



Department
for Environment
Food & Rural Affairs

Plant Health Biosecurity Strategy Consultation: Technical report

April 2022

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Introduction

This technical report was prepared by analysts at Fera and Defra and presents a description of responses to Defra's Plant Health Biosecurity Strategy Consultation (2021). The full text of the original consultation document can be accessed at: [Plant Biosecurity Strategy for Great Britain Consultation](#).

The consultation was undertaken by Defra and the governments of Scotland and Wales to inform Great Britain's approach to plant biosecurity over the next five years. Responses were received from organisations and members of the public who have an interest in, and responsibility towards, plant health. Key outcomes of the strategy can be grouped into four key topic areas:

Outcome 1: A world class biosecurity regime

Making the most of opportunities to tailor and strengthen our response to prevent and manage the introduction and spread of pests and pathogens that pose a threat to plant health in Great Britain (GB).

Outcome 2: A society that values healthy plants

Raising awareness of the importance of healthy plants and trees and encouraging the adoption of responsible behaviours across society.

Outcome 3: A biosecure plant supply chain

Government and industry working in partnership to support biosecure supply chains.

Outcome 4: An enhanced technical capability

Building plant health capability and making use of emerging, innovative science and technology to keep pace with changing threats and ensure preparedness for the future.

In addition, an optional annex was included in the consultation focusing on additional proposed measures for high risk tree species.

Overview of responses

In total, there were 144 responses recorded on the survey portal or from documents provided in alternative formats. There were 125 responses to the optional Annex covering high risk tree species. Where appropriate, responses are presented as a proportion of the full sample however some questions in the consultation were only relevant to a subset of respondents. In these cases, the sample size is provided alongside the data. It is important to note that the views expressed in the consultation are from a non-random set

of engaged participants and may not reflect the complete spectrum of stakeholders within plant health.

Six organisations (the Horticultural Trades Association, the Institute of Chartered Foresters, the Royal Botanic Gardens Kew, Organic Farmers & Growers, UK Research and Innovation, and the Woodland Trust) chose to respond to the consultation outside of the requested web portal and format. For comparability these responses have been converted (where possible) into a standard entry for quantitative analysis and are included in the analysis.

Woodland Trust advocacy campaign

During the period of the consultation the Woodland Trust (WT) ran an advocacy campaign encouraging members and affiliates to supply a standardised response to some of the questions raised in the consultation. In total 1,047 identical responses were received as a result of this campaign. In order to avoid biasing the sample, and because the selected questions did not include any quantitative responses such as are presented below, these responses have not been mapped to specific questions.

Demographics

Figure 1: What geographical region are you from?

Sample size: 144

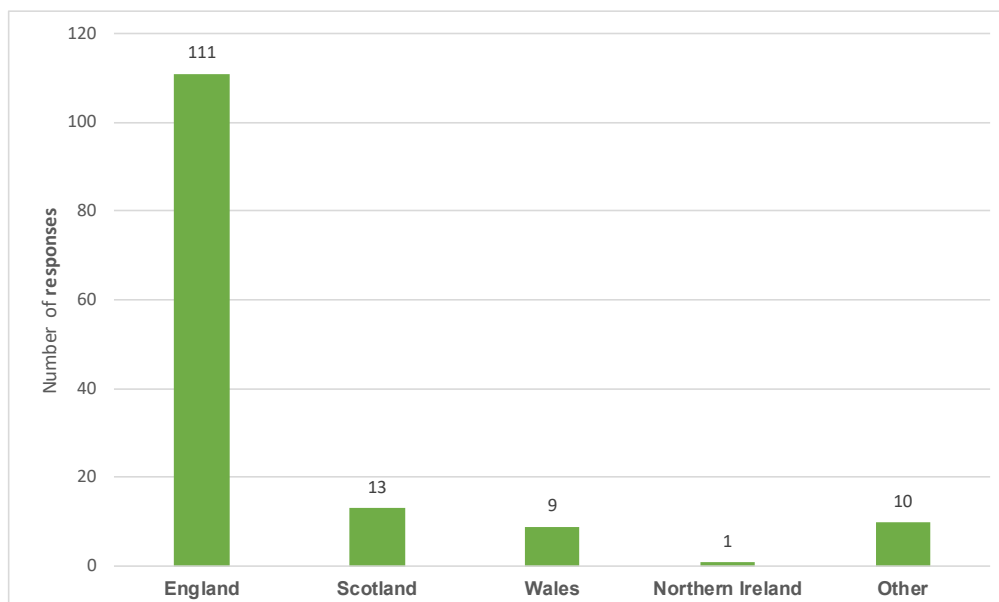


Figure 1 is a chart showing countries associated with respondents: 111 from England, 13 from Scotland, 9 from Wales, 1 from Northern Ireland, 10 'other'

The majority of respondents (77%) indicated that they were from England. Of those respondents who listed themselves as ‘Other’, nine represented organisations with a UK wide scope.

Figure 2: Please tell us which of the following options best describes your interest in plant health?

Sample size: 144

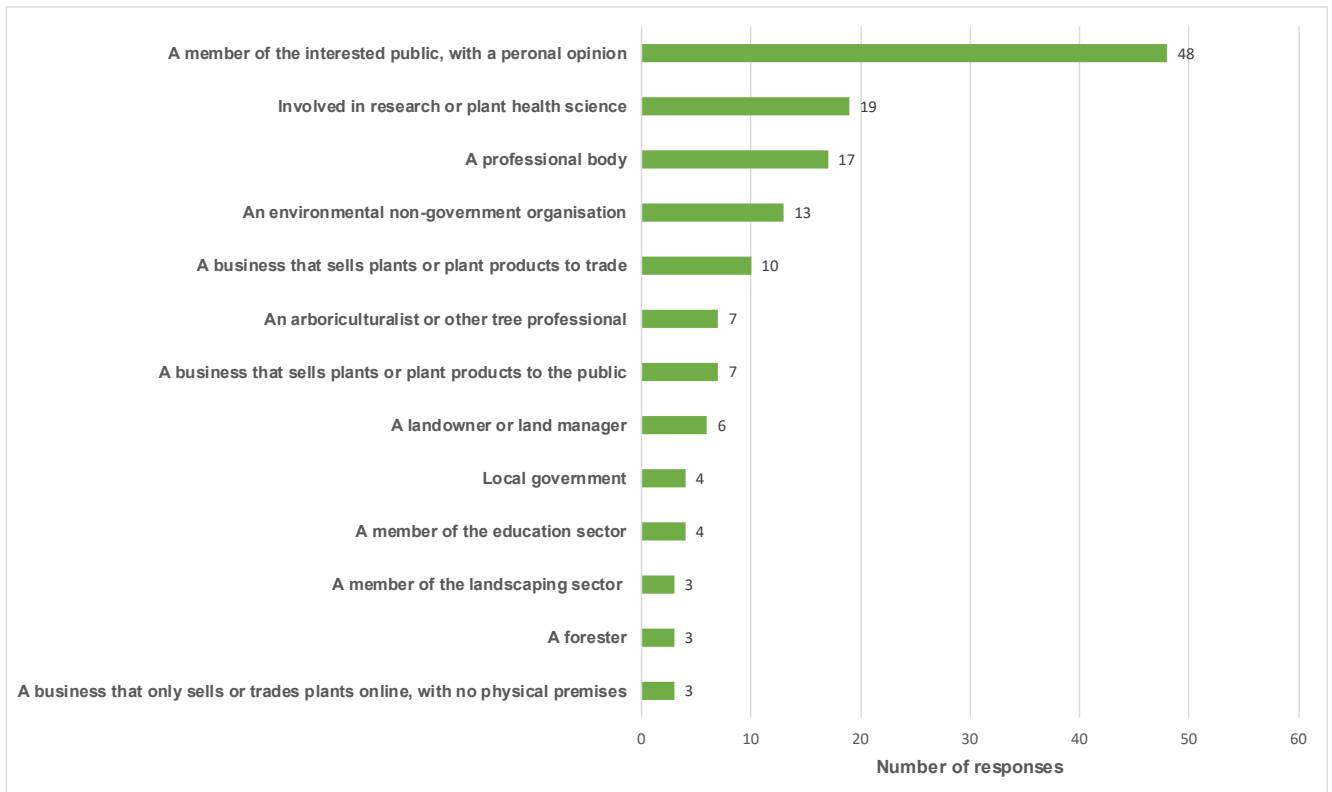


Figure 2 is a chart showing the respondents’ roles in plant health.

