

PINK DOUBLE FERNLEAFS

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Paeonia tenuifolia, also known as the fernleaf peony, is a very different peony species with lots of finely divided narrow leaflets. Most readers may know the wild form, which is a single red, or the cultivated double red 'Plena'. There's also a lesser known pink form 'Rosea' rarely available from time to time. Hans Maschke, a German hybridizer, has worked with this species for several years and the results are inspiring. A few years ago (2013) he reported on this cross in the American Peony Society Bulletin. Hans has kindly given me permission to post that article here, for which I'm grateful. Please leave your comments below if you might have further questions or if you'd like to say whether these plants are welcome in your garden, they are something completely new in the peony world and very promising if you'd ask me. Hans is considering an update on the article with his latest experiences. He is still working to improve upon this cross, with some help from Wolfgang Giessler, from the [German nursery of the same name](#), to introduce the white form, [Weisse Perle](#), in the strain as well. For more pictures or even more crosses from Hans you may wish to visit his own website (in German, but with many pictures, the crosses are on the left):

http://www.andreas-maschke.de/wordpress_paeonien/

You can click on any of the images below to see a larger version of it.

Hans Maschke - The Long Road to Pink Double Fernleaves((footnote:Maschke, H. "The long road to pink double fernleaves."
In: *American Peony Society Bulletin*, 2013, no 368, December, pp. 12-18.))

This plant from a backcross with var. 'Plena' is very vigorous and has pushed its competitors aside

The fernleaf peony (*Paeonia tenuifolia*) is well known and widely appreciated and will need no further introduction here. In addition to plants with single red flowers, typical of the species, a double red (var. 'Plena') and a single pink form (var. 'Rosea') exist. Hereafter in this article, the mentioning of these variety names will always refer to the pink or double clones presently offered in commerce. Rumors about white singles and pink doubles have been confirmed not long since. Recently, the pure white selection 'Weisse Perle' (Giessler 2013), with first bloom in 2009, was registered with the American Peony Society. In 2010, Leo Smit of Canada found a double pink fernleaf among his plants grown from seeds, which he had purchased in England. This story is told on the website of the Heartland Peony Society. Significant advancements in fernleaf peonies seem to be underway.

In the 1980's I purchased the red double and the pink single from Heinz Klose (now deceased) of Lohfelden, Germany. I have never had any other *P. tenuifolia* in my garden than just these two plants and their progeny. Around 1990, I pollinated var. 'Plena' with var. 'Rosea', just to toy with them I guess. All the resulting plants bloomed single and red. Disappointing perhaps, but soon I had other problems. We had to move our garden to another location and at the end there were only two seedlings left of that cross (TF-1 and TF-2). But I had learned by then that my result was typical for dominant-recessive inheritance.

Some understanding from genetics

Basic genetics teaches us that genetic information in plant cells comes in duplicate. A homozygous plant with single flowers has the gene *S* in twofold at the pertinent chromosomal location (*SS*). A double form has *dd* there instead. One gene from each of the parents is passed on to their offspring. Thus, when a single is crossed with a double, all seedlings will have the genetic configuration *Sd*. Such plants are called heterozygous. If the inheritance pattern is dominant-recessive and *S* is dominant, the flower will be single. When two such heterozygous plants are intercrossed, there are several possibilities for the genes to recombine: *Sd* x *Sd* may give *SS*, *Sd*, *dS* or *dd*. All outcomes of combinations will have equal probability. *Sd* is the same as *dS*, so we get 25 % *SS* (single), 50 % *Sd* (single) and 25 % *dd* (double).

In the pink single *tenuifolia*, the genes *pp* for pink will be present instead of *RR* for red at the location where color is determined (with *R* being dominant). If a red double is crossed with a pink single, two mechanisms of heredity run simultaneously and independently: *ddRR* x *SSpp* inevitably gives 100 % *SdRp*, meaning 100 % single red flowers. In the second generation (*F2*), we get a diversity of combinations: *SdRp* x *SdRp* gives 6.25 % *SSRR* (single red), 12.5 % *SSRp* (single red), 6.25 % *SSpp* (single pink), 12.5 % *SdRR* (single red), 25 % *SdRp* (single red), 12.5 % *Sdpp* (single pink), 6.25 % *ddRR* (double red), 12.5 % *ddRp* (double red) and finally 6.25 % *ddpp* (double pink). Thus, a pink double may come from crossing two red singles!

Pursuing the double pink

I got my first *F2* seedlings shortly after the turn of the millennium, but luck wasn't on their side. Few of them reached maturity, because of neglect due to the sheer lack of time which I constantly suffered back then. Anyway, I found a double red (TF-4) and two single pinks (TF-6, TF-7) among these *F2* plants and this confirmed my underlying assumption.

