SASA
Science and Advice for Scottish Agriculture
Agriculture, Food and Rural Communities Directorate

The Scottish Government

Potato Growing Crop Inspections in Scotland

Review of 2013 Season

GROWING CROP INSPECTIONS IN SCOTLAND – REVIEW OF 2013 SEASON

SUMMARY

- There was a 4% reduction in the number of crops entered for inspection and a 2% reduction in the area entered.
- Maris Piper regained the top spot as the most widely grown variety for seed in Scotland.
- Gemson, Innovator, Osprey and Galactica enter the 'top 30' by seed area entered for inspection.
- Significant reduction in the total area of crops downgraded and failed compared with last year.
- Downgradings and failures at their lowest levels for 10 years and 9 years respectively.
- The incidence of blackleg plummeted compared with last year with symptoms recorded in just over a third of crops, nearly half the figure recorded last year.
- Blackleg remained the most common fault observed during growing crop inspections and was the most common reason for downgrading and failing crops.
- The seed area not holding grade due to mild mosaic continued to fall, to stand at a 10 year low. However, the total seed area with mild mosaic recorded was up slightly on last year.
- The area recorded with severe mosaic declined to its lowest level recorded in any year since 2000.
- PVY^N was the most common virus detected in crops downgraded for mild and severe mosaic.
- The incidence of leafroll continued to decline, to stand at its lowest level in any year since 2000. However, there was a slight increase in the seed area not holding grade due to leafroll compared with last year.
- Rogues were the second most common fault observed during growing crop inspections with their incidence up on last year. However, the seed area not holding grade due to rogues was similar to last year.

NUMBER / AREA OF CROPS ENTERED FOR INSPECTION (Tables 1 and 2)

The total number of crops entered for inspection in 2013, stood at 4,613, down 4% on last year, while there was a 2% reduction in the area of crops entered, to stand at 10,941 ha.

Table 1 Number of crops entered for inspection

Entry class	Number of crops entered 2013	Number of crops entered 2012	Number of crops + / -	% Number of crops + / -
Pre-Basic	1,385	1,415	- 30	- 2.1
Super Elite	2,867	3,076	- 209	- 6.8
Elite	361	335	+ 26	+ 7.8
Total	4,613	4,826	- 213	- 4.4

Table 2 Area of crops entered for inspection

Entry class	Area of crops entered 2013	Area of crops entered 2012	Area + / -	% Area + / -
Pre-Basic	724	705	+ 19.1	+ 2.7
Super Elite	9,029	9,507	- 477.5	- 5.0
Elite	1,187	984	+ 202.8	+ 20.6
Total	10,941	11,196	- 255.6	- 2.3

CHANGES IN VARIETY AREAS (Table 3)

There were a total of 262 listed varieties grown in 2013, however, many of these varieties were grown in only very small areas. The combined area of the 'top 30' varieties, traditionally used for training purposes, totalled 8,372 ha, equating to 76% of the total area entered for inspection.

Maris Piper regained the top spot as the most widely grown variety for seed in Scotland, after losing this position to Hermes last year. The area of Maris Piper entered for inspection in 2013 was 1,401 ha, an increase of 10% on the area grown last year. In contrast, the area of Hermes was down by 17% (266 ha) to stand at 1,321 ha.

Table 3 Areas of the 'top 30' varieties in 2013

Variety	Area entered 2013	Change in area from 2012 (%)
Maris Piper	1,401	+ 9.9
Hermes	1,321	- 16.8
Desiree	643	- 17.9
Maris Peer	583	+ 9.3
Lady Rosetta	348	+ 12.3
Pentland Dell	299	+ 2.6
Markies	276	+ 5.7
Harmony	265	+ 15.8
Cara	261	- 0.7
Valor	231	- 5.6
Estima	219	+ 1.1
King Edward	208	+ 1.2
Burren	207	- 5.0
Atlantic	184	+ 14.6
Cabaret	176	- 8.8
Winston	164	- 4.4
Saxon	162	- 8.4
Charlotte	153	- 19.4
Rooster	147	- 0.9
Russet Burbank	131	- 24.4
Slaney	125	- 1.9
Banba	120	+ 11.5
Shepody	119	- 9.8
Gemson	111	+ 63.7
Innovator	104	+ 53.2
Wilja	103	+ 15.3
Marfona	90	- 25.2
Osprey	81	+ 11.4
Casablanca	71	- 5.8
Galactica	71	- 1.6

There were large reductions in the areas of Fontane and Melody, each down in area by more than 50% compared with last year. Both varieties drop out of the 'top 30' along with Maris Bard and Kennebec. Replacing these varieties in the 'top 30' are Gemson, Innovator, Osprey and Galactica. All four varieties make their first appearance in the 'top 30'. The areas of Gemson and Innovator were substantially up on last year, increasing by 64% and 53% respectively. Gemson, a Grampian Growers' variety, bred by the James Hutton Institute, is a Maris Peer cross, while Innovator, an HZPC russet skinned variety, was bred from parents of American and Dutch origin.

