

Rhododendron tomentosum crossed by lepidote species and hybrids, results on seed germination and ploidy tests

Kristian Theqvist 28-Feb-2024

In the period from 2003 to 2006, I conducted controlled crosses involving *Rhododendron tomentosum* as the seed plant. The trusses underwent emasculation and were safeguarded with paper bags both before and after pollination. Non-pollinated stigmas were utilized as a control.

The ploidy numbers presented in this report were obtained through flow cytometry (FCM) tests conducted at Coimbra University, led by João Loureiro, as part of a project overseen by John Perkins (USA). Values from other FCM sources are provided in parentheses. It is important to note that the older chromosome counting results published by Ammal et al. in 1950 were found to be unreliable and are not considered in this study.

Rhododendron tomentosum was identified as tetraploid ($4x$, $2n = 52$). This species exhibits narrow leaves with long red-brown hairs on the underside, particularly concentrated on the midrib. Short white hairs and glossy glands (scales) are also present on the underside.

The conducted crosses demonstrated that *Rhododendron tomentosum* successfully hybridizes with various other lepidote *Rhododendrons*. However, the outcomes did not yield horticulturally significant plants. It is suggested that further hybridization with a second generation could potentially lead to more noteworthy and interesting results.

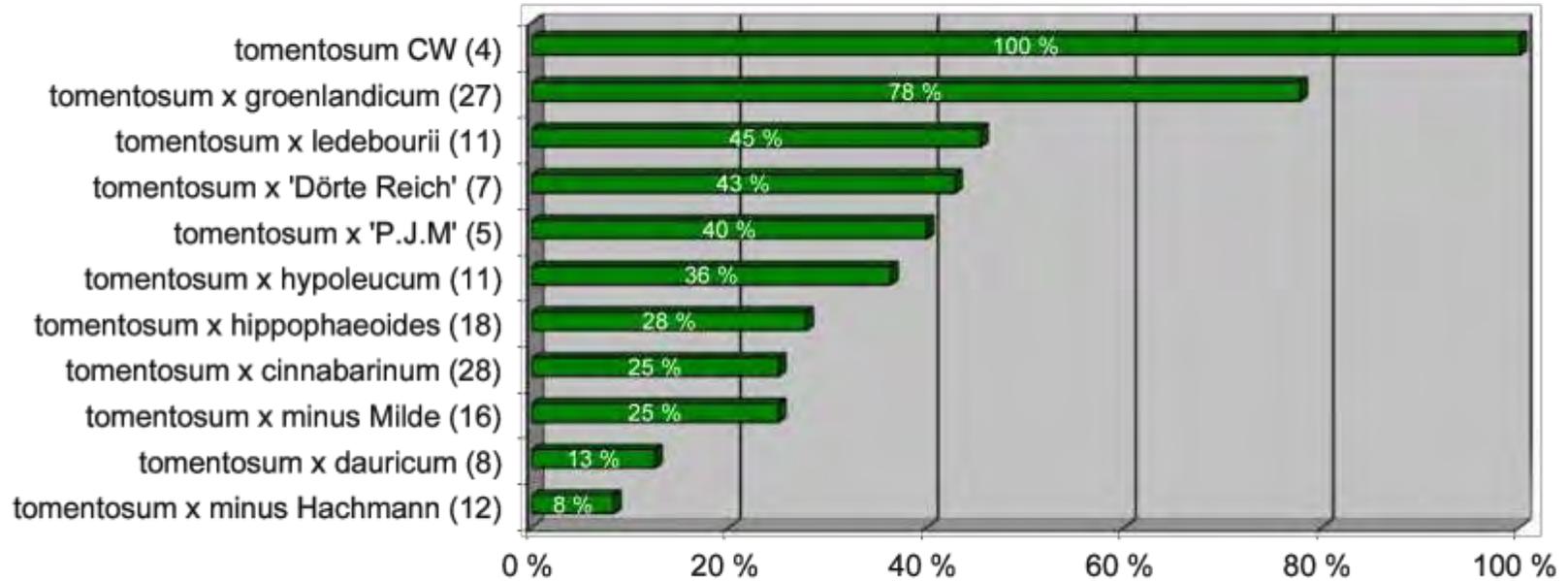


R. tomentosum × 'Flämingperle'

In July 2008, I gathered leaves from several of my *R. tomentosum* cross plants, arranged them on a blank piece of paper, and captured a photograph to facilitate a more straightforward comparison of the diverse leaf forms with the mother plant *R. tomentosum*, as well as two other Ledums, namely *R. groenlandicum* and *R. diversipilosum* 'Milky Way'. The photograph specifically showcases the undersides of the leaves. It's important to note that these leaves were obtained from new growth, and therefore, they do not exhibit the mature leaf's full range of colors, hairs, and glands. Additionally, some of the leaves appear to be without hairs.

Number in the picture	Species or cross
1	<i>tomentosum</i> CW
2	<i>groenlandicum</i> CW