The largest group of respondents were members of the general public (48 respondents), followed by research (19 respondents) and professional (17 respondents) bodies. The industry (“trade”) sample had most responses from growers (10 respondents stating they sell to the trade, and a further 7 reporting sales to the public).

For all subsequent analysis, respondents have been grouped into the following broad categories: general public (48 respondents), landowner or manager (13 respondents), Non Governmental Organisations (NGOs)/charities/other professionals (40 respondents), research and education (23 respondents), and trade (20 respondents).

The future vision for plant health

How can Government, industry and the public work more effectively together to protect Great Britain’s plants?

Respondents provided a free text response of up to 250 words. Suggestions covered the following topics:

- Public education, awareness and engagement
- More effective collaboration with external stakeholders
- Barriers to trade, including regulation, Brexit and devolution
- Restrictions on imports/increasing domestic production
- Increasing biosecurity resources and staffing
- Climate change, biodiversity and resilience
- Labelling and assurance schemes
- Research and horizon scanning
- Gene editing and chemical treatments

Which of the following issues do you think poses the greatest risk to plant health?

Respondents were asked to rank options in order of high to low risk.

Figure 1: Which of the following issues do you think poses the greatest risk to plant health?

Sample size: 144

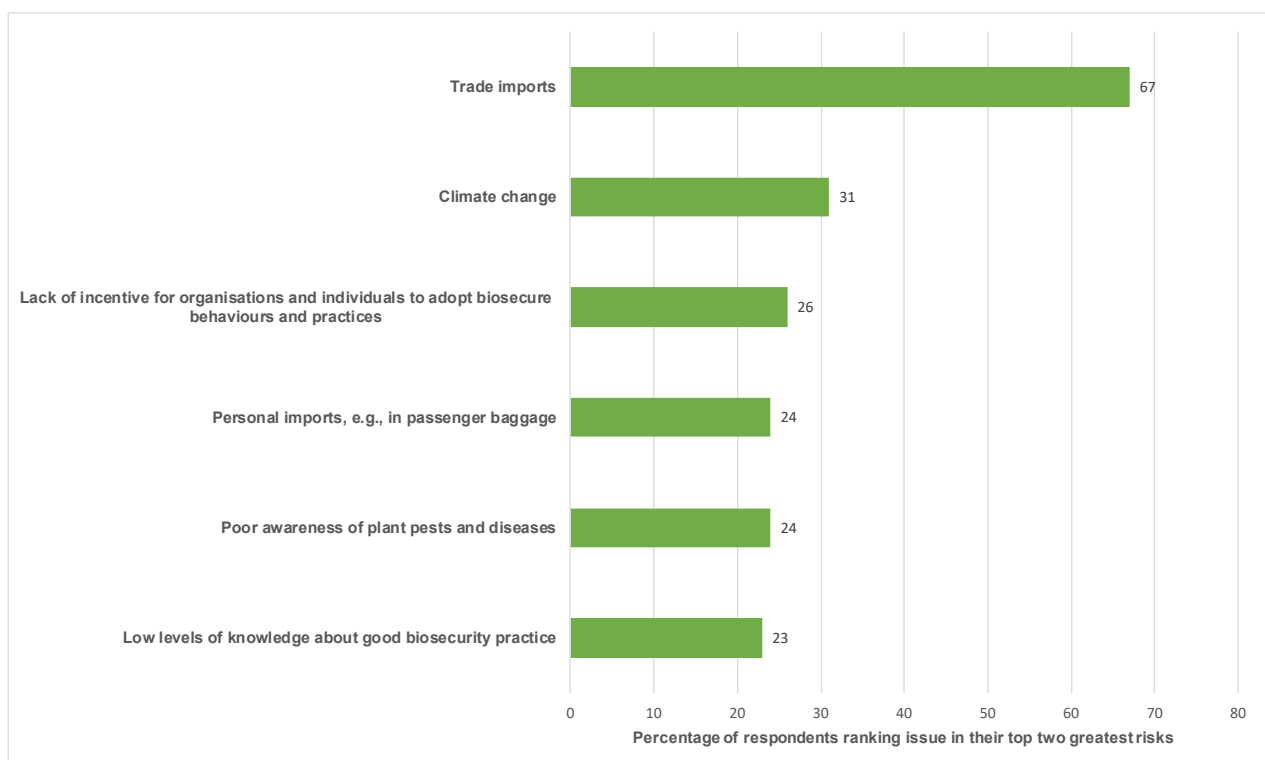


Figure 3 is a chart showing the ranking of perceived risks to plant health based on respondents' ranking of the top two risks.

The greatest perceived risk to plant health in the UK was the movement of material in trade, which over two-thirds of respondents listed among their two greatest concerns. Climate change was the second greatest perceived risk, with the remaining risks, including

lack of incentives, personal import of material, poor awareness of risks and low knowledge of practice achieving approximately the same levels of responses.

Table 1: Perceived greatest risks by broad group (expressed as a percentage)

Risk	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	sample: 48	sample: 13	sample: 40	sample: 23	sample: 20
Trade imports	62	85	70	74	55
Climate change	29	15	28	39	45
Lack of incentive for organisations and individuals to adopt biosecure behaviours and practices	25	23	30	26	25
Personal imports, e.g., in passenger baggage	23	31	22	13	40
Poor awareness of plant pests and diseases	23	38	20	17	30
Low levels of knowledge about good biosecurity practice	35	8	25	17	5

Table 1 shows the ranking of perceived risks based on respondents' ranking of the top two risks and aggregated into broader groups based on respondents' roles in plant health.

When viewed by broader groups, trade imports were consistently identified as the greatest risk across all groups, although respondents in trade were more likely to identify personal imports and climate change as key risks. Members of the public identified a lack of knowledge about good biosecurity practice as of greater importance than poor awareness of plant pests and disease, a trend that is the inverse of that observed in the trade and among landowners.

Outcome 1: A world class biosecurity regime

Associated free text responses for this outcome include a number of calls for an increase in mandatory measures, such as increased quarantine periods or banning certain imports, and harsher penalties (especially from members of the public and environmentally aligned NGOs). Other respondents highlighted the burden of compliance and accreditation, and the impact this may have on competitiveness, both for larger business in overseas markets, as well as for SMEs and volunteer-led initiatives, which face specific challenges within the sector:

“What is the extent of non-commercial trade in plants for conservation purposes (e.g., Plant Heritage, Academic Botanic Gardens, Conservation Organisations), and how can this be supported so that the largely voluntary workforce can be motivated to participate in good biosecurity without financial penalty?”.

“Continued facilitation of legal movement of plant material, with correct plant health precautions - for example, by making inspection and certification fees comparable to those in other countries”.

Voluntary measures received a mixed response, with only a small number of respondents within the trade listing themselves as members of various industry-lead accreditation/assurance schemes (see Outcome 3), and various comments highlighting the costs of participation. Many respondents also felt that their preferred biosecurity arrangements, especially in relation to inspection and enforcement, would not be possible with the current size of the inspectorate.