DOWNGRADINGS AND FAILURES (Table 4 and Fig. 1)

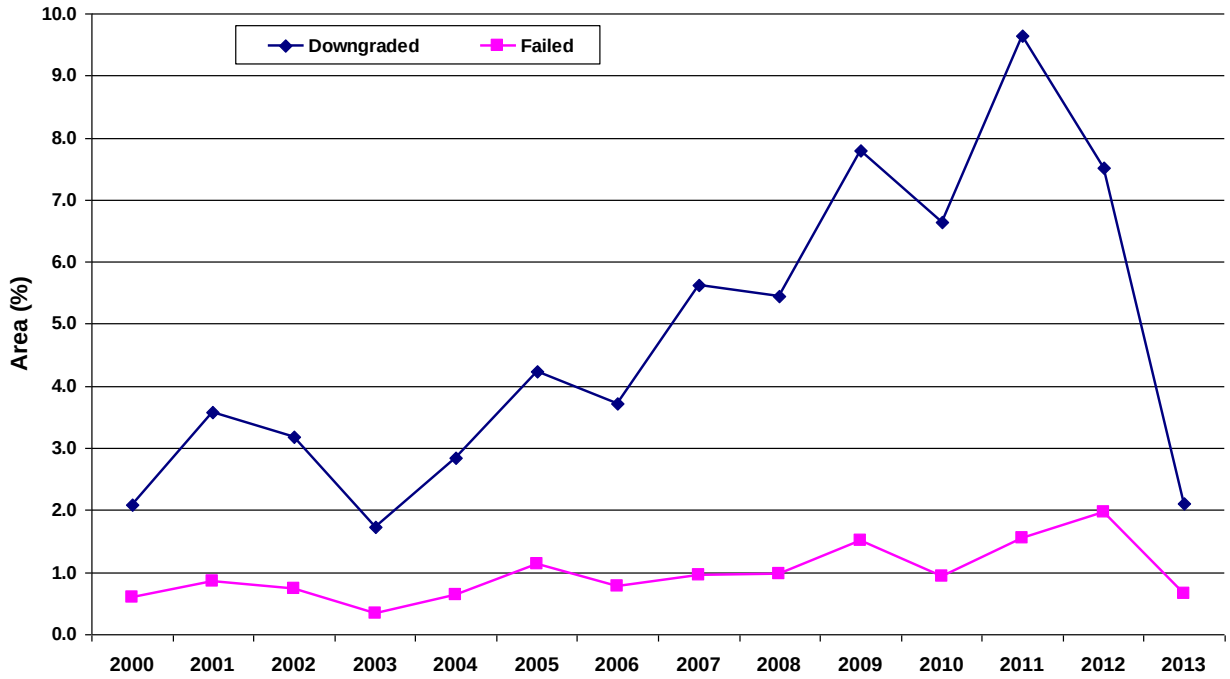
There was a significant reduction in the total area of crops downgraded compared with last year, to just over 2% of the seed area entered for inspection, down from 7.5% recorded last year. Downgradings are at their lowest level for 10 years. Just under 7% of the PB area was downgraded, down from 16.8% recorded last year; 1.8% of the SE area was downgraded, down from 7.2%; and 1.6% of the Elite area was downgraded, down from 5.7%.

The total area of crops failing to make a grade in 2013, stood at 0.6% of the seed area entered for inspection, the lowest level for 9 years. There were reductions in all 3 classification grades.

