



Assessment of risks to UK seed from experimental and commercial releases of GM crops worldwide: routine

Quarterly summary report – April to June 2005

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Provided for:
Plant Variety Rights Office and Seeds Division, Defra

1. Introduction

This document is the first in an ongoing series of concise reports aimed at assessing the risks posed to UK conventional seed by the release of GM crops worldwide. All known GM releases to the environment have been taken into account, including deliberate (experimental) releases, commercial releases and also any accidental releases that are reported in the press or via regulatory channels. The information used in the production of these reports will be derived from online public-access databases, biotechnology websites, news reports, government/regulatory websites and published documents. Based on routine surveillance an updated report will be produced each quarter with the aim of highlighting those areas (in terms of crop type, GM trait and country) where there is significant activity in the areas of GM crop research and release. This first report presents baseline data showing all documented releases since GM trials commenced in the early 1980's. Subsequent reports will augment this information in order to build up a clear picture of the species and countries where GM developments are taking place so that informed decisions can be taken as to the risks posed to UK conventional seed.

The species covered by these reports consist of plants which have undergone genetic modification and which, mostly, have conventional counterparts that are grown in the UK. The reports will not include exotic species, such as cotton, pineapple, rice, tobacco, etc. which are unlikely to be grown in the UK (unless there is a risk of admixture with seed of species which are grown in the UK and/or the type of modification makes the species more suited to the UK climate). Whilst these reports are intended to focus mainly on agricultural crops they will also cover vegetable crops, fruit, flowers, and amenity crops such as grasses and trees, where this is deemed appropriate.

2. Crop Release Information

The main agricultural crops which have undergone genetic modification and have been released either in experimental trials or commercially are shown in separate categories in this section. These categories are based on the usage of the crop and include both major and minor agricultural crops, vegetable crops, fruit crops, flowers and 'other crops'. Each section includes a bar chart which is designed to provide 'at a glance' information on the number of trials that have been 'approved' worldwide for individual GM species. Each chart is accompanied by a table which shows more detailed information including the number of GM releases on a country by country basis and the major traits that have been developed. It should be noted that 'approved' refers to the fact that the regulatory authorities have given the go ahead for the release(s) to take place, it does not mean that the trials actually went ahead (although in the vast majority of cases they will have taken place). Another important point to note is that most individual approvals give authorization for separate releases at several different sites, therefore the actual number of trials will be greater than the number of notifications shown in the tables. (For example data from the Canadian Food Inspection Agency show that in 2004 a total of 64 permits were granted for GM Alfalfa releases in Canada, but there were actually 180 trials undertaken that year. This approach seems to apply to most GM regulatory systems, including the EU system). In order to make interpretation of the information easier tomato has been included with major agricultural crops for the simple reason that the high number of releases skews the vegetable graph, making it very difficult to determine the number of releases of minor vegetable crops.

2.1 'Major' Agricultural and Horticultural Crops.

Figure 1 – Total number of experimental releases of 'major' agricultural and horticultural crops to date

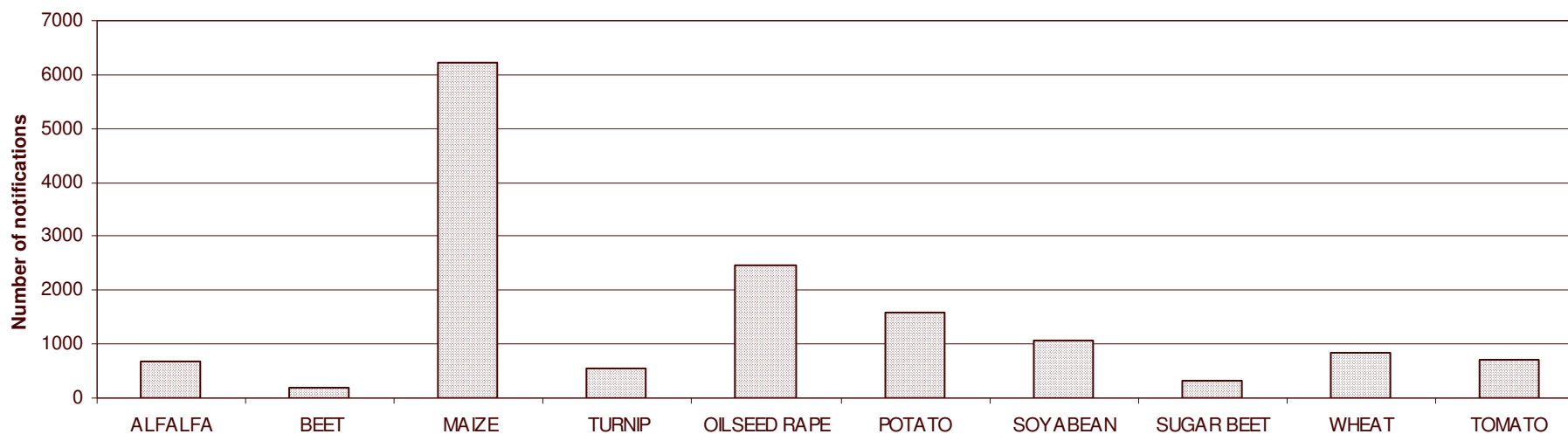


Table 1 – GM releases of 'major' agricultural and horticultural crops showing trait, country of release, etc.