3	<i>diversipilosum</i> 'Milky Way'
4	<i>tomentosum</i> × 'Dörte Reich'
5	<i>tomentosum</i> × <i>veitchianum</i>
6	<i>tomentosum</i> × <i>veitchianum</i>
7	<i>tomentosum</i> × <i>impeditum</i>
8	<i>tomentosum</i> × <i>groenlandicum</i>
9	<i>tomentosum</i> × <i>diversipilosum</i> 'Milky Way'
10	<i>tomentosum</i> × <i>cinnabarinum</i>
11	<i>tomentosum</i> × <i>cinnabarinum</i>
12	<i>tomentosum</i> × <i>minus</i>
13	<i>tomentosum</i> × <i>tapetiforme</i>
14	<i>tomentosum</i> × <i>concinnum</i> var. <i>pseudoyanthinum</i>
15	<i>tomentosum</i> × <i>ambiguum</i>
16	<i>tomentosum</i> × <i>yunnanense</i>
17	<i>tomentosum</i> × <i>spinuliferum</i>
18	<i>tomentosum</i> × 'Princess Anne'
19	<i>tomentosum</i> × 'P.J.M. Elite'
20	<i>tomentosum</i> × <i>ledebourii</i>
21	<i>tomentosum</i> × <i>dauricum</i>
22	<i>tomentosum</i> × <i>leucaspis</i>

Statistics on survival of *R. tomentosum* crosses after 3 winters outside
Kristian Theqvist 15-Jul-2008



Note. The amount of plants in some groups is too small to get definite conclusions.
A lot of seedlings were miniatyre and not growing well. These died during the winters.
Number of total seedlings within each group at start is given in parenthesis.

Conclusion

After three years, a majority of the hybrid plants had died when they were planted outdoors. It is clear that the hybrids were less hardy than the mother plant, *R. tomentosum*.

	 <p style="text-align: center;"><i>Rhododendron tomentosum</i></p>	
<p><i>Rhododendron tomentosum</i> flower trusses</p>	<p><i>R. tomentosum</i> leaf underside</p>	<p><i>R. tomentosum</i>, hairs and glands on leaf underside</p>

Click on the images to see them larger.

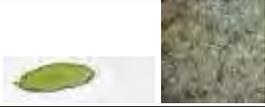
Cross (<i>t.</i> = <i>tomentosum</i>)	FCM ploidy (x) of pollen parent	Seeds	Seed germination	FCM ploidy (x) of seedlings	Comments on leaves, hairs and glands, and other things	Links to photos
<i>t.</i> × <i>ambiguum</i>	6x	Yes	Yes (40%)	4x	A bit wider leaves than <i>tomentosum</i> , red brown hairs on midrib, short white hairs and glossy glands	
<i>t.</i> × <i>augustinii</i>	4x	Few	Only one	Not tested		
<i>t.</i> × <i>burmanicum</i>	?	Yes	Yes	Not tested		
<i>t.</i> × <i>calostrotum</i> <i>ssp. keleticum</i>	4x	Few small	No			
<i>t.</i> × <i>chengshenianum</i> (<i>ambiguum</i>)	6x? (6x)	Few small	No			