Table 4 Downgraded and failed statistics for 2013 (*figures in brackets are percentages)

	No. of crops downgraded*	Area of crops downgraded*	No. of crops failed*	Area of crops failed *
Pre-Basic	29 (2.1)	48.8 (6.7)	3 (0.2)	0.1 (0.02)
Super Elite	53 (1.9)	156.7 (1.8)	18 (0.6)	56.8 (0.6)
Elite	6 (1.7)	18.7 (1.6)	6 (1.7)	13.1 (1.1)
Total	88 (1.9)	224.2 (2.1)	27 (0.6)	70.0 (0.6)

Fig. 1 Seed area downgraded and failed (2000 – 2013)
(figures expressed as a % of seed area entered for inspection)



BLACKLEG (Table 5 and Figs. 2 to 6)

Although blackleg was still the most common fault observed during growing crop inspections, the incidence plummeted compared with last year. Symptoms were recorded in 36% of the seed area inspected, nearly half the figure of 68% recorded last year.

Fig. 2 Total area with fault recorded at Growing Crop Inspection 2013 (figures expressed as a % of seed area entered for inspection)

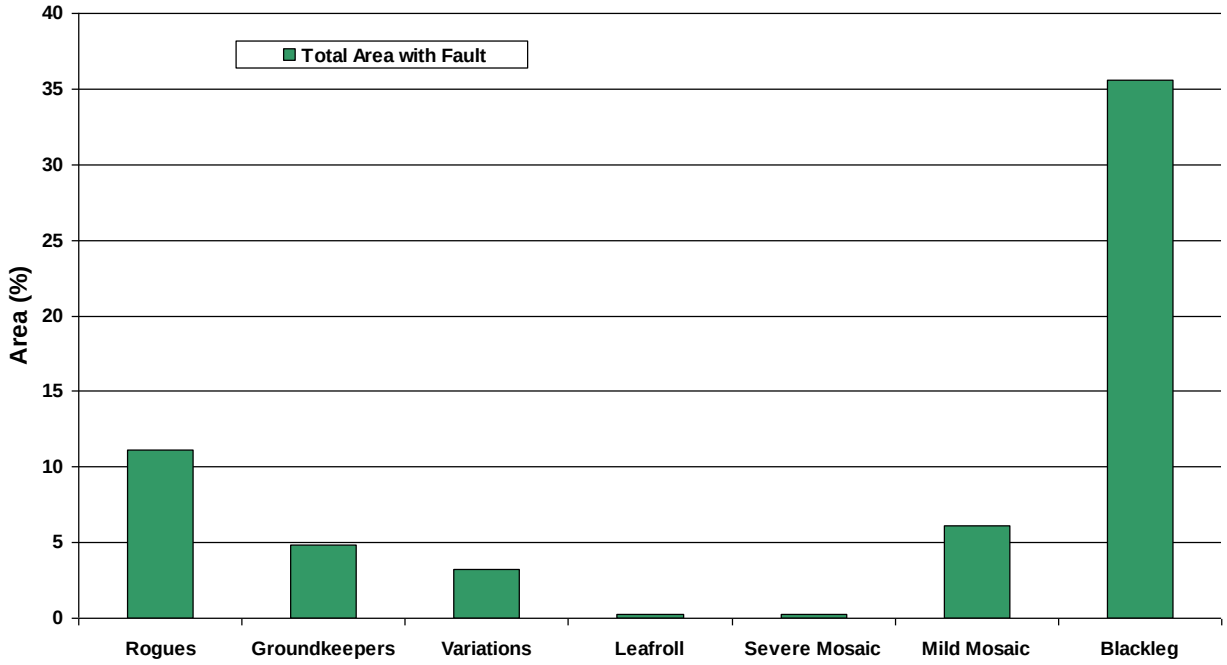
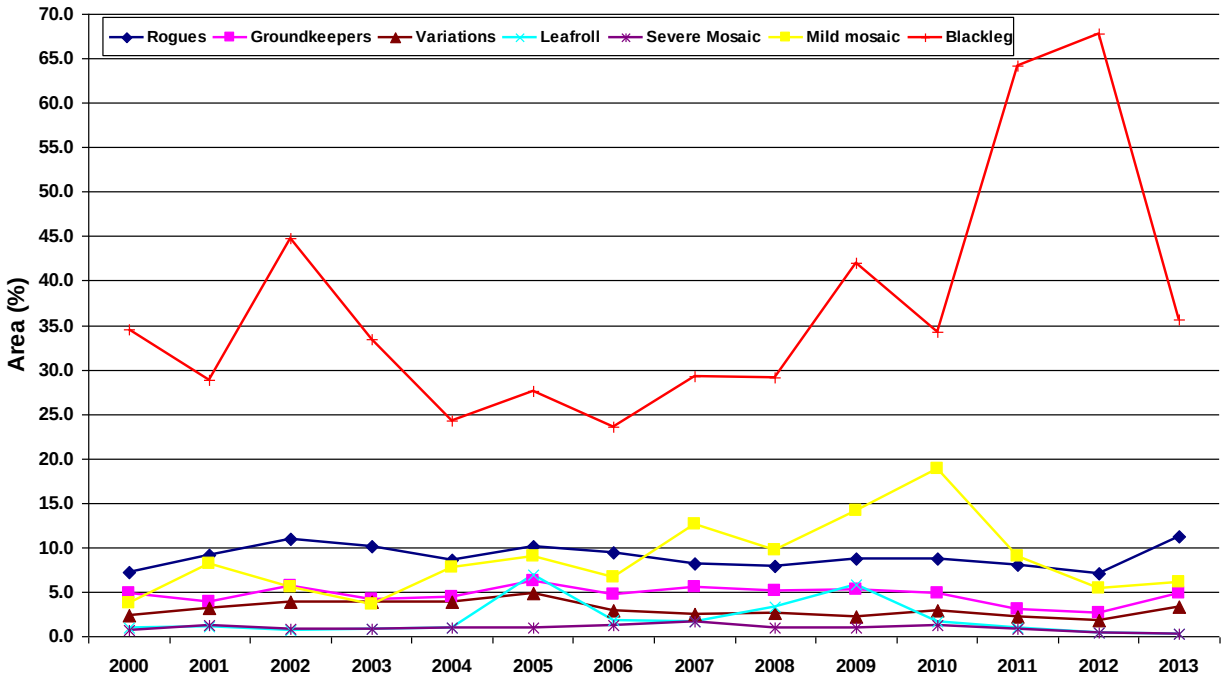