Figure 4: Where do you/your business currently get information on plant pests and diseases from?

Sample size: 144

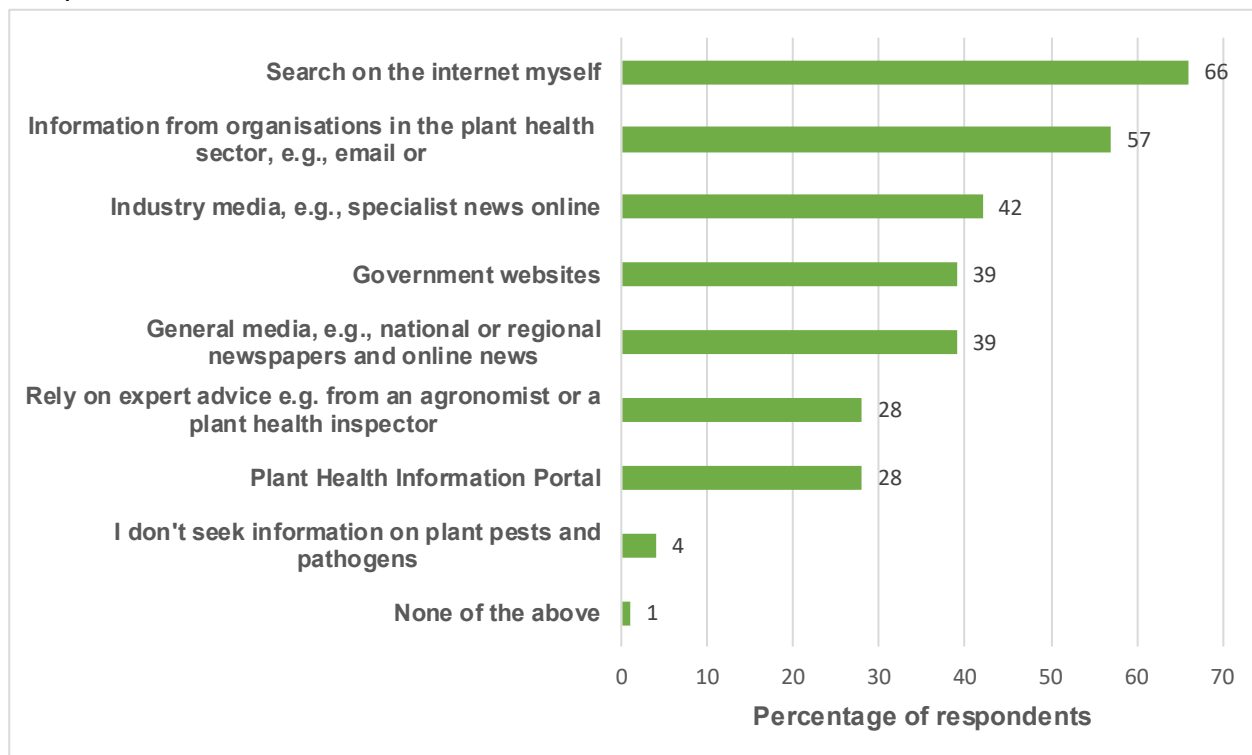


Figure 4 is a chart showing where respondents get information on plant pests and diseases from.

Searching on the internet was the most popular means of getting information on plant pests and diseases (66%) followed by information from organisations in the plant health sector (57%). Around 4% of respondents indicated they don't seek information on plant pests and pathogens.

Table 2: Where do you or your business currently get information on plant pests and diseases from? By broad group (expressed as a percentage).

Information source	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Search on the internet myself	60	62	70	70	70

Information from organisations in the plant health sector, e.g., email or	44	54	65	57	75
Industry media, e.g., specialist news online	17	31	70	30	70
Government websites	12	46	58	39	60
General media, e.g., national or regional newspapers and online news	54	31	32	22	40
Rely on expert advice e.g. from an agronomist or a plant health inspector	2	15	42	35	65
Plant Health Information Portal	4	15	42	35	55
I don't seek information on plant pests and pathogens	8	-	5	-	-
None of the above	-	-	3	4	-

Table 2 shows where respondents get information on plant pests and diseases from, aggregated into broader groups based on respondents' roles in plant health.

Respondents generally reported online sources as their key source of information, with only a small minority (4%) reporting that they would not seek out any information on plant pests and pathogens.

Figure 5: What information on plant health and biosecurity do you or your business need from government?

Sample size: 144

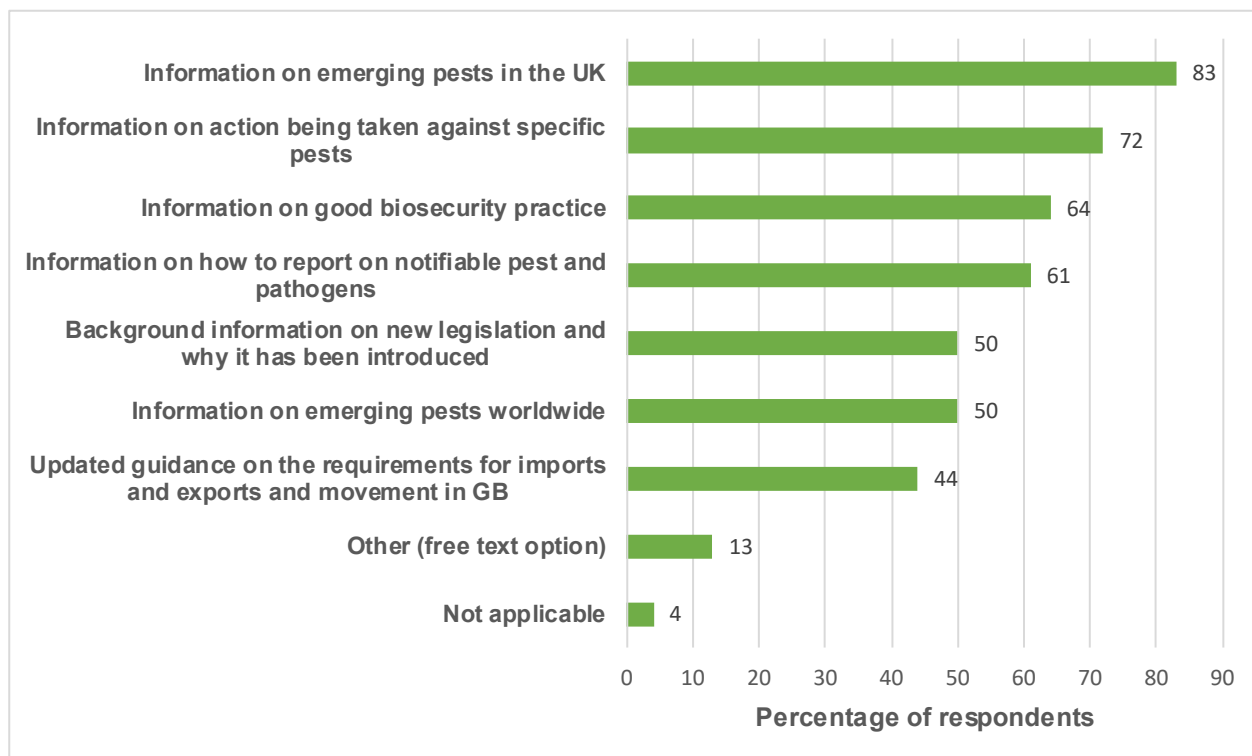


Figure 5 is a chart showing what information on plant health and biosecurity respondents want from government.

Respondents focused on the need for clear, accessible and succinct information from government. A number of respondents mentioned the Plant Health Information Portal and the Plant Health Risk Register by name, as well as organisations such as Forest Research, the Forestry Commission, Forestry Scotland, RHS, and Natural Resources Wales. Additionally, several respondents argued that there should be targeted efforts within education to increase awareness of plant pests and diseases more generally, from school age onwards or better training for professionals.