CROP TYPE	MAIN TRAITS	COUNTRY	TOTAL RELEASES	COMMERCIALISATION STATUS	ADDITIONAL INFO
ALFALFA (<i>Medicago sativa</i>)	Glyphosate tolerance; Improved digestibility; Virus resistance.	Belgium (1) Bulgaria (1) Spain (1) <hr/> South Africa (1) Canada (336) USA (330)	670	USA – 1 notification PENDING	Since the GM Inspectorate's December 2004 alfalfa desk study ¹ there have been a further 52 release permits granted in the USA.
BEET (<i>Beta</i> sp. – actual species not specified)	Glyphosate tolerant; Virus resistance;	Czech Republic (4) France (1) Greece (1)	203	USA – 3 notifications APPROVED	

	Phosphinothricin tolerant	Netherlands (4) Spain (9) Sweden (2) UK (9) New Zealand (1) USA (172)			
MAIZE incl. sweetcorn	Herbicide tolerance; Insect resistance; Drought tolerance; Altered nitrogen metabolism; Pharmaceutical applications	Austria (1) Belgium (28) Denmark (1) France (272) Germany (22) Greece (6) Hungary (10) Italy (98) Netherlands (13) Poland (2) Portugal (9) Spain (163) UK (7) Argentina Brazil Canada (252) USA (5348)	6232	EU – 3 notifications APPROVED (cultivation); 4 notifications PENDING (cultivation) USA – 17 notifications APPROVED ; 4 notifications PENDING Other countries with approval for commercialisation incl.: Argentina Canada South Africa Japan Philippines Uruguay	Bt 10 incident: Between 2001 and 2004, Syngenta accidentally marketed Bt 10 corn, mistaking it for Bt 11 (approved for food and feed use imports into the EU). The GM Inspectorate have been keeping a close eye on this incident but there is no evidence that Bt 10 has made it's way into seed for sowing in the EU. GM varieties in Spain: Spain now grows more than 50,000ha of GM maize and has been propelled into the ranks of "biotech mega countries".
TURNIP/TURNIP RAPE (<i>Brassica rapa</i>)	Lepidopteran resistant;	Australia (3) Canada (540) USA (3)	546		
OILSEED RAPE (<i>Brassica napus</i>)	Herbicide resistance; Male sterility; Lowered glucosinolates; Disease resistance; Male sterility/fertility restorer	Czech Republic (2) Denmark (2) Finland (2) France (128) Germany (192) Italy (2) Netherlands (9) Spain (3) Sweden (10) UK (119)	2458	Canada – 4 notifications APPROVED EU – 3 notifications APPROVED (1 for seed for breeding activities only; 2 for cultivation for which France has not issued the consent); 4	

		Australia (28) Canada (1402) Japan (10) New Zealand (3) USA (546)		notifications PENDING (cultivation). USA – 7 notifications APPROVED	
POTATO (<i>Solanum tuberosum</i>)	Improved starch content; Pest resistance; Modified carbohydrate metabolism; Increased carotenoid content; Disease resistance; Resistance to Phytophthora; Bioreactors for non-plant spider silk proteins; Increased nutritional value; Cold tolerant; Drought tolerant	Australia (10) Austria (2) Belgium (2) Czech Republic (1) Denmark (10) Finland (5) France (12) Germany (80) Italy (7) Netherlands (56) Poland (1) Spain (15) Sweden (9) UK (37) Canada (457) Japan (14) New Zealand (18) Russian Federation (3) Switzerland (2) USA (831)	1572	USA – 5 notifications APPROVED	
SOYABEAN (<i>Glycine max</i>)	Herbicide tolerance; Disease resistance; Altered oil profile	Brazil (4) Canada (138) Japan (1) Russian Federation (1) South Africa (1) USA (940)	1085	Numerous notifications APPROVED, incl.: Argentina Brazil Canada Japan Mexico South Africa USA Uruguay	UK soya seed: Information gathered during the seed audit programme shows that no new soya seed was imported into the UK for sowing in Spring 2005, and demand was met using stocks of over-year-old seed. In future additional new varieties may be imported from Eastern Europe and the GMI are monitoring these possible developments.

SUGAR BEET	Glyphosate tolerance; Herbicide tolerance; Virus resistance; Rhizomania resistance	Belgium (13) Denmark (21) Eire (4) Finland (5) France (69) Germany (24) Greece (1) Italy (40) Netherlands (23) Spain (15) Sweden (11) UK (26) <hr/> Canada (56) USA (24)	332	Canada – 1 application APPROVED EU – 1 application PENDING (cultivation) USA – see ‘beet’ above	
WHEAT (<i>Triticum aestivum</i>)	Fungal resistance; Yield increase; Herbicide tolerance; Improved nutritional quality; Altered starch composition; Disease resistance	Belgium (2) Denmark (3) Italy (5) Spain (9) UK (12) <hr/> Australia (4) Canada (434) USA (389)	858	USA – 2 applications withdrawn (Glyphosate tolerant)	
TOMATO (<i>Lycopersicon esculentum</i>)	Altered ripening; Improved nutritional quality; Pest resistance; Virus resistance; Glyphosate tolerance	France (5) Greece (1) Italy (50) Netherlands (2) Portugal (2) Spain (3) UK (1) <hr/> Australia (5) Canada (7) Japan (10) USA (615)	701	USA – 11 applications APPROVED (Lepidopteran resistant, Fruit ripening altered) Other approvals include: Japan Mexico	

¹ Alfalfa (lucerne): An assessment of the risks of adventitious GM presence in UK conventional seed, December 2004.