Fig. 3 Total seed area with fault recorded (2000 – 2013) (figures expressed as a % of seed area entered for inspection)



Blackleg was the most common reason for downgrading and failing crops in 2013, with 44 crops downgraded and 7 failed. However, this was a substantial reduction compared with last year when 327 crops were downgraded and 65 failed. The seed area downgraded for blackleg in 2013 stood at 1% compared with 6.7% recorded last year, while the area failed for blackleg was 0.3% compared with 1.7% recorded last year.

Fig. 4 Seed area downgraded and failed at growing Crop Inspection 2013 by fault (figures expressed as a % of seed area entered for inspection)

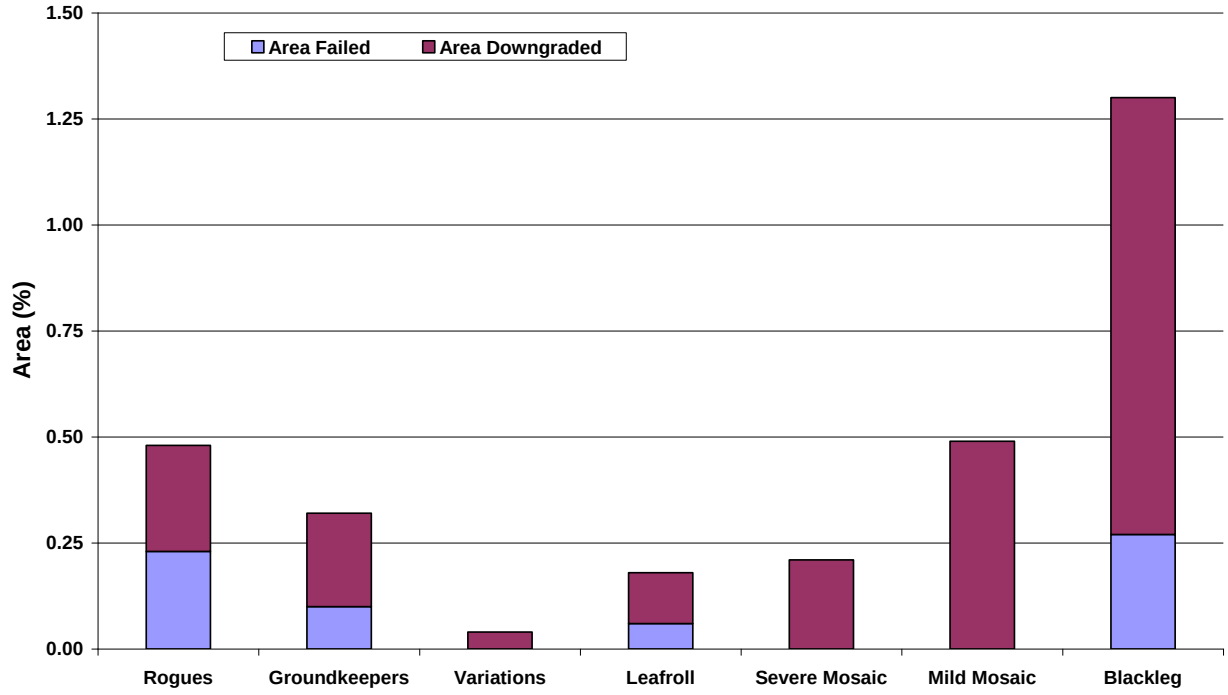
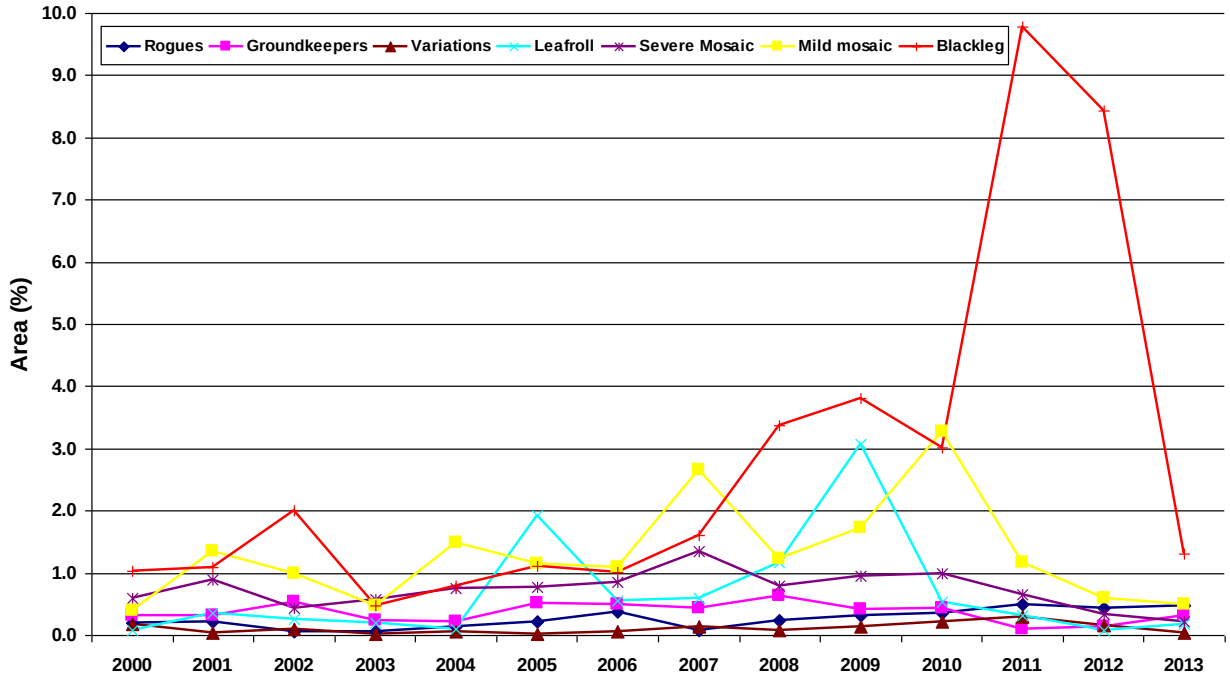
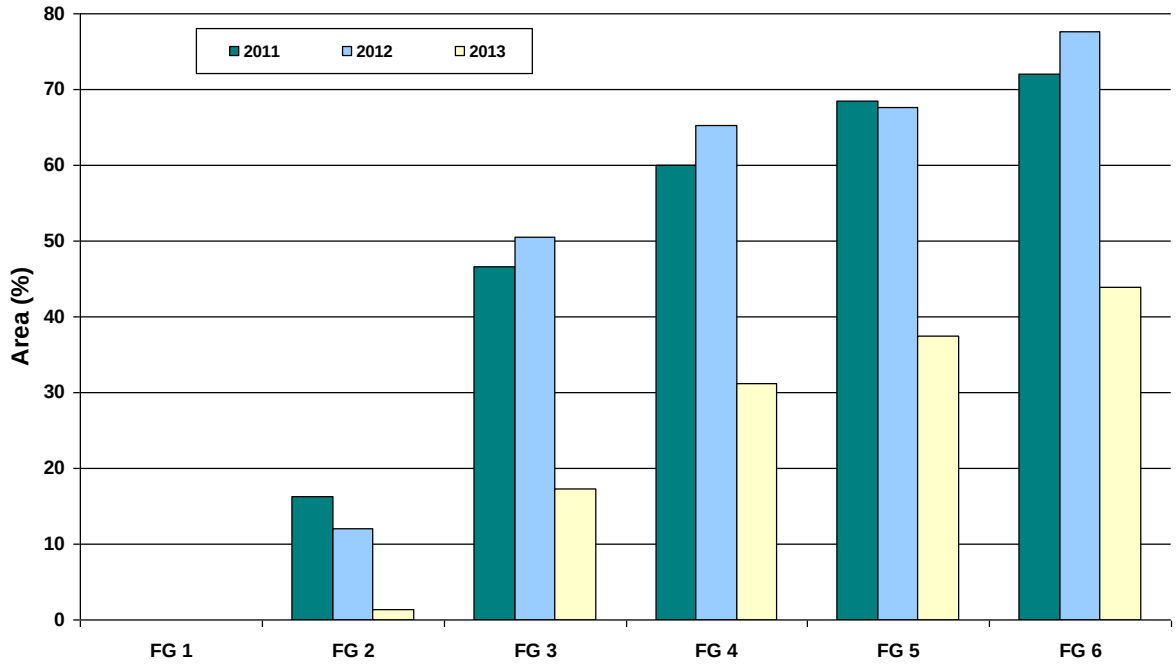


