

First *Bremia lactucae* fysio identification in Brazil

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Bremia lactucae is the cause of downy mildew fungus in lettuce and is a most important disease that occurs in winter conditions, at low temperatures and high damp in Brazil. The downy mildew has been a problem for lettuce growth in the Brazilian areas since the 90's decade.

B. lactucae has a long history and fits in the "gene to gene" reaction. Every time as new resistance genes are harboured in lettuce varieties, the fungus is able to find the right virulence key to break it. These changes of the fungus are mostly due to mutations and will result in many new disguises, called races, fysio's or pathotypes. Confusion arose among growers, resistances were questioned and there was a great need to identify the *Bremia* isolates that were found. The lettuce breeding industry (in particular the companies in the Netherlands and France) took the initiative to clear the situation. The identification of the active fysio in the production area is very important. It helps to define the resistance gene(s) that will supply resistance. In Europe and USA over the years a set of resistance genes were established. This set was transformed into a sextetcode system.

Seven days after sowing in a germination box, the seedlings of the testset were inoculated and placed in a germination chamber with 13° C temperature, and 12 h photoperiod. The first seven hours after inoculation were in the dark. The inoculate had the concentration of 10⁵ spores per millilitre. The spores of *Bremia lactucae* were collected on the cultivar Lucy Brown, the most used iceberg lettuce cultivated in Brazil, found in a growing area in the Jaboticabal City, São Paulo State.

The test was evaluated 14 days after inoculation. The virulence of the fysio's in every set is analysed with scoring scale attributes: + = >80% with spores is susceptible; - = <5% plants with spores; () = necrotic reaction [red coloration] with (+) many spores or (-) some spores.

Variety	CobhamGr LSER G288	Lednicky UC DM2	Dandie R4T57D	Valmaine	Sabine	LSE 57/15 UC DM10	Capitan	Hilde II	Pennlake UC DM14	PIVT 1309	LSE /18	LS-102	Colorado	Ninja	Discovery	Argeles	Sextet code	Source
DM gene	0 0	1 2 3 4	5/8 6	7 10 11 12 13 14	15 16 17 18 36 37 38	0	1 2 3 4 5 6	7 8 9 10 11 12	13 14 15 16 17 18 19	0	1 2 4 8 16 32	1						
Sextet nr	0	1 2 3 4	5 6	7 8 9 10 11 12	13 14 15 16 17 18 19	0	1 2 4 8 16 32	1	2 4 8 16 32	1	2 4 8 16 32	1						
Value	0	1 2 4 8	16 32	1 2 4 8 16 32	1 2 4 8 16 32	1	2 4 8 16 32	1	2 4 8 16 32	1	2 4 8 16 32	1						
Bl:12	+ +	+ - - + +	+ +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	EU-A 57/63/03/00	
Brazil	+	+ + + + +	+ +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	EU-A 63/63/03/00	
CS 9	+ +	+ + + + +	+ +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	+ + + + + + +	EU-A 63/63/01/00	CS

The resulting sextetcode identification is EU-A 63/63/03/00. This is equal with the commonly found fysio in Spain in 1999 - 2001. It grows on older varieties and is persistent in that area. Our objective is to identify all the *B. lactucae* fysio's that are giving problems in Brazilian's lettuce production areas.

Keywords: *Bremia lacucae*, Lettuce downy mildew