2.2 'Minor' Agricultural Crops.

Figure 2 – Total number of experimental releases of 'minor' agricultural crops

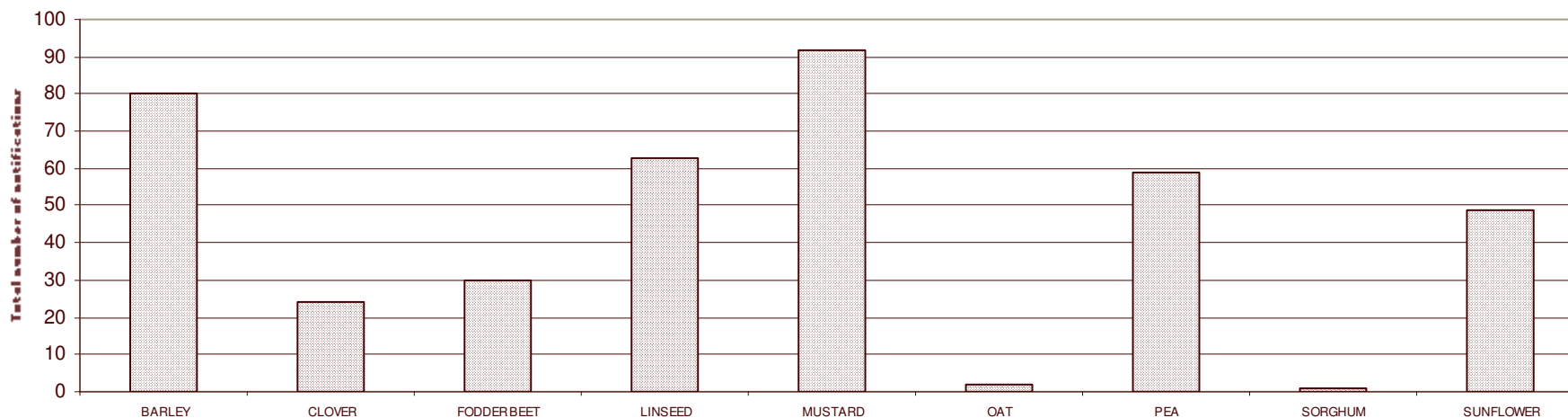


Table 2 – GM releases of 'minor' agricultural crops

CROP TYPE	MAIN TRAITS	COUNTRIES	TOTAL	COMMERCIALISATION STATUS	ADDITIONAL INFO
BARLEY (<i>Hordeum vulgare</i>)	Marker gene; Fungal resistance; Improved malting quality; Novel protein;	Finland (2) New Zealand (1) UK (2) <hr/> Australia (4) Canada (9) Iceland (1) USA (61)	80		
CLOVER	Herbicide tolerant; Virus resistance	Australia (10) Canada (12) New Zealand (1) USA (1)	24		The 24 notifications for GM clover species is the same number reported in the GM Inspectorate's 2004 desk study focussing on clover ² .
FODDER BEET (<i>Beta sp.</i>)	Glyphosate tolerance;	Belgium (2)	30	EU – 1 application	

	Herbicide tolerance; Virus resistance;	Denmark (10) France (5) Italy (2) Spain (3) UK (8)		PENDING (cultivation)	
LINSEED (<i>Linum usitatissimum</i>)	Herbicide resistance; Altered oil composition in seed; Marker gene	Sweden (1) Canada (61) USA (1)	63	USA - 1 application APPROVED (Tolerance to soil residues of sulfonylurea, U of Saskatchewan)	
MUSTARD (incl. Brown mustard <i>Brassica juncea</i> , Ethiopian mustard & white mustard)	Herbicide tolerance; Salt tolerance increased Industrial enzyme produced	Belgium (3) Australia (2) Canada (86) USA (1)	92		
OAT (<i>Avena sativa</i>)	Virus resistance	USA (2)	2		
PEA (<i>Pisum sativum</i>)	Glyphosate tolerant; Virus resistance; Increased protein content; TII-GUS transgene expression;	Germany (1) UK (1) Australia (10) Canada (6) New Zealand (1) USA (40)	59		
SORGHUM (<i>Sorghum bicolor</i>)	Fusarium resistance	USA (1)	1		South African scientists are working to develop a GM 'super sorghum' which has a higher proportion of vitamins and minerals. No further information regarding possible releases is available. ³
SUNFLOWER (<i>Helianthus annuus</i>)	Insect resistance; Disease resistance; Nitrogen metabolism altered	France (10) Netherlands (2) Spain (3) Canada (2) USA (32)	49		

² Clover: An assessment of the risks of adventitious GM presence in conventional seed, December 2004; ³ <http://www.foodnavigator.com/news/>