Table 3: What information on plant health and biosecurity do you or your business need from government? By broad group (expressed as a percentage).

Information source	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	sample: 48	sample: 13	sample: 40	sample: 23	sample: 20

Information on emerging pests in the UK	85	92	82	74	80
Information on action being taken against specific pests	71	77	78	52	85
Information on good biosecurity practice	56	85	70	48	75
Information on how to report on notifiable pest and pathogens	67	69	70	35	55
Background information on new legislation and why it has been introduced	25	38	70	43	85
Information on emerging pests worldwide	44	46	65	43	45
Updated guidance on the requirements for imports and exports and movement in GB	23	23	70	26	75
Other (free text option)	6	23	18	13	15
Not applicable	4	-	5	9	-

Table 3 shows what information on plant health and biosecurity respondents want from government, aggregated into broader groups based on respondents' roles in plant health.

The need for consolidated sources, particularly within the trade and for consumption by the general public were highlighted, as well a need for greater guidance and streamlining of the process for identification and reporting of notifiable pests and concerns over emerging issues in neighbouring European countries.

Figure 6: Do you or your business currently feel you have the right information to select suppliers that will supply biosecure stock?

Sample size: 144

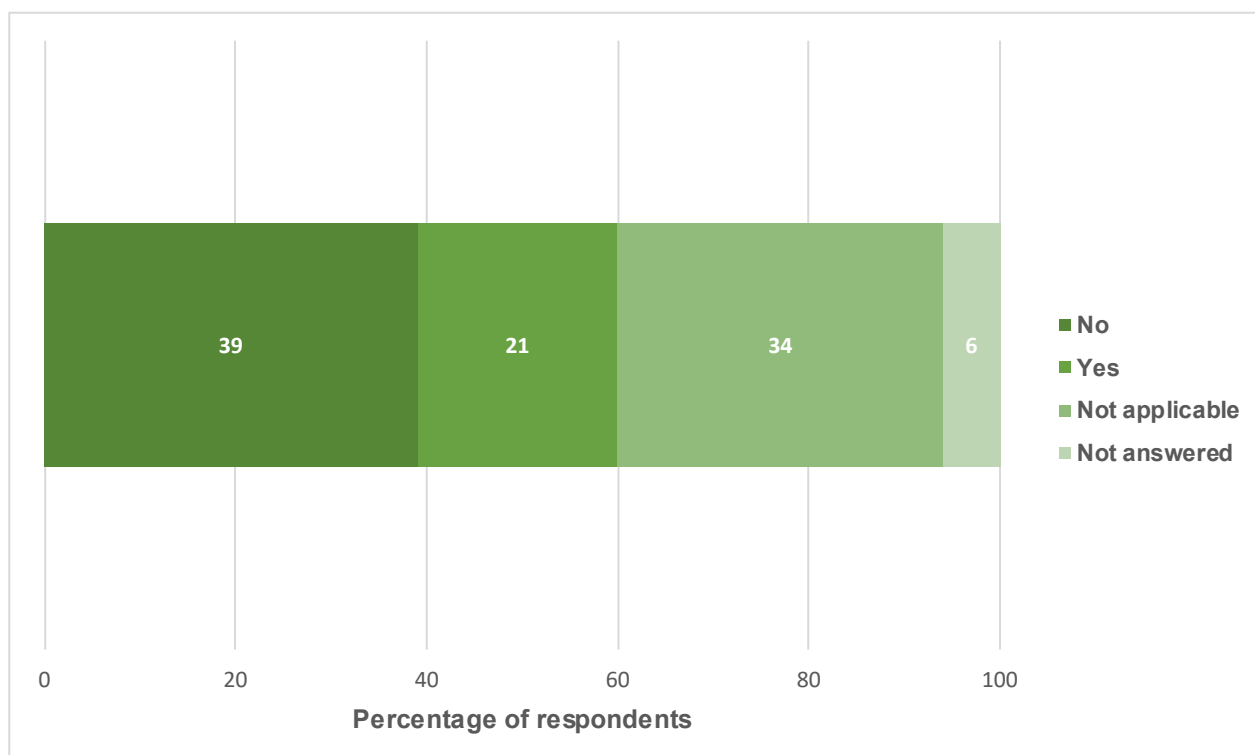


Figure 6 is a chart showing the proportion of respondents who feel they have the right information to select suppliers that will supply biosecure stock. 39% said no; 21% said yes; 34% said not applicable; and 6% did not answer.

Over one-third of respondents felt that they lacked sufficient information to reliably select suppliers of biosecure stock, however 40% of responses indicated the question was not applicable or did not answer.

When asked about their concerns around the selection of biosecure suppliers, many respondents highlighted the relative inaccessibility of information and requested transparent expansion of accreditation schemes or other official markers in support of biosecurity aims (in particularly around the identification and traceability of imported stock). Information on emerging pests was a particular area of interest. Analogies to 'kitemarks' used for certification in the food sector were often made, as was recognition that solutions need to account for the burden of compliance, particularly for small businesses and individuals. One of the key gaps identified by a number of respondents was the ambiguity associated with the definition of a plant as having been grown in the UK, and how this relates to imported and re-potted material (particularly when such labelling is directed at the general public).

Figure 7: Would you be willing to engage with others to share information to better protect UK biosecurity?

Sample size: 144

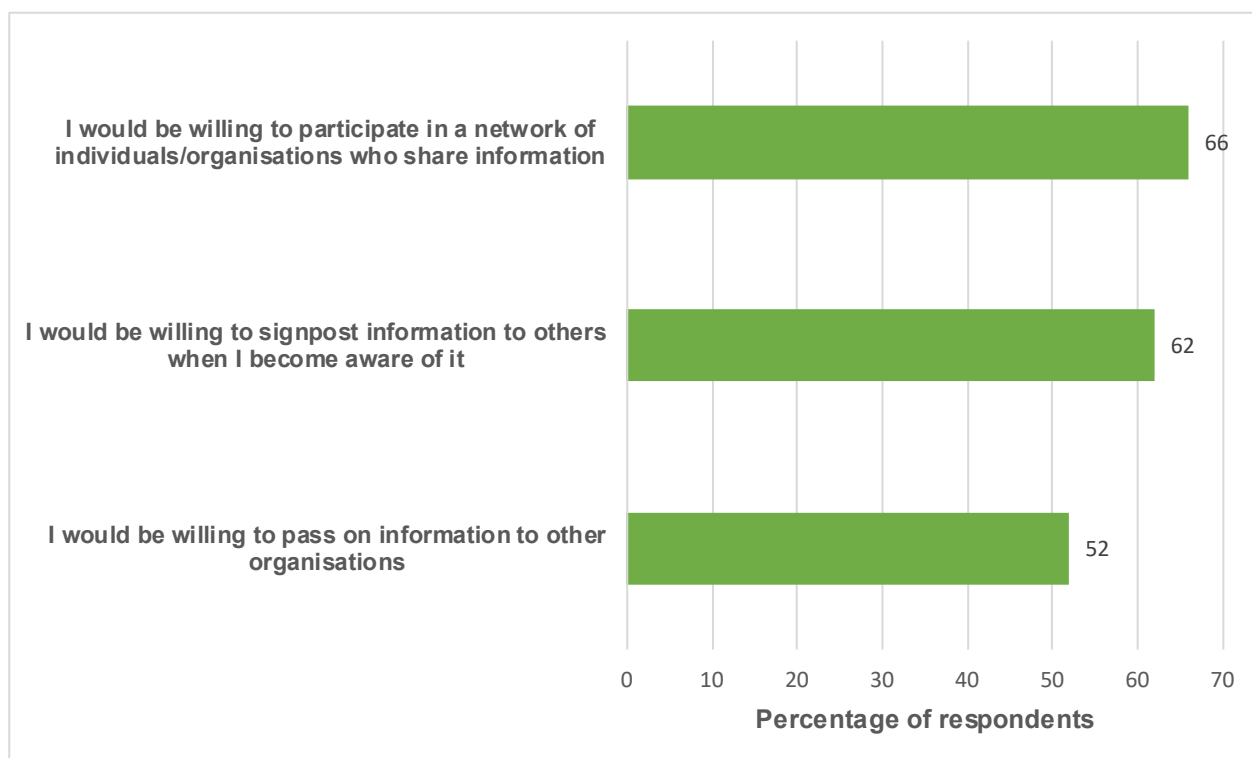


Figure 7 is a chart showing the proportion of respondents who would be willing to engage with others to share information to better protect UK biosecurity.