Fig. 5 Seed area not holding grade (2000 – 2013) by fault (figures expressed as a % of seed area entered for inspection)



As in previous years, with each successive field generation there was an increase in the proportion of the seed area in which blackleg was recorded. However, the areas recorded with blackleg were well down compared with the past couple of years. Blackleg was recorded in 5% of the PB area, 36% of the SE area and 45% of the Elite area, down from 17%, 70% and 76% respectively, recorded last year.

Fig. 6 Area with blackleg recorded for each field generation (FG)
(figures expressed as a % of seed area entered for inspection for each field generation)



When the area/no. of crops of each variety entered for inspection is taken into account, the poorest performing 'top 30' variety against blackleg was Charlotte, with 10% of the seed area not holding grade. However, it should be stressed that this amounted to just 3 crops. Two of these crops were failed for blackleg. Similar to previous years, Charlotte performed poorer against blackleg than its high resistance rating score of 8 (on a 1 to 9 scale of increasing resistance) might imply.

Outwith the 'top 30' varieties, Premiere, Fontane and Sylvana did not perform well against blackleg with 22%, 18% and 17% of their respective areas not holding grade due to blackleg.

Table 5 Blackleg performance of the 'top 30' varieties at Growing Crop Inspection in 2013, compared with their resistance rating scores, recorded on the British Potato Variety Database (1 to 9 scale of increasing resistance)
*figures in brackets are percentages

Variety	Area of crops downgraded/failed for blackleg*	No. of crops downgraded/failed for blackleg*	Resistance rating score
Charlotte	15.7 (10.2)	3 (5.5)	8
Estima	16.5 (7.6)	5 (4.3)	2
Marfona	4.4 (4.9)	1 (2.4)	5
Rooster	5.3 (3.6)	1 (2.0)	7
Desiree	17.9 (2.8)	5 (2.3)	4
Hermes	7.7 (0.6)	5 (1.1)	6
Maris Piper	0.3 (0.02)	1 (0.3)	5
All other 'top 30' varieties	0	0	-

