. Auten, Glasscock, Bockstoce, Mains, White, etc. Actually, only Professor Saunders' records are available. With the passing of these hybridists we can say the old order has passed.

The "now" generation of hybridists will not be listed lest haply some would be left out. Instead, a list of hybrids that are being used and are available will be listed as represented in my garden. The real value of these is their gene contents along with their great fertility. You Paeonians and peony enthusiasts should — and must — add to this list!

Sable - 5 or 6 plants - Glasscock
fertile hybrid - single, almost black

Water Soaked (Roy Pehrson's) - 3 plants
dark red single - very good hybrid

Lord Cavin - 1 plant
lactiflora double, fertile, white with red streaks

Miss America x Good Cheer (Don Hollingsworth)
Nice red but not fertile

Moonrise x Paula Fay (Don H.)
beautiful flower but not very fertile

Westerner x Good Cheer (Don H.)
bright red

Miss America x Good Cheer (Don H.)
no seeds

Tow Head - at end of row (Don H.)
One of Don's introductions. He changed its name — ask him.

Don's #206 (Don H's named Itoh)

Don's Yellow Emperor - 1 plant Itoh
One of Sairnow's introductions

101 Bicolor - Sanctus x Silver Dawn
Great for hybridizing

102 Pink and Cream - a Quad F3

103 Double Yellow - Quad F3 x Silver Dawn F3

104 Quad F3 x Silver Dawn F3

105 White Double Moonrise x Archangel
Flowers almost yellow - very fertile

106 Quad F3 x Moonrise F2 - 3 plants
Cream, fertile, and excellent plant habit

107 White Double (Semi-single)
Not too fertile - early

108 Archangel X Nancy (cardboard)

109 Cactus single lactiflora

110 and 111 Red Jap lactiflora (few seeds)

112 Quad F3 x Moonrise
Tall plant with large white flowers ¡ª good

113 Sable x Super D - Clone #1 - row of plants from this clone
Tall, single red flowers

114 Sable x Super D - clone #2
Same as above but more fertile - tetraploid

115 Roy Pehrson's Itoh - no good - measles
Lactiflora x T.P. mix so - a suffruticosa Itoh

116 Roy's Itoh - incomplete flowers
Lacti x T.P. mix

117 Roy's Itoh - no good - measles, incomplete flower, no seed

118 - Roy's lobata (sent for an Itoh)
Dark red, single, but not fertile

119 Windflower F2 (Roy Pehrson's)
Sets seeds but pollen no good

120 Quad F3 x Moonrise - a row of semi-double peach flowers.
Should be introduced. Fertile - should be used for hybridizing.

121 Petite Rene x #8969 - very early - heavy flower - sets seed
Poor red color

122 Quad F3 x Moonrise F2 - a row of seedlings - tall - mixed colors

123 Quad F3 x Moonrise - same as above
Dandy full double yellow - small flowers on excellent plant. Don't know if fertile.

Lullaby
Lois' Choice
Cream Delight
Douglas Brand
Paula Fay
Nancy Nichols
Roy's Silver Dawn - seedling
Princess Margaret
Sunny Boy - sick
Greta - sick
Heidi - Rogers
Sugar and Spice - Rogers
Sunny Girl
Nippon Gold
Mikado
Sunny Boy - Don H.
Silver Dawn (Roy) - Don H.
Halcyon
Anomala
P.C. Silver Dawn F3
P. Decora
Small yellow seedling
Alice Harding T.P. hybrid
White T. P. single
Purple T.P. x lutea hybrid
Roy's Red Itoh
Kamada Fuji
T.P. seedlings
Laura Dessert x Emodi
P. officinalis Alba (Kees - Holland)
Yellow double seedling
Rusty
Similar to Sparkling Windflower
P.C. Itoh Glory White
P. C. Itoh Glory Yellow
T.P. Purple - from Holland, MI
T.P. White - from Holland, MI
Lutea Hybrid - Itoh
Cream single
Northern Lights (Saunders)
Emodi x Mloko
Lacti
Pink single
Burma Ruby
P. C. Rose single
105 White double
123 Peach
T.P.'s
lobata double
America - Roy K.
Burma Midnight - Roy K.
Dad
Dad F2
Silvia S's Nosegay
Silvia S's Moonrise
Horizon x Silver Dawn
Roselette
Halcyon (Rogers)
Peregrina
Potanini
Red Charm
Fire Flame
Picotee
Camelia
Hollingsworth #305
T.P.s
Petite Rene x 8069
Don's F2B x Choni
Amber Moon x F2A

FUTURE GENERATION

We are now in a position to go ahead full speed with our hybridizing. We have a great gene pool and have learned enough in the past few years in hybridizing for a grand rush in new clones. Great quantities of advanced generation hybrid seeds which are being distributed at very small cost of packaging and postage makes it possible to begin or continue peony propagation in a big way.

Many hybrids that Professor Saunders succeeded in making were lost because they lacked hardiness. Most of the species of peonies from the Caucasus area are tender being able to endure only a limited amount of freezing. While some of them did survive for a time (e.g. *P. mlokosewitschii*) they never did prosper. This condition has not changed but with protection (greenhouse) or utilizing more southern areas of our country, the peony growing area could possibly be extended.