Around two-thirds of respondents indicated willingness to engage with collaborative information sharing networks, with a slightly lower proportion willing to be engaged with signposting and passing on information.

Table 4: Would you be willing to engage with others to share information to better protect UK biosecurity? By broad group.

Means of sharing	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
I would be willing to participate in a network of	46	69	80	74	75

individuals/organisations who share information					
I would be willing to signpost information to others when I become aware of it	60	54	70	57	60
I would be willing to pass on information to other organisations	29	54	68	52	75

Table 4 shows the proportion of respondents who would be willing to engage with others to share information to better protect UK biosecurity, aggregated into broader groups based on respondents' roles in plant health.

The willingness to engage with others is strongest within the trade sector and NGOs, charities and other professionals, and weakest among the general public, particularly willingness to pass on information.

Figure 8: How important is biosecurity as a consideration when you are deciding whether to bring personal imports of plants and plant products into Great Britain?

Sample size = 144

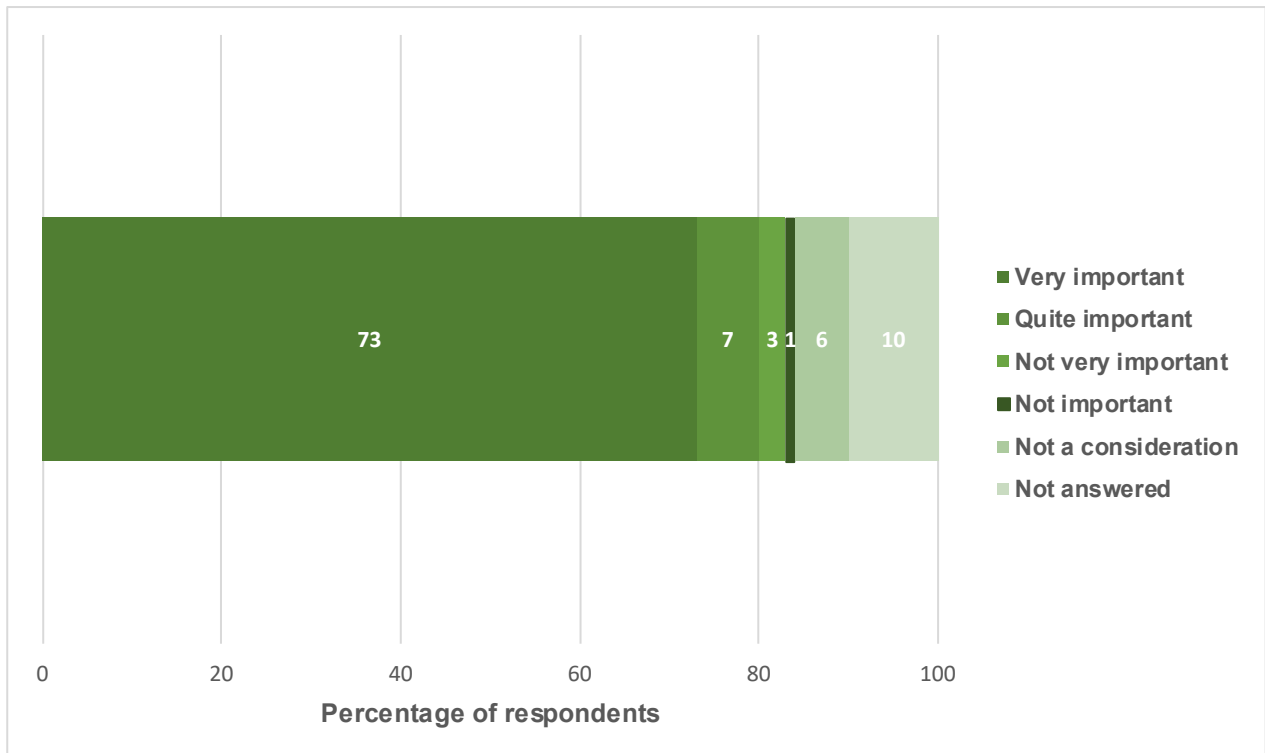


Figure 8 is a chart showing how important respondents feel the consideration of biosecurity to be in relation to personal imports.

The majority of respondents (73%) described biosecurity as being 'very important' in the personal import of plant material. Only 6% of respondents listed biosecurity as not being a consideration in personal imports.

Many respondents agreed that general awareness of plant biosecurity concerns was low and that engaging the public on this topic would increase compliance and positive behaviours:

"Public awareness results in educational knowledge and people can make informed decisions when purchasing plants, or taking risks to import plants from unreliable sources".

A related theme was concern with the actions of individual consumers, such as planting seeds bought from third party internet sellers that have been mislabelled to avoid biosecurity checks:

"We should tighten rules on imports of plant products purchased by individuals by the internet".

However, a minority put the onus back on government and industry:

"I believe it is both dangerous and stupid to expect the public to selectively avoid dodgy suppliers. It is essential that all plants for sale to British consumers either bought physically or online conform to the highest standards of bio-security".

Figure 9: Before you import plants or plant products by post, or in your personal luggage into Great Britain, where would you look for information on import requirements and restrictions?