2.3 Vegetable Crops.

Figure 3 – Total number of experimental releases of vegetable crops

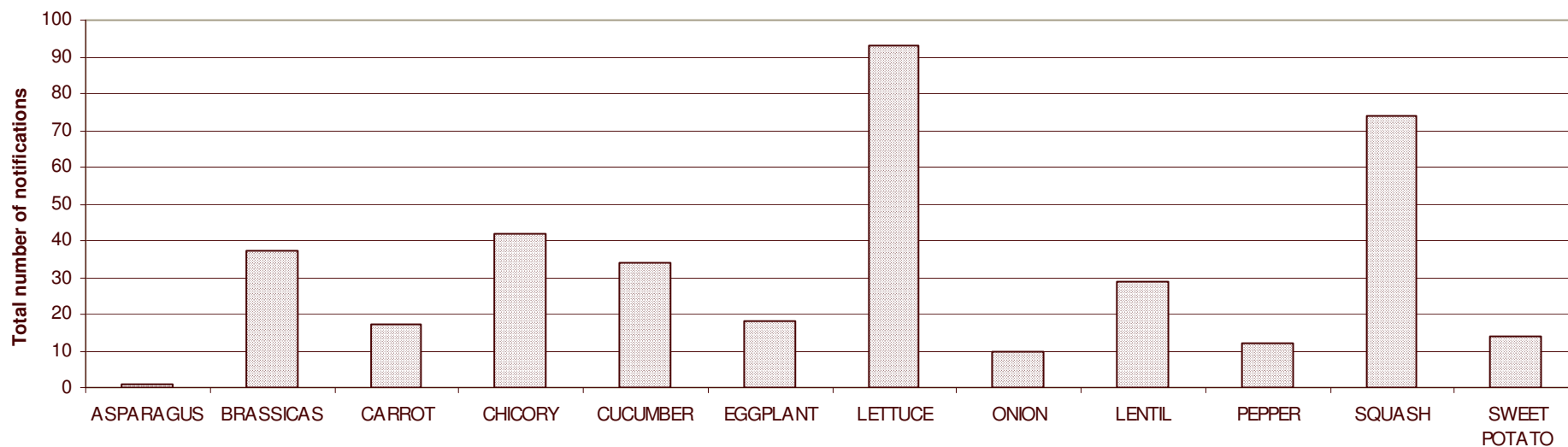


Table 3 – GM releases of vegetable Crops

CROP TYPE	MAIN TRAITS	COUNTRIES	TOTAL	COMMERCIALIZATION STATUS	ADDITIONAL INFO
ASPARAGUS (<i>Asparagus officinalis</i>)	Antibiotic resistance	New Zealand (1)	1		
BROCCOLI, CABBAGE, CAULIFLOWER, KALE (<i>Brassica oleracea</i>)	Herbicide tolerant; Lepidopteran resistant; Prolonged shelflife	Belgium (5) Finland (3) Netherlands (2) <hr/> Canada (2) Japan (1) New Zealand (4) USA (20)	37		

CARROT (<i>Daucus carotta</i>)	Pest & disease resistance; Fungus resistance; Glyphosate tolerant; Nutritional quality altered	Netherlands (3) _____ USA (14)	17		
CHICORY (<i>Chicorium intybus</i>)	Additional fructosyl transferases; Herbicide tolerant; Male sterile	Belgium (13) France (5) Italy (10) Netherlands (10) UK (2) _____ USA (2)	42	EU – 1 notification (seed for breeding activities only) USA – 1 notification withdrawn.	
CUCUMBER (<i>Cucumis sativus</i>)	Virus resistant; Herbicide tolerant; Salt tolerant	Spain (2) _____ Egypt (2) USA (30)	34		
EGGPLANT (<i>Solanum melongena</i>)	Pest resistance; Resistance to coleopteran insects; Kanamycin tolerance	Italy (10) _____ USA (8)	18		
LETTUCE (<i>Lactuca sativa</i>)	Nutritional quality altered; Herbicide tolerance; Disease resistance; Insect resistance	France (7) Italy (1) _____ Australia (1) USA (84)	93		
ONION (<i>Allium</i> sp.)	Glyphosate tolerance; Fungal resistance	New Zealand (1) USA (9)	10		
LENTIL (<i>Lens culinaris</i>)	Herbicide resistance	Australia (1) Canada (28)	29		
PEPPER (<i>Capsicum</i> sp.)	Fruit ripening altered; Virus resistance; Prolonged shelflife	USA (12)	12		
SQUASH	Virus resistance	Spain (2) France (1) Italy (3) _____ USA (68)	74	USA – 2 applications APPROVED (virus resistance)	
SWEET POTATO (<i>Ipomoea batatas</i>)	Herbicide tolerance; Disease resistance; Protein altered	USA (14)	14		