<i>t. × cinnabarinum</i> var. <i>cinnabarinum</i>	8x? (6x)	Yes	Yes (100%)	4x	Wider than <i>tomentosum</i> leaves, red brown hairs on midrib, short white hairs and glossy glands	
<i>t. × cinnabarinum</i> var. <i>xanthocodon</i>	?	Yes	Yes (40%)	Not tested		
<i>t. × concinnum</i>	6x	Few	2 seed plants	4x	Wider than <i>tomentosum</i> leaves, red brown hairs on midrib, short white hairs and glossy glands	
<i>t. × concinnum</i> var. <i>pseudoyanthinum</i>	6x?	Few	3 seed plants	4x	Somewhat twisted and wide leaves, red brown hairs on midrib, short white hairs and glossy glands	
<i>t. × dauricum</i>	2x	Yes	Yes (22%)	Not tested	Some seed plants were without hairs!	
<i>t. × dendrocharis</i>	2x	Yes	Some seed plants	Not tested		
<i>t. × desquamatum</i> (<i>rubinigosum</i>)	6x	Yes	Yes (23%)	Not tested		
<i>t. × diversipilosum</i>	4x	Yes	Yes (80%)	4x	Wide leaves, a long red brown hairs on midrib, scattered red brown and densely short white hairs and glossy glands on underside	
<i>t. × diversipilosum</i> 'Milky Way'	4x	Yes	Yes (90%)	4x	Wide leaves, a lot of red brown hairs on midrib, densely quite long white hairs and densely glossy glands	
<i>t. × edgeworthii</i>	?	Yes	Some seed plants	Not tested		
<i>t. × fastigiatum</i>	4x	Yes	Yes (63%)	Not tested	Several seed plants had shiny leaves.	
<i>t. × ferrugineum</i>	2x	Yes	Few seed plants	Not tested		

<i>t. × groenlandicum</i>	4x	Yes	Yes (90%)	4x	Wide large leaves, a lot of red brown hairs on midrib, scattered red brown and densely short white hairs and glossy glands on underside	  
<i>t. × hanceanum</i> 'Canton Consul'	?	Yes	Yes (66%)	Not tested	Large variation, some with twisted leaves	
<i>t. × hippophaeoides</i>	2x	Yes	Yes (77%)	Not tested	Very large variation, mostly vigorous, some weak ones	
<i>t. × hirsutum</i>	2x	Few	2 seed plants	Not tested		
<i>t. × hypoleucum</i>	4x	Yes	Yes (55%)	4x	Small leaves, some red brown hairs on midrib, short white hairs and scattered glossy glands	  
<i>t. × impeditum</i>	4x	Yes	Yes (43%)	4x	Small leaves, red brown hairs on midrib, short white hairs and glossy glands	   
<i>t. × keiskei</i> 'Yaku Fairy'	2x	Yes	4 seed plants	Not tested		
<i>t. × lapponicum</i>	2x	Yes	Yes (60%)	Not tested	Most seed plants with small leaves	
<i>t. × lapponicum</i> var. <i>parvifolium</i>	2x	Few	4 seed plants	4x	Small, wide leaves (some distorted), long red brown hairs on midrib, short white hairs and small glossy glands	  
<i>t. × ledebourii</i>	2x	Yes	Yes (30%)	Not tested	Large variation, some with leaves without hairs	
<i>t. × leucaspis</i>	(2x)	Yes	Yes (80%)	4x	Wide leaves, red brown hairs on midrib, short white hairs and glossy glands	  
<i>t. × lindleyi</i>	(2x)	Yes	Yes (60%)	Not tested	Large variation, several with large leaves, some small ones with distorted leaves	
<i>t. × minus</i> (Milde)	2x	Yes	Yes (72%)	Not tested	Wide leaves	