Sample size = 144

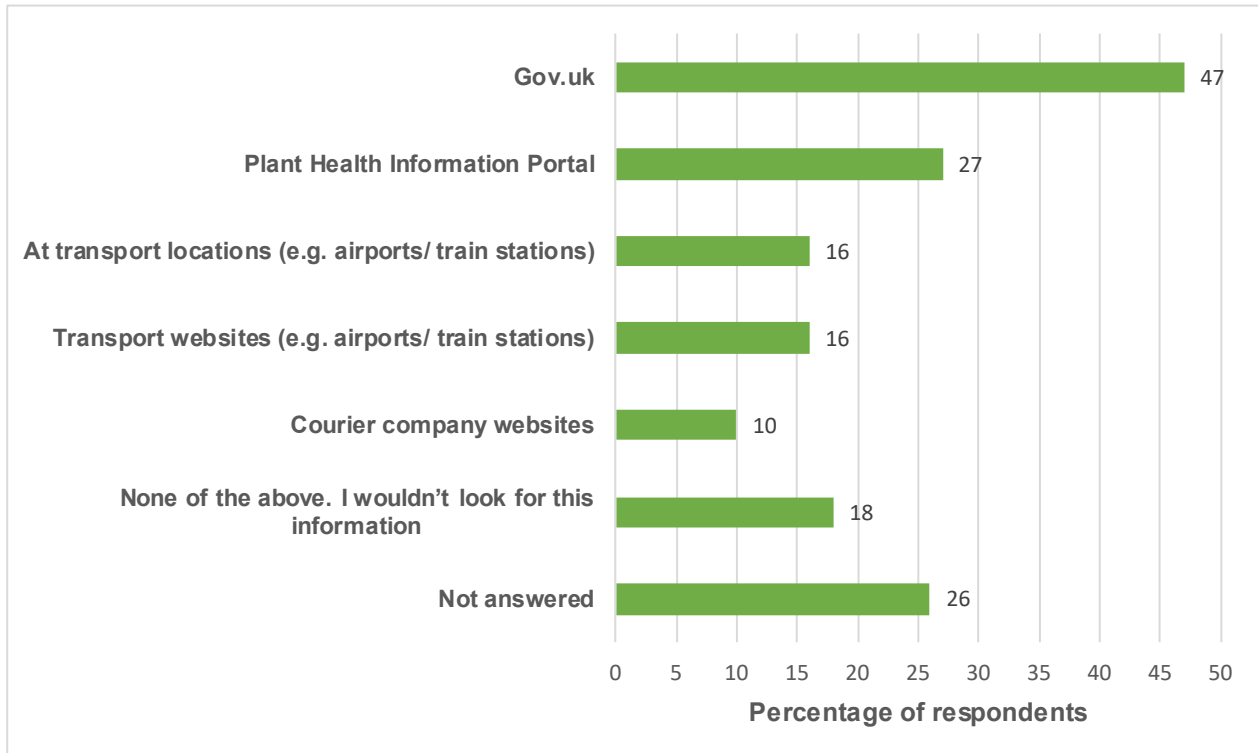


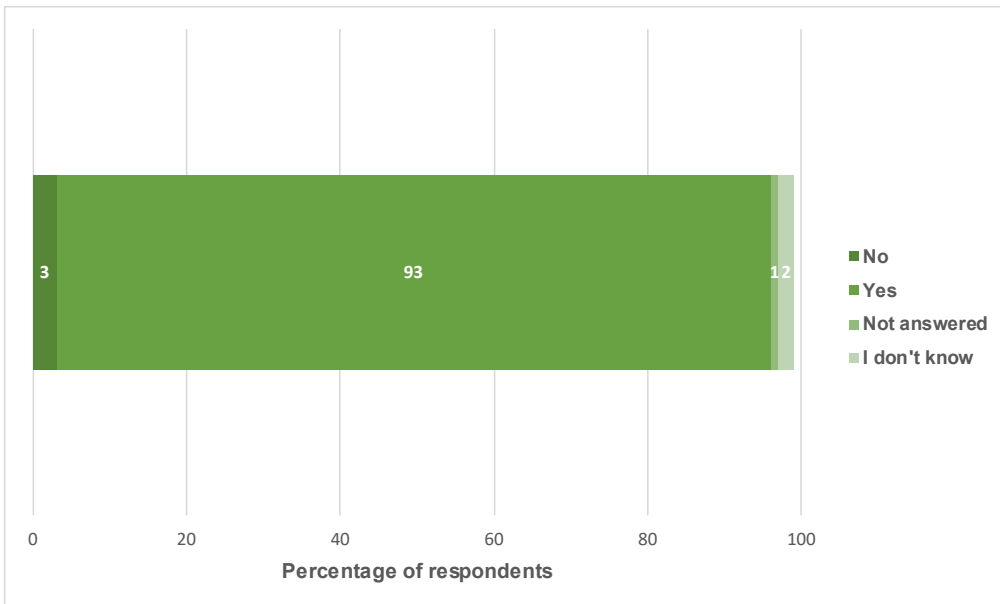
Figure 9 is a chart showing where respondents would look for information on import requirements and restrictions before importing plant or plant products by post.

Just under half of respondents (47%) selected 'Gov.uk' as where they would look for information on personal imports, followed by the Plant Health Portal (27%). Of the 18% of respondents who stated that they would not look for information relating to personal imports, 12 stated explicitly that they would/do not import plants in personal luggage. Comments focused on professional compliance in imports or placed the emphasis on sellers.

Outcome 2: A society that values healthy plants

Figure 10: Do you support the intention to encourage society to play a more active role in helping to protect plant health?

Sample size = 144



*** numbers do not sum to 100% due to rounding*

Figure 10 is a chart showing whether respondents support the intention to encourage society to play a more active role in helping to protect plant health.

The majority of respondents (93%) supported the intention to encourage society to play a more active role in plant health. Respondents highlighted the benefits of increasing public awareness and engagement, both in reducing individual incidents with biosecurity impacts, but also in shaping consumer purchases and wider stakeholder attitudes. Comments from respondents assumed that an increase in awareness would correlate with an increase in engagement. Comments from those who disagreed indicated that this was of small importance compared to other drivers such as government and industry actions, trade policy and climate change.

Figure 11: In order to raise awareness of the risks to plant health and encourage people to act responsibly, what do you think is the most effective message for use in a promotional campaign?

Sample size = 144

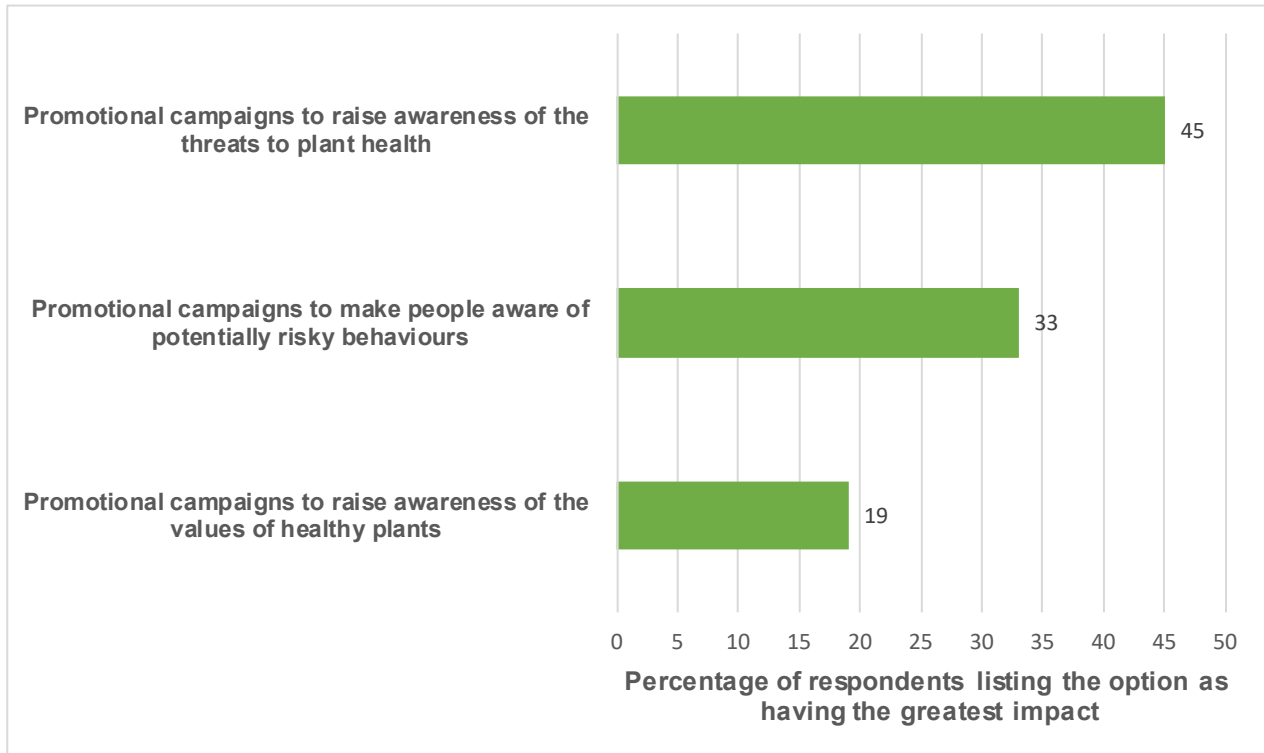


Figure 11 is a chart showing what respondents think is the most effective message for use in a promotional campaign to raise awareness of the risks to plant health and encourage people to act responsibly.