2.4 Fruit Crops.

Figure 4 – Total number of experimental releases of fruit crops

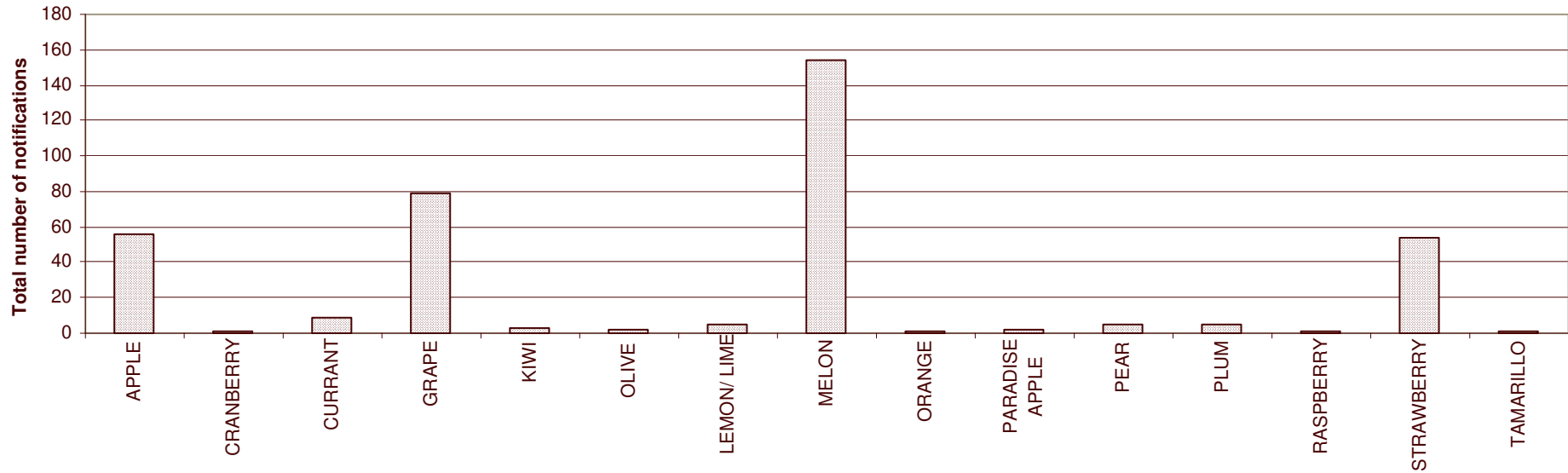


Table 4 - Fruit

CROP TYPE	MAIN TRAITS	COUNTRIES	TOTAL	COMMERCIALIZATI ON STATUS	ADDITIONAL INFO
APPLE (<i>Malus domestica</i>)	Resistance to fungal and bacterial pathogens; Insect resistance; Increased rooting ability; Fruit sugar profile altered; Self-compatibility; Marker system	Belgium (2) Germany (2) Netherlands (2) Sweden (1) Spain (2) <hr/> Australia (2) New Zealand (1)	56		

		USA (44)			
CRANBERRY (<i>Vaccinium oxycoccus</i>)	Lepidopteran resistant	USA (1)	1		
CURRANT (<i>Rubus idaeus</i>)	Fruit ripening altered; Virus resistance	USA (9)	9		
GRAPE (<i>Vitis</i> sp.)	Virus resistance; Fungal resistance; Improved processing characteristics; Kanamycin resistant	Denmark (1) France (6) Germany (1) Italy (1) Canada (26) USA (44)	79		
KIWIFRUIT (<i>Actinidia deliciosa</i>)		Italy (3)	3		
OLIVE (<i>Olea europea</i>)	Improved agronomic characteristics	Italy (2)	2		
LEMON/LIME (<i>Citrus</i> sp.)	Resistance to fungal pathogens; Virus resistance	Italy (4) USA (1)	5		
MELON (incl. watermelon) (<i>Cucumis melo</i>)	Virus resistance; Fruit ripening altered; Herbicide tolerance	Spain (5) France (3) Italy (2) Japan (1) USA (143)	154	USA – 1 application withdrawn	
ORANGE (Sweet orange)	Antibiotic resistance; Histochemical markers	Spain (1)	1		
PARADISE APPLE		Netherlands (1) UK (1)	2		
PEAR	Fruit ripening altered; Virus resistance	USA (5)	5		
PLUM (<i>Prunus domestica</i>)	Virus resistance; Ethylene production reduced	Spain (1) USA (4)	5	USA – 1 application PENDING (virus resistance, ARS)	
RASPBERRY (<i>Rubus idaeus</i>)	Improved processing characteristics	Italy (1)	1		
STRAWBERRY (<i>Fragaria</i>)	Herbicide tolerance;	Italy (6)	54		

<i>fragaria x Fragaria ananassa</i>)	Disease resistance; Flowering time altered; Chimeric defH9-iaaM gene	Spain (2) UK (1) Canada (2) South Africa (1) USA (42)			
TAMARILLO (Cyphomandra betacea)	Virus resistance	New Zealand (1)	1		