<i>t. × minus</i> (Gothenburg)	2x	No				
<i>t. × minus</i> (Bergianska)	2x	Yes	No			
<i>t. × minus</i> (Hachmann)	2x	Yes	Yes (100%)	Not tested	Wide, a bit distorted leaves	
<i>t. × mucronulatum</i> var. <i>chejuense</i>	2x	Yes	Few	Not tested		
<i>t. × oreotrephes</i>	8x?	Yes?			Swelling seed pods dissappeared	
<i>t. × polycladum</i>	2x	Yes	Yes	Not tested		
<i>t. × prostratum</i>	?	No				
<i>t. × russatum</i>	4x	Few	3 seed plants	Not tested		
<i>t. × russatum</i> var. <i>cantabile</i>	4x	Yes	Only one weak plant	Not tested		
<i>t. × saluenense</i>	?	Yes	Yes (63%)	Not tested	Small leaves, and on some seed plants with long distorted leaves	  
<i>t. × sargentianum</i>	2x	Few	No			
<i>t. × subarcticum</i>	2x	Yes	Yes (37%)	3x	Small leaves like <i>subarcticum</i> , red brown hairs on midrib and on edges, short white hairs and glossy glands on underside	  
<i>t. × spinuliferum</i>	(2x)	Few	6 seed plants	Not tested	Small leaves, red brown hairs on midrib, barely noticeable short white hairs and glossy glands	  
<i>t. × tapetiforme</i>	4x	Yes	6 seed plants	4x	Narrow leaves, red brown hairs on midrib, short white hairs and densely glossy glands	  
<i>t. × tsaii</i>	4x	Yes	Yes	Not tested		
<i>t. × veitchianum</i>	(2x?)	Yes	Yes (60%)	Not tested	Wide leaves, some red brown hairs on midrib, barely noticeable white hairs and glossy glands	  
<i>t. × yungningense</i>	4x	Yes	Yes	Not tested		

<i>t. × yunnanense</i>	(4x)	Yes	Yes (43%)	4x	Large and wide leaves, red brown hairs on midrib, very short white hairs and glossy glands	
<i>t. × 'Aquamarin'</i>	4x	No	No			
<i>t. × 'Biskra'</i>	(6x?)	Yes	Yes (55%)	Not tested	Large variation, some wide, some small, some twisted leaves	
<i>t. × 'Biskra' x cinnabarinum var. xanthocodon</i>	(6x?)	Few	1 seed plant	Not tested		
<i>t. × 'Blumiria'</i>	4x	Few	5 seed plants	Not tested	Wide leaves, some very twisted leaves	
<i>t. × 'Charme La'</i>	4x	Yes	Yes	Not tested		
<i>t. × 'Countess of Haddington'</i>	(2x?)	Few	No			
<i>t. × 'Curlew'</i>	(2x?)	Few	No			
<i>t. × 'Dörte Reich'</i>	8x	Yes	Yes (67%)	4x	As a young plant <i>tomentosum</i> × 'Dörte Reich' had huge leaves compared to <i>tomentosum</i> . The flowers are white very similar to <i>tomentosum</i> flowers. The cross is clearly a hybrid, but with no special garden merit. Fertile and gave seeds that germinated.	 (seedpods from selfed)
(<i>t. × 'Dörte Reich'</i>) x (<i>t. × 'Dörte Reich'</i>)	4x	Yes	Yes	4x	Plant 7. Large wide leaves, long red brown hairs, barely noticeable short white hairs and scattered glossy glands. Plant 11. Wide roundish leaves, only few red brown hairs, no short white hairs and scattered glossy glands.	

<i>t.</i> × 'Flämingperle'	4x	Yes	Yes (53%)	Not tested	Large variation. Several plants without hairs. One plant with nice white flowers, different from <i>tomentosum</i> . Unfortunately, the plant does not exist anymore.	
<i>t.</i> × 'Isola Bella'	(2x?)	Few	3 seed plants	Not tested	Wide leaves.	
<i>t.</i> × 'Johnsonianum'	?	No				
<i>t.</i> × 'Mother Greer'	(2x)	No				
<i>t.</i> × 'P.J.M. Elite'	(2x)	Few	6 seed plants	Not tested	Large variation, mostly vigorous, twisted leaves.	
<i>t.</i> × 'Princess Anne'	(2x?)	Few	6 seed plants	4x	Wide leaves, red brown hairs on midrib, short white hairs and glossy glands.	
<i>t.</i> × 'Puncta'	?	Few	2 seed plants	Not tested		
<i>t.</i> × 'Ramapo'	?	Few	3 seed plants	Not tested		
<i>t.</i> × 'Robert Seleger'	?	No				
<i>t.</i> × 'Schneeflöckchen'	?	Few	No			