Messaging relative to threats to plant health was generally considered the most effective, followed by highlighting risky behaviours.

Figure 12: When would messages on how best to protect plant health have the most impact?

Sample size = 144

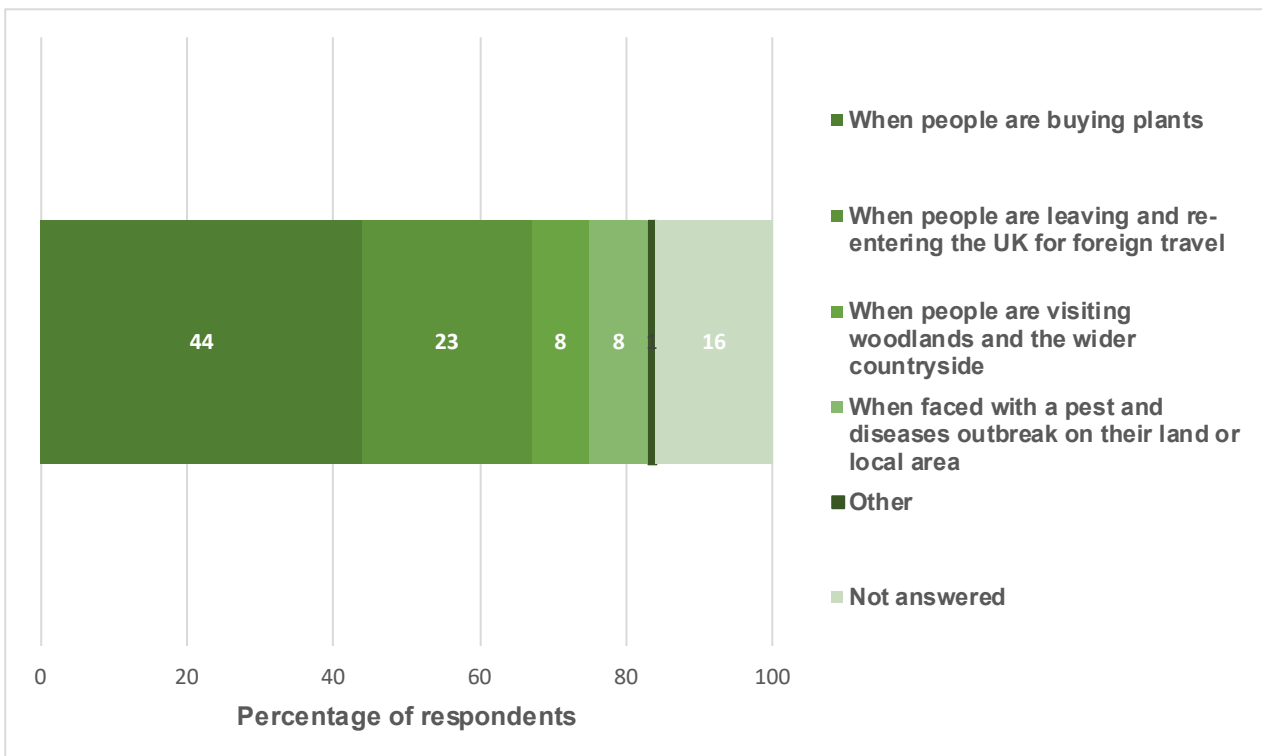


Figure 12 is a chart showing when respondents think messages to protect plant health would have the most impact.

The largest group of respondents (44%) favoured messaging at time of purchasing plants, followed by messaging targeted at when people are leaving/re-entering the UK (23%).

Many respondents included comments indicating that a mixed strategy including all of the listed options would be preferable (possibly varying by the specific pest issue). Other key messaging locations identified included the online environment, with sites like eBay being specifically highlighted. Respondents also highlighted that for messaging to be effective it must precede the act of purchasing high-risk material and sought wider improvements in public awareness around biosecurity. Consistent visibility of messaging, particularly at the border, was also highlighted.

When given the opportunity to provide further detail on this point, most of the respondents highlighted the importance of all of the options presented, including wider biosecurity education, information at the point of sale (whether in person or online) and the intersection with other strategies such as inspection. Likewise, some respondents considered messaging beyond consumers, such as with regards to development and planting schemes.

Figure 13: Which learning resources would have the biggest impact in terms of building your own or your organisation’s knowledge of plant biosecurity?

Sample size = 144

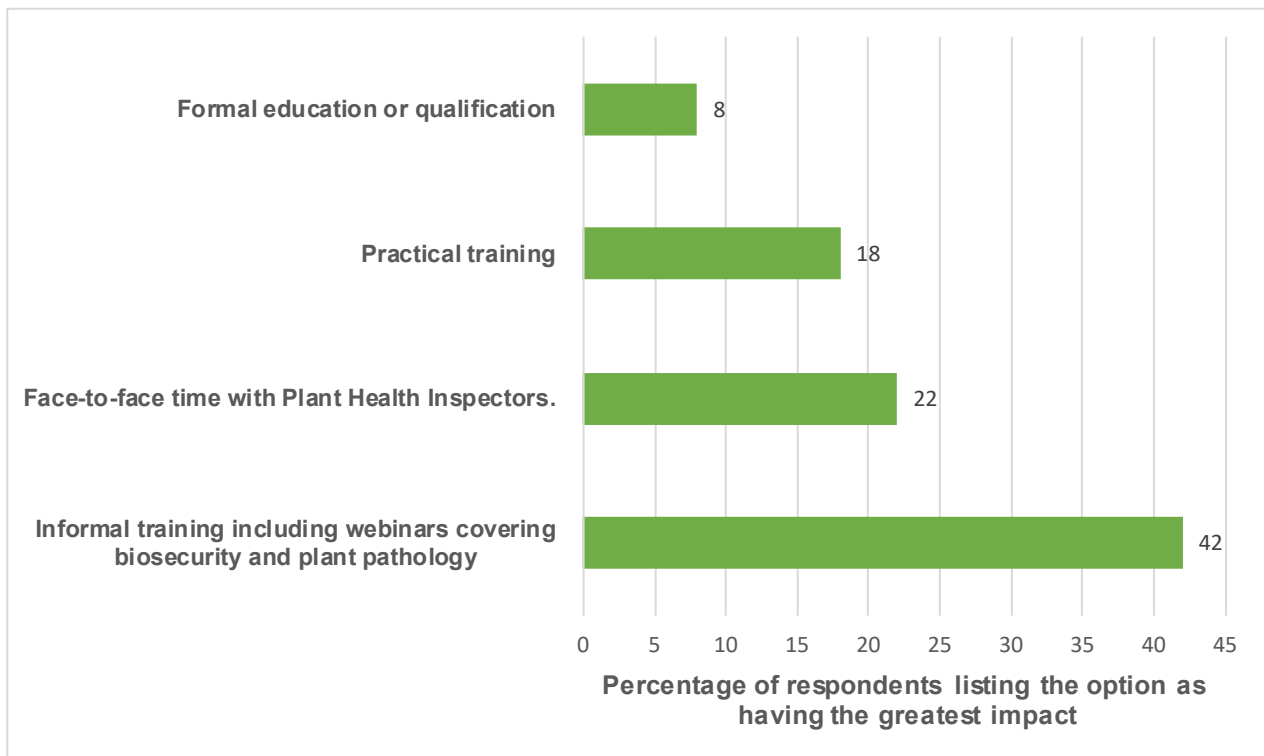


Figure 13 is a chart showing which learning resources respondents feel would have the biggest impact in terms of building knowledge of plant biosecurity.

Informal training was identified as the most important learning resource (42%), followed by face-to-face contact with inspectors (22%). There was generally very little appetite for formal qualifications among respondents, with most relevant comments focusing on tools for broader public engagement.