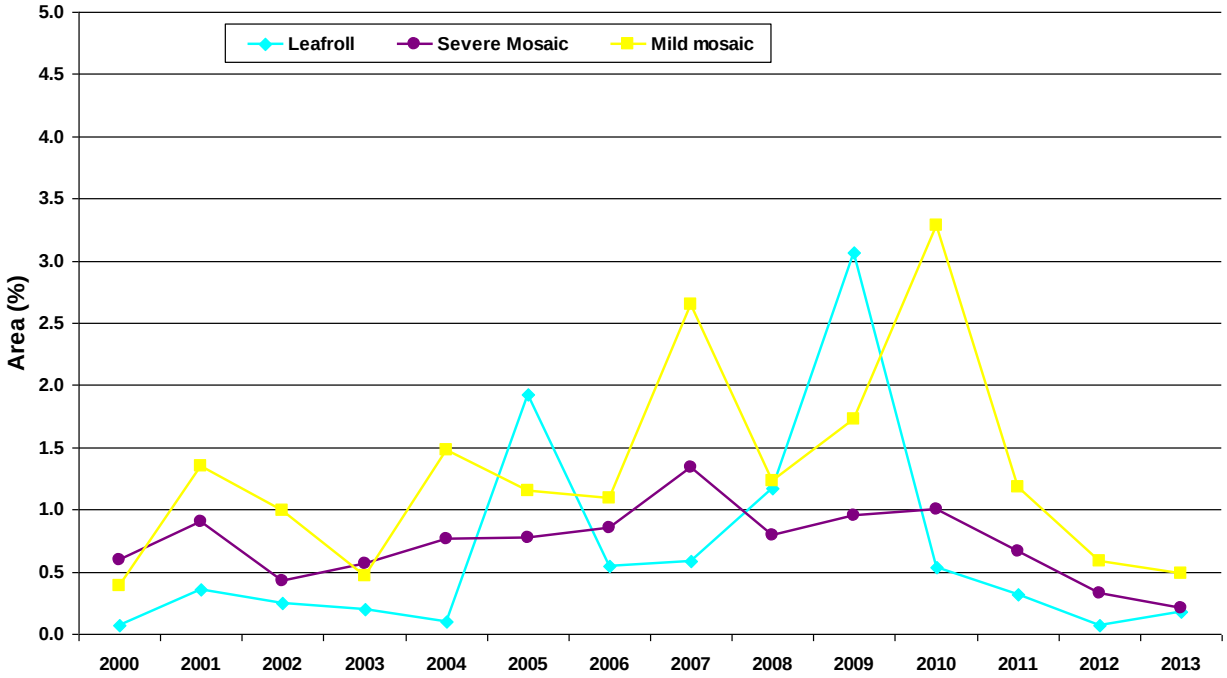
MILD MOSAIC / SEVERE MOSAIC / LEAFROLL (Fig. 7)

The seed area not holding grade due to mild mosaic continued the decline observed over the last 2 years to stand at a 10 year low. However, mild mosaic was recorded in 6% of the seed area inspected in 2013, slightly more than that recorded last year (5%). Seventeen crops were downgraded and no crops failed, amounting to 0.5% of the seed area not holding grade. Mild mosaic was recorded in 1.3% of the PB area, 5% of the SE area and 17% of the Elite area. The poorest performing varieties with regard to mild virus were Atlantic, Maris Piper and Red Pontiac with 4, 3 and 2 crops of each variety downgraded respectively. All of these crops were infected with PVY^N. Nearly all (15 out of the 17 crops downgraded for mild mosaic) were infected with PVY^N. For the remaining 2 crops, a crop of Hermes was downgraded for PVA infection and a crop of Kerr's Pink downgraded for PVX infection. Six of the crops downgraded for mild mosaic were PB crops.

The seed area recorded with severe mosaic declined to 0.3% of the area entered, the lowest level recorded in any year since 2000. Ten crops were downgraded and none failed. The most common variety downgraded was Maris Peer with 4 crops. PVY^N was the most common virus detected in crops downgraded for severe mosaic.

The incidence of leafroll continued to decline to stand at 0.3% of the seed area inspected in 2013, the lowest level recorded in any year since 2000. However, there was a slight increase in the seed area not holding grade due to leafroll compared with last year. Only 3 crops were downgraded for leafroll and 3 crops failed. The 3 downgraded crops were an SE crop of Maris Piper and 2 PB3 crops of Golden Wonder. The 3 failed crops were Elite sister crops of Maris Piper.