2.5 Flowers.

Figure 5 – Total number of experimental releases of flowers

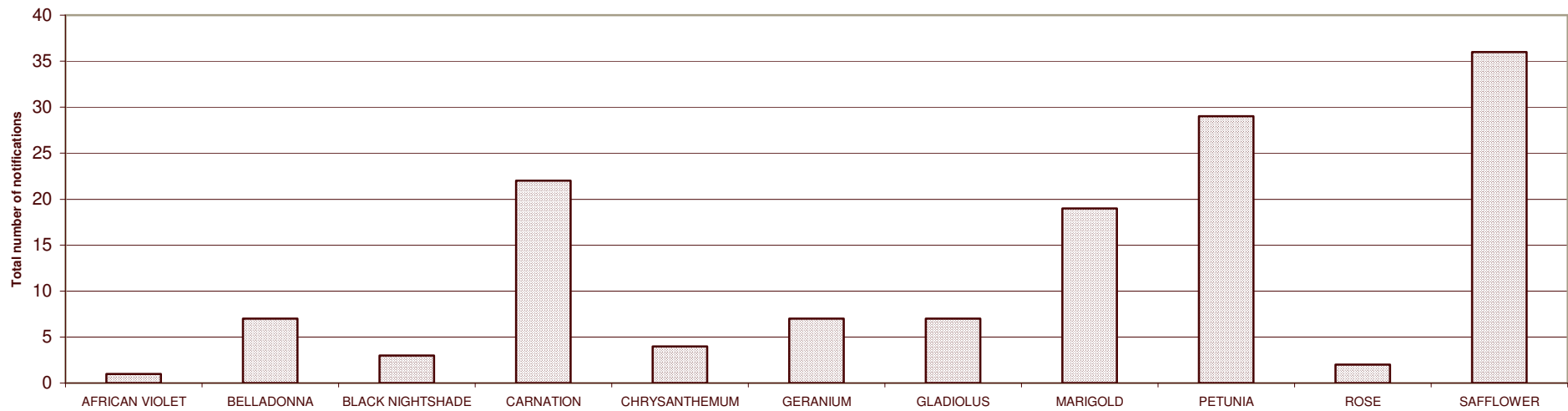


Table 4 - Flowers

CROP TYPE	MAIN TRAITS	COUNTRIES	TOTAL	COMMERCIALISATION STATUS	ADDITIONAL INFO
AFRICAN VIOLET (<i>Saintpaulia ionantha</i>)	Altered flower colour	Netherlands (1)	1		
BELLADONNA (<i>Astropha belladonna</i>)	Coleopteran resistant Lepidopteran resistant Kanamycin resistant	USA (7)	7		
BLACK NIGHTSHADE (<i>Solanum nigrum</i>)	Defensive genes	Germany (3)	3		
CARNATION (<i>Dianthus</i> sp)	Pigment metabolism altered; increased vase life	Netherlands (8) Australia (5) Japan (9)	22	EU – approved for import only	
CHRYSANTHEMUM	altered flower colour; Pigment metabolism altered; Virus resistance	Netherlands (1) Australia (1) USA (2)	4		
GERANIUM (Pelargonium sp.)	Fungus resistance	Italy (1) USA (6)	7		
GLADIOLUS	Virus resistant; Herbicide tolerant;	USA (7)	7		
MARIGOLD	Glyphosate tolerance	Italy (17) USA (2)	19		
PETUNIA	Flower colour altered; Glyphosate tolerant; Extended flower life	Denmark (2) USA (27)	29		
ROSE (<i>Rosa hybrida</i>)	Altered flower colour	Australia (2)	2		
SAFFLOWER	Industrial enzymes; Pharmaceutical proteins	Canada (23) USA (13)	36		

2.6 Other Species.

Figure 6 – Total number of experimental releases of other species

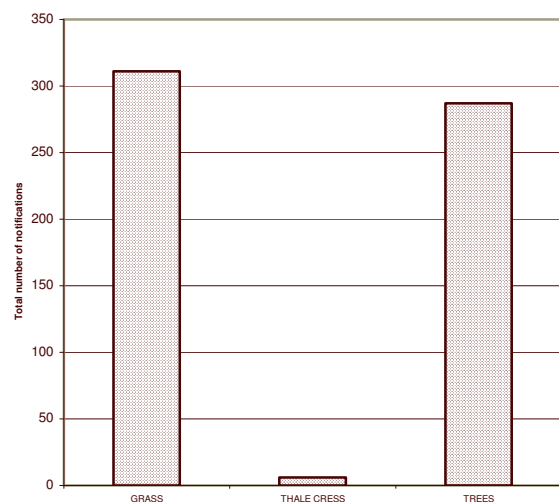


Table 6 – Other species

CROP TYPE	MAIN TRAITS	COUNTRIES	TOTAL	COMMERCIALIZATI ON STATUS	ADDITIONAL INFO
GRASS (various incl. Ryegrass, Tall fescue Creeping bentgrass, Canary grass, etc.)	Herbicide tolerance; Fungal resistance; Hypolignified tall fescue Pollen allergen reduced Drought tolerant Salt tolerance increased	France (2) Netherlands (1*) Canada (14) Japan (4) USA (291) *Trials did not finally go ahead in the Netherlands.	311	USA – 1 application PENDING (Creeping bentgrass, Glyphosate tolerant, Monsanto).	There have been 8 new notifications for the release of GM grasses since the GM Inspectorate's December 2004 grasses desk study. ⁴ These new notifications have all been in the USA. The USDA held a number of public forums in May 2005 to ascertain the public's opinion on Monsanto's application

					for deregulation.
THALE CRESS (<i>Arabidopsis thaliana</i>)	Lack of photosynthetic proteins; Antibiotic resistance; Loss of systemic resistance	Sweden (5) _____ USA (1)	6		
TREES (various incl. Aspen, Birch, Cherry, Eucalyptus, Pine, Poplar, Rose gum, Spruce, Sweetgum, Walnut, etc)	Sterility; Lignification; Phytoremediation of soils contaminated with heavy metals	Denmark (2) Finland (8) France (8) Germany (3) Italy (3) Spain (2) Sweden (1) UK (2) _____ Norway (1) Canada (25) USA (232)	287		