Figure 14: How can we further enhance the positive contributions of citizen science to plant health?

Sample size = 144

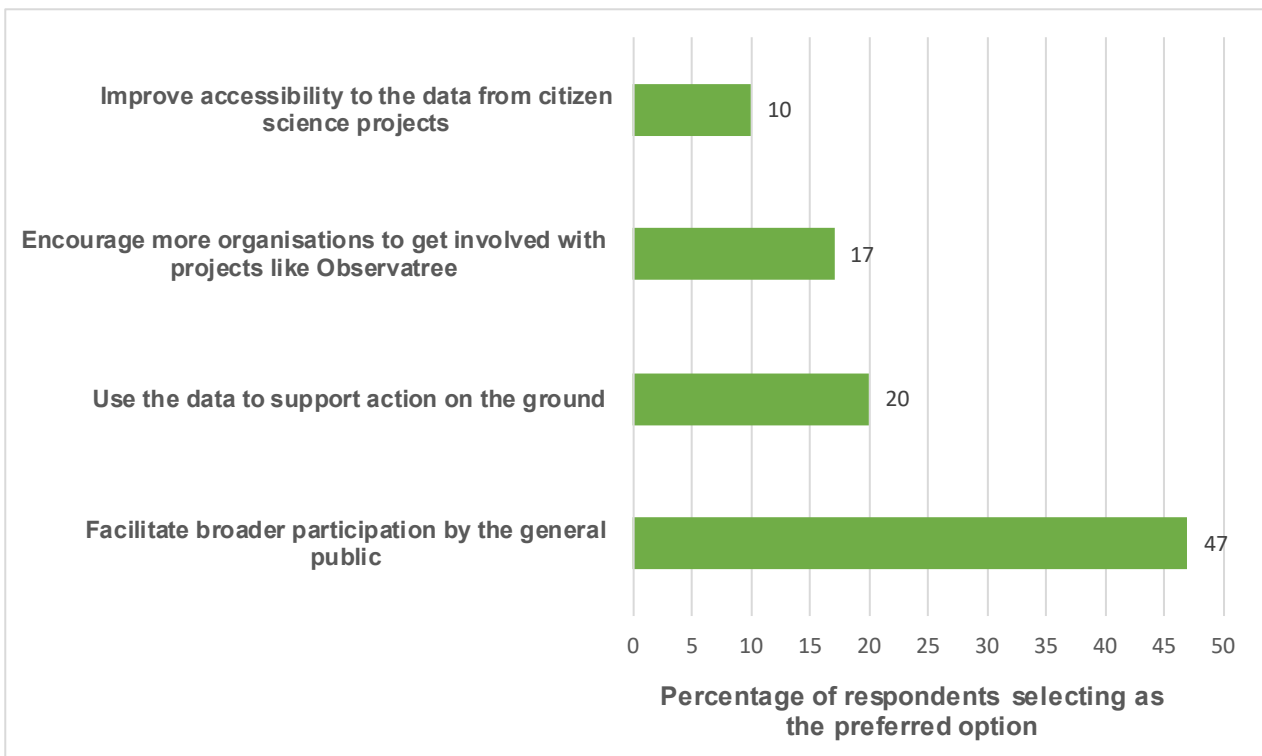


Figure 14 is a chart showing how respondents feel we can further enhance the positive contributions of citizen science to plant health.

Discussion of the contributions of citizen science matched the broader theme of engagement outside of the space of existing stakeholders. Members of the public were keen on the idea of citizen science as a tool for public engagement (but showed limited interest in access to the data afterwards). By contrast landowners were more focused around the practical aspects of using citizen science data to support intervention and facilitating projects such as Observatree. Several comments also highlighted the potential for development of citizen science databases as tools for information sharing and response e.g.,

“A government database in which growers can add the name of plant/tree/crop and enter whether there were signs of contamination or if it was healthy. This would provide a database of information but also potentially encourage more places to adhere to quarantine policies”.

Outcome 3: A biosecure plant supply chain

General note on interpretation

Due to the nature of the plant supply chain, the first two questions in this section were considered largely inapplicable to respondents outside of the trade and are presented accordingly.

Figure 15: Do you already belong to an assurance scheme that requires standards of those wanting to join?

Sample size = 17

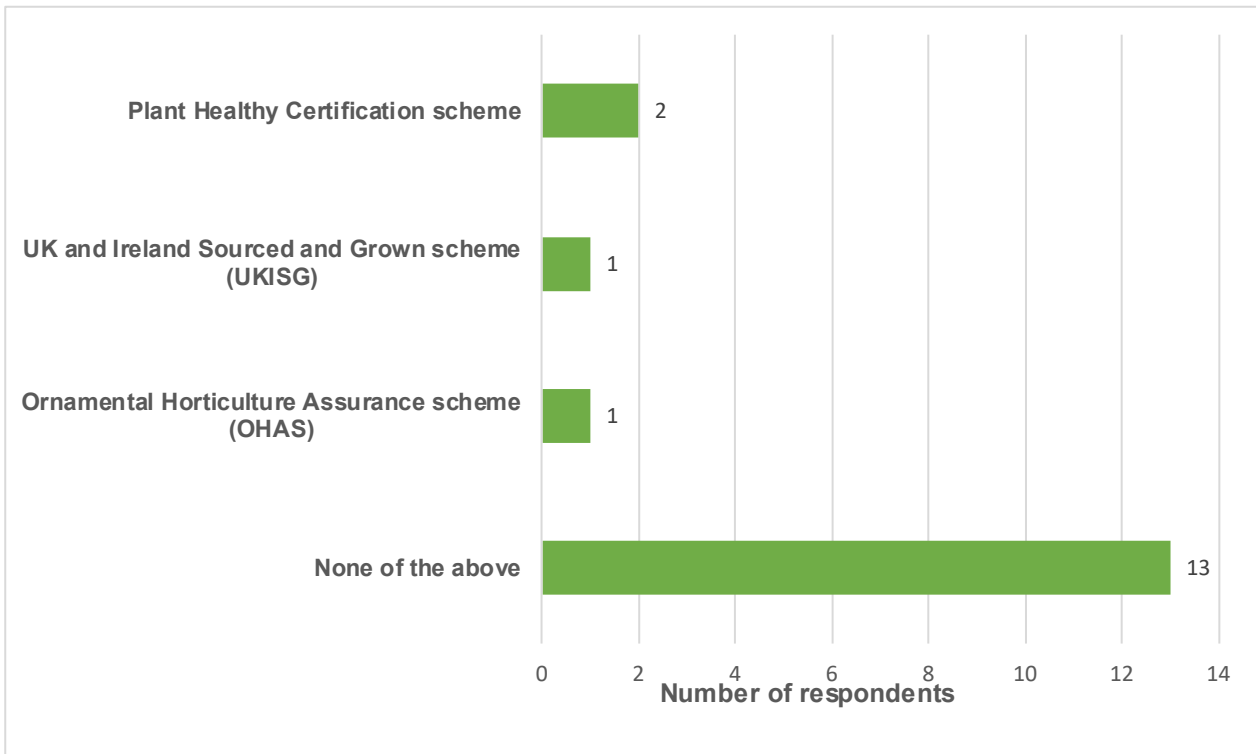


Figure 15 is a chart detailing the number of respondents who belong to a plant health assurance scheme.

Only 17 respondents in total came from sectors of the trade that would be eligible for membership of the listed assurance schemes. Of these, only 4 respondents reported being members of the listed schemes. Given the small number of responses involved, caution is advised in the interpretation of these findings and how this relates to uptake of schemes more generally.

Figure 16: If you are a supplier, what benefits do assurance schemes need to offer you/your business for you to join or maintain your membership?

Sample size = 20