A great deal of energy should be expended on the Itoh cross! The plants of this cross are very good (extra special) and the flowers have good substance and they are long lasting even as cut flowers. Most of the clones are not tall but really robust. Full doubles in yellow, also white and a number of them have smaller flowers that are singles of various colors. These are altogether a wonderful addition to the peony genus. The cross is lactiflora x lutea hybrid. Roger Anderson has a clone, '**Martha W.**' which is a lactiflora that gives good results when pollinated with lutea hybrid pollen. Other lactifloras give mediocre results.

A similar cross is lactiflora x suffruticosa. This cross had been done on a grand scale by the late Roy Pehrson. Strange, it seems to me, that this one gives seedlings that have very poor incomplete flowers. His plants were labeled lacti x T. P. mix. Another disconcerting feature is that most of them develop what he called "measles", spotted foliage which worsens as the season progresses. But some of the seedlings are good, giving us encouragement to continue this cross!

He who would like to experiment should try herbaceous tetraploids x lutea hybrid pollen; tetraploids x suffruticosa; and tetraploids x *P. potaninii* tall yellow.

One far-out cross I'd like to try that hopefully would give a different form of peony is that of *P. potaninii* x *P. tenuifolia*. Both species are stoloniferous; that is, produce underground shoots that produce plants a short distance from the mother plant. Maybe, just maybe, the resulting seedlings would produce short (6") stems, small flowers and form a thicket suitable for ground cover. However, very little, if any, success has been had in crossing *P. potaninii* with anything!!

Along the same line, some lutea hybrids have stolon characteristics and should be used as pod (seed) parent with tenui for pollen, this cross being similar to the one above, though possibly a little less difficult. I would expect the resulting seedlings to form a hedge about a foot high.

What far-out ideas do you Paeonians have?

One area of endeavor that could be greatly expanded is suffruticosa species. Having raised a good number of them, I find that they rate very highly and could even surpass the Jap T.P.'s through selection and propagation. And we then could have American names. Present day suffruticosa flowers are tops, no other flower superior, but they do need some coddling. Let's develop a robust strain!

5831 North Colrain Avenue
Kansas City, Missouri 64151

February 25, 1989

Chris Laning
Kalamazoo, Michigan

Dear Chris:

Thanks very much for sharing the information on "Park's Plant Protector." And, I do have some responses to your questions.

First, for the benefit of anyone else who may see these comments, the plant protector is a thin blanket of synthetic material which is porous, letting air and moisture through, and is translucent, allowing light through. It is advocated by the supplier for covering plants as a means of lengthening the growing season. Being light weight it is supposed to need no support, simply let it lay on the plants and secure the edges.

What about the possibility of using a blanket of this material over peony plants being used for seed production from controlled crosses, with the idea of isolating the flowers from insect carried or windblown pollen? You also asked whether it is known for sure that wind transfer of pollen is much of a factor in peonies.

Of the last, I know of no conclusions that anyone has drawn with respect to wind pollination in peonies. Common sense supports that it must be a factor, particularly for plants which are in close proximity. However, it seems to me that peony pollen is coarser and heavier than pine tree pollen, for example, which seems to permeate the air while it is present and might be carried for quite long distances. I feel that insects are probably the principal source of cross pollination, while both gravity and insects would be involved heavily in self-pollination. Another source, subtle though it may be, is the unintentional transfer of unwanted pollen on the skin, clothing and tools of the hybridist.

With respect to insects, crawling insects can be a factor just as can those which fly about, such as bees. Further, bees seem to prefer other flowers to peonies, because, while they work the pollen of early peonies quite heavily, later in the season they don’t seem to be around the peonies so much. That is how it seems to be here. I am led to suppose they get some flowers more to their liking later in the season.

The blanket should be very effective at keeping insects out once in place. The trick may be getting them out until the blanket is secured at the edges.

Another complication might be that the flowers don't open uniformly on some varieties, though this isn't much of a factor once the daytime high temperatures get stepped up fairly high. Most years that happens fairly early in the peony season here. When they don't open uniformly this means more than one entry to the flowers for pollination and exposure to additional insect entry.

Nevertheless, the idea of working up a capability to do some mass pollinations without having to strip the flowers is quite appealing.

The flower types of Japanese, anemone and bomb in clones (varieties) which give good stigmas and good carpels a high percent of the time could be selected and planted in rows or blocks which fit the dimensions of the material available. These varieties will necessarily have to be those which do not shed pollen of their own production. That is a problem with some of the Japanese form flowers, those which have the yellower center segments — staminodes.

Additional protection from contamination can be obtained by coating the stigmas heavily with the chosen pollen as soon as the flowers open. That requires a pollen source which is abundant, even though not highly viable.

It seems to me that one could work up a trial based on common sense techniques that would give a better idea of what can be accomplished. Necessarily, it will take a few seasons to establish a trial from scratch. Therefore, the first trials are more likely to happen on an opportunistic basis.

Chris, you mention having a row of '**Mikado**' plants. That could be just the thing for a preliminary try, provided '**Mikado**' does not produce pollen of its own, and I don't have any notes on that. I am of the impression it tends to open a high percent of the flower; about the same time, when disbudded.

I would encourage anyone who is interested to give it a try. If the goal is to set up volume seed production, then there are some other observations to be taken. Start looking at the question of what are the varieties that interest you for parents that also do not have a problem of producing unwanted pollen or one of stringing flowering out over a several day period.

Don Hollingsworth

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