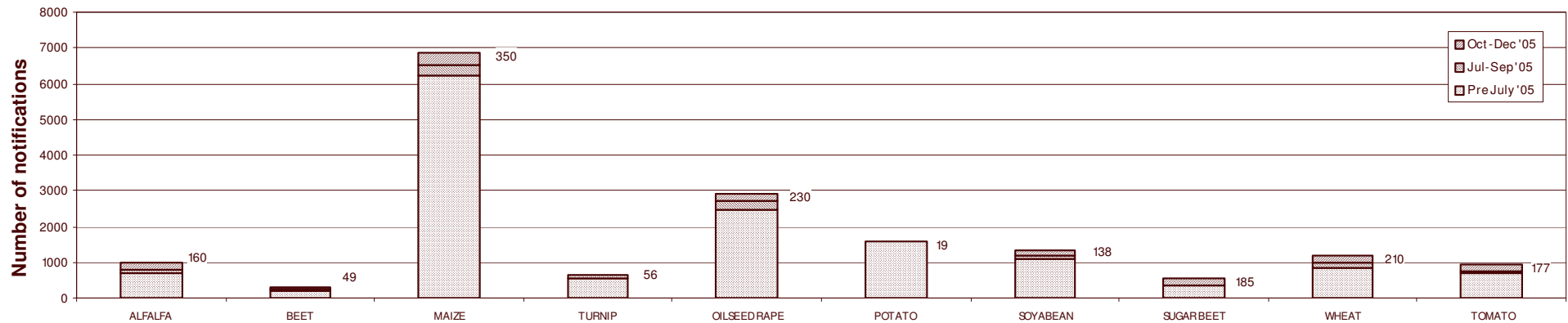
⁴ Grasses: An updated assessment of the risks of adventitious GM presence in conventional seed.

3. Subsequent Reports

Subsequent reports will take the same format as this first report in terms of presentation of the data, including overview graphs followed by detailed tables. An example of how the tables are expected to develop is set out below (figure 5), with new releases shown as additions to the bars. The numbers by the side of each bar show the actual number of release notifications granted for each new quarter and are designed to complement the visual information for each stacked bar.

Attention will be drawn to any areas of interest, for example if there is a major increase in the number of GM trials for a particular crop, or if commercialisation of a GM line goes ahead in a particular country. If it is considered that there is an increase in risk to UK conventional seed this concern will be flagged up for the attention of PVS, giving the reasons for concern.

Figure 5 – Example of how future graphs are likely to develop



4. Additional Information

Routine information gathering is an integral part of the GM Inspectorate's seed audit programme and is vital in order to keep abreast of the latest developments in biotechnology. In addition to using information from websites, databases, etc. for surveillance and risk assessment purposes, the GM Inspectorate use this information to ensure that whenever a company is visited the Inspectorate has the most up to date information at their disposal. Figure 6 is an example of the GM crop matrices developed by the Inspectorate for use in conjunction with seed audits to ensure that the PCR testing commissioned by seed companies is able to detect all appropriate GM crop lines. A separate matrix exists for each crop type, thus enabling the Inspector to quickly ascertain whether the testing is appropriate.

Figure 6 – Example of GM crop matrices used during the GM Inspectorate's seed audit programme.

Identification of GM Maize & Sweetcorn (*Zea mays* L.) varieties by PCR amplification of GM insertions

Updated: 12/07/05

COMMERCIAL RELEASES (see detailed information for countries)

Lines	Promoter	Antibiotic markers		Traits						Sterility factors		Terminators		Misc Seq's	EU regulatory status	Ref
	CaMV P35S	Amp ^r	NptII	Insect Resistant		RR resistance		LL resistance		dam	barnase	T35S	NOS			
				Cry	variant	EPSPS	GOX	PAT	BAR							
Bt176 (Innovator)	✓	✓	✗	✓	1A(b)	✗	✗	✗	✓	✗	✗	✓	✗		Cultivation C/F/4/11-3	1,2
Bt11	✓	✗	✗	✓	1A(b)	✗	✗	✓	✗	✗	✗	✗	✓		Import C/UK/96/M4/1 / Pending	1,2
T25/T14 (LL)	✓	✓	✗	✗	-	✗	✗	✓	✗	✗	✗	✓	✗		Cultivation C/F/95/12/07	1,2
GA21 (RR)	✗	✗	✗	✗	-	✓	✗	✗	✗	✗	✗	✗	✓			1,2
MON 80100	✓	✗	✓	✓	1A(b)	✓	✓	✗	✗	✗	✗	✓	✓			2
MON 802	✓	✗	✓	✓	1A(b)	✓	✓	✗	✗	✗	✗	✗	✓			2
MON 809	✓	✗	✓	✓	1A(b)	✓	✓	✗	✗	✗	✗	✗	✓			1,2
MON 810 (MaisGard/ YieldGard cornborer)	✓	✓	✗	✓	1A(b)	✓	✓	✗	✗	✗	✗	✗	✓		Cultivation C/F/95/12/02 / Pending	1,2