Fig. 7 Seed area not holding grade (2000 – 2013) due to virus (figures expressed as a % of seed area entered for inspection)



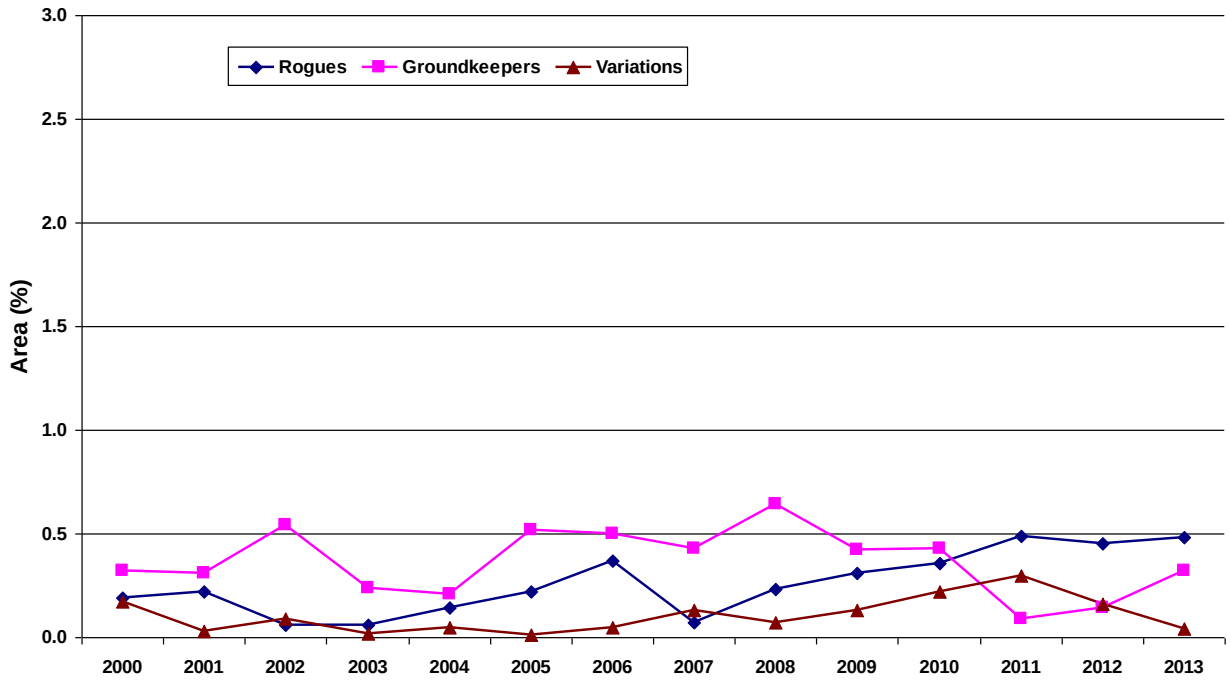
DEVIATIONS FROM VARIETY AND TYPE (Figs. 2 and 8)

Rogues were the second most common fault observed during growing crop inspections, recorded in 11% of the seed area inspected, an increase from 7% recorded last year. However, the seed area not holding grade due to rogues was on par with last year. Eleven crops were downgraded, similar to last year, while 11 crops failed, an improvement on the 15 crops that failed last year.

Groundkeepers were recorded in just under 5% of the seed area inspected, up from 3% recorded last year. There was also an increase in the seed area not holding grade due to groundkeepers. Six crops were downgraded, compared with 3 last year and 4 crops failed, the same as last year.

Variations were recorded in just over 3% of the seed area inspected, similar to that recorded last year. There was a reduction in the seed area not holding grade due to variations. Four crops were downgraded, compared with 10 last year and 2 crops failed, compared with 7 last year. All crops not holding grade due to variations were PB grade. It should be noted that the downgraded figure for variations in PB crops last year is a little misleading as the principle reason for downgrading these crops was for blackleg.

Fig. 8 Seed area not holding grade (2000 – 2013) due to rogues, groundkeepers and variations (figures expressed as a % of seed area entered for inspection)



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Notes:

- The data presented in this report is correct as at 17/09/13. As the SPUDS system is continually being updated, statistical tables run before or after this date may give slightly different results. For example, a variety may be added to the national list/common catalogue and, therefore, have it's 'variety status' changed on SPUDS to 'listed'. As a result of the change, this variety will be included in the statistical reports whereas previously it would have been excluded.

- Some crops may have been downgraded and/or failed for more than one reason so will be duplicated in the statistics e.g. a crop may have been downgraded for blackleg but failed for leafroll. In this case it would appear as a failed crop under leafroll but only a downgraded crop under blackleg.

- For crops with a particular fault but within tolerance for grade these are based on 2nd inspection findings only.