My first double *F2* seedling TF-4 showed up in 2008

TF-6 is a very compact plant with a good performance after dividing and replanting

A batch of seeds planted in 2005 met a better fate. Flowering began in 2011 with two pink singles (undistinguishable from var. 'Rosea') and five or six red singles out of approximately 60 seedlings. This was not disappointing, since I wouldn't count on doubles among the first 10 or 15 percent of first blooms in any batch of seedlings from which 25 percent can be expected to be double. I think it is common for singles to show up first.

In the following year (2012), two nice pink doubles appeared (TF-8, TF-9). A third one joined the group in 2013 (TF-10,). Most of the seedlings of 2005 have flowered now. Next to the pink doubles, there are about 10 pink singles and 10 red doubles as well as some 30 single reds. This corresponds very nicely with the earlier lesson in basic genetics.

In 2012, TF-8 and TF-9 showed one and two flowers, respectively. Both were transplanted in the following fall since they stood rather crowded in their bed.

Pink double fernleaves

In 2013, the respective numbers were six and three, joined by another three from TF-10. I happily report that the vigor of these plants seems to be good. As yet, the pink doubles bloomed together with var. 'Plena' or perhaps even a little earlier. On an average, the flowers of these seedlings are much alike, but there are also differences. TF-8 and TF-10 have flowers roughly as large as var. 'Plena' with a color similar to var. 'Rosea' while the substance is better. TF-9 has slightly smaller flowers which are a little "feathery" and the color is more intense. Time will show how constant these traits are and if maybe there are even more differences .

The flowers of TF-8 were always bagged to prevent unwanted pollination. TF-8 has been registered as Little Erna.

TF-9 is the only pink double which proved fertile with other pinks, so far

The byproducts

As can be derived from the above, 75 percent of the F2 generation is heterozygous. In other words: genetically different from both the wild form, the var. 'Plena', and the var. 'Rosea'. Hence, one can expect some variation in appearance as well. This proved to be true. Several of the single reds have larger flowers compared to the wild form, sometimes with extra petaloids. Many of the plants are more compact growing than the already known, existing forms. The red doubles slightly vary in size, doubleness and depth of color. Some have flowers which also look "feathery", while others carry large, massive globes which can well compete with the var. 'Plena'. Meanwhile it has become obvious to me that TF-4 is heterozygous of the type ddRp. This seedling blooms a little later than var. 'Plena', the plant habit is slightly more compact and the flower color is somewhat lighter.

Some of the pink singles are clearly different from var. 'Rosea', especially TF-6 and TF-7. I suspect these plants are most likely heterozygous of the type Sdpp. The petals of the flowers of both TF-6 and TF-7 have a heavier substance than the petals of var. 'Rosea'. For TF-6, this makes the flower color appear somewhat opaque. This plant is of the dwarf-type and forms an exceptionally nice little bush. The flowers of TF-7 are larger than usual. They look rather massive and have a distinctly deeper color, which is particularly impressive on opening. The shape of the bush is also nice. As it seems, quite a few fine garden plants can be expected from the F2 generation, aside from the pink doubles.

TF-7 excels with rather massive flowers in a stronger pink

What the future holds

Clearly, the present results are very encouraging for further breeding. One promising prospect will be a larger share of pink doubles. While this is 6.25 % in the F2 generation (TF-2 x TF-1), using TF-4 as the seed parent (TF-4 x TF-1) will likely result in doubling this outcome (12.5%). The cross TF-4 x TF-6 will expectedly yield a share of 25% pink doubles. Finally, crossing a pink double with a heterozygous pink single should result in 50% pink doubles with the balance being pink singles. I tried all possible matings with TF-8 through TF-10 as seed parents and TF-6 or TF-7 as pollen parents and got a surprising result: TF-8 and TF-10 completely refused the pollen applied. It is comforting under these circumstances that TF-9 proved fully fertile with both TF-6 and TF-7. It's also comforting that all three pink doubles were fertile with *Paeonia mlokosewitschii*. This might bring new qualities into the tenuifolia-mlokosewitschii hybrids. Meanwhile, I have also made some other crosses, among them backcrosses with the original varieties. Maybe the results of further breeding will exhibit still more variation in color, shape and habit. This can be particularly hoped for from plants with one of the newly found white-flowered forms in the parentage.

TF-10, now registered as Aunt Fritzi, bloomed first in 2013.

It can be anticipated that in a not too distant future there will be a considerable number of red double, pink single and pink double tenuifolias. How to name all these plants? In 1838, when the renowned British botanist David Don described the var. 'Plena', it was common practice to rely on Latin cultivar names. This is not allowed anymore. At all events, the best seedlings will get names in accordance with the rules of the International Cultivar Registration Authority (ICRA) for peonies, which is the American Peony Society. What will become of the plants that are not distinctive enough to register and not poor enough to throw away? Considering the rather low multiplication rate of tenuifolia clones, it could be an option to sell them as unnamed seedlings. One can only speculate what will happen in time with the traditional varieties from which all this began. Will they stand their ground and keep their identity, or will they drown in a flood of newcomers?

Author's Note: Thank you to Ruud Warmerdam for his help in writing this article.