MON 832	✓	✗	✓	✗	-	✓	✓	✗	✗	✗	✗	✗	✓			2
MON 863 (YieldGard rootworm)	✓	✗	✓	✓	3B(b)	✗	✗	✗	✗	✗	✗	✗	✓		Pending	1,2
NK603	✓	✗	✗	✗	-	✓	✗	✗	✗	✗	✗	✗	✓		Pending	1,2
B16 (DLL25)	✓	✓	✗	✗	-	✗	✗	✗	✓	✗	✗	✗	✗			2
DBT 418 (Bt Xtra)	✓	✓	✗	✓	1A(c)	✗	✗	✗	✓	✗	✗	✗	✗			1,2
MS3 (InVigor)	✓	✓	✗	✗	-	✗	✗	✗	✓	✗	✓	✗	✓			2
MS6 (InVigor)	✓	✓	✗	✗	-	✗	✗	✗	✓	✗	✓	✗	✗			2
676, 678, 680	✓	✗	✗	✗	-	✗	✗	✓	✗	✓	✗	✗	✗			2
CBH 351 (Starlink)	✓	✓	✗	✓	9C	✗	✗	✗	✓	✗	✗	✗	✓			2
TC1507 (Herculex)	✓	✗	✗	✓	1F(a)	✗	✗	✓	✗	✗	✗	✓	✗		Pending	1,2
DAS 6275	✓	✗	✗	✓	1Fa2	✗	✗	✗	✓	✗	✗	✗	✗	PinII		2
Yieldgard plus	✓	✓	✓	✓	1A(b) & 3B(b)	✓	✓	✗	✗	✗	✗	✗	✓			4

DELIBERATE RELEASES (LINES RELEASED IN TRIALS BUT NOT COMMERCIALY)

Lines	Promoter	Antibiotic markers		Traits						Sterility factors		Terminators		Misc Seq's	Country of release	Ref	
		CaMV P35S	Amp ^r	NptII	Insect Resistant		RR resistance		LL resistance		dam	barnase	T35S				NOS
					Cry	variant	EPSPS	GOX	PAT	BAR							
A188 drought tolerant	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	pepc, actin1	France	3	

ACCIDENTAL RELEASES

Lines	Promoter	Antibiotic markers		Traits						Sterility factors		Terminators		Misc Seq's	Primary country of accidental release	Ref	
		CaMV P35S	Amp ^r	NptII	Insect Resistant		RR resistance		LL resistance		dam	barnase	T35S				NOS
					Cry	variant	EPSPS	GOX	PAT	BAR							
Bt 10	✓	✓	✗	✓	1A(b)	✗	✗	✓	✗	✗	✗	✗	✓		USA		

ANNEX 1 – Sources of information

The information contained in this report is considered correct at the time of publication. The GM Inspectorate rely on a wide range of data sources to ensure the information they have regarding GM crops is up to date, and whilst every care is taken to verify this information the nature of the data sources means that authentication is not always possible. It is possible that releases in some countries are not recorded in publicly available databases and we cannot, therefore, account for these.

General databases consulted in this study

<http://www.agbios.com/main.php>
<http://www.genewatch.org/>
<http://biosafety.ihe.be/>

International Field Test Sources: databases consulted in this study

Argentina:	http://www.sagpya.mecon.gov.ar/0-0/index/programas/conabia/index_conabia.htm
Australia:	http://www.health.gov.au/ogtr/index.htm
Austria:	http://biotech.jrc.it/deliberate/gmo.asp
Belgium:	http://biotech.jrc.it/deliberate/gmo.asp
Bolivia:	http://webdomino1.oecd.org/ehs/biotrack.nsf
Brazil:	http://www.ctnbio.gov.br/ctnbio/Sistema/LIBERACOE/Sogm.asp
Bulgaria:	http://webdomino1.oecd.org/ehs/biotrack.nsf
Canada:	http://www.cfia-acia.agr.ca/english/plaveg/pbo/pbobbve.shtml
Czech Republic:	http://webdomino1.oecd.org/ehs/biotrack.nsf
Denmark:	http://biotech.jrc.it/deliberate/gmo.asp
Egypt:	http://binas.unido.org/binas/trials.php3
Finland:	http://biotech.jrc.it/deliberate/gmo.asp
France:	http://biotech.jrc.it/deliberate/gmo.asp
Germany:	http://www.rki.de/GENTEC/GENENG/GENTEC_E.HTM
Greece:	http://biotech.jrc.it/deliberate/gmo.asp
Hungary:	http://biosafety.abc.hu/biosafe_eng.html
Iceland:	http://biotech.jrc.it/deliberate/gmo.asp
India:	http://webdomino1.oecd.org/ehs/biotrack.nsf
Irish Republic:	http://biotech.jrc.it/deliberate/gmo.asp
Italy:	http://biotech.jrc.it/deliberate/gmo.asp
Japan:	http://www.s.affrc.go.jp/docs/sentan/eguide/edevelp.htm
Luxembourg:	http://biotech.jrc.it/deliberate/gmo.asp
Mexico:	http://www.senasica.sagarpa.gob.mx/pagconasag/svtransgen.htm#ensayo
Netherlands:	http://biotech.jrc.it/deliberate/gmo.asp
New Zealand:	http://www.ermanz.govt.nz/no/index.asp
Norway:	http://biotech.jrc.it/deliberate/gmo.asp
Portugal:	http://biotech.jrc.it/deliberate/gmo.asp
Russian Federation:	http://webdomino1.oecd.org/ehs/biotrack.nsf
South Africa:	http://www.nda.agric.za/docs/GeneticResources/Geneticcontrol.htm
Spain:	http://biotech.jrc.it/deliberate/gmo.asp
Sweden:	http://biotech.jrc.it/deliberate/gmo.asp
Switzerland:	http://webdomino1.oecd.org/ehs/biotrack.nsf
Thailand:	http://biodiversity.biotech.or.th/biosafety/doa/m_impgmo.asp
United Kingdom:	http://biotech.jrc.it/deliberate/gmo.asp
United States:	http://www.isb.vt.edu/cfdocs/fieldtests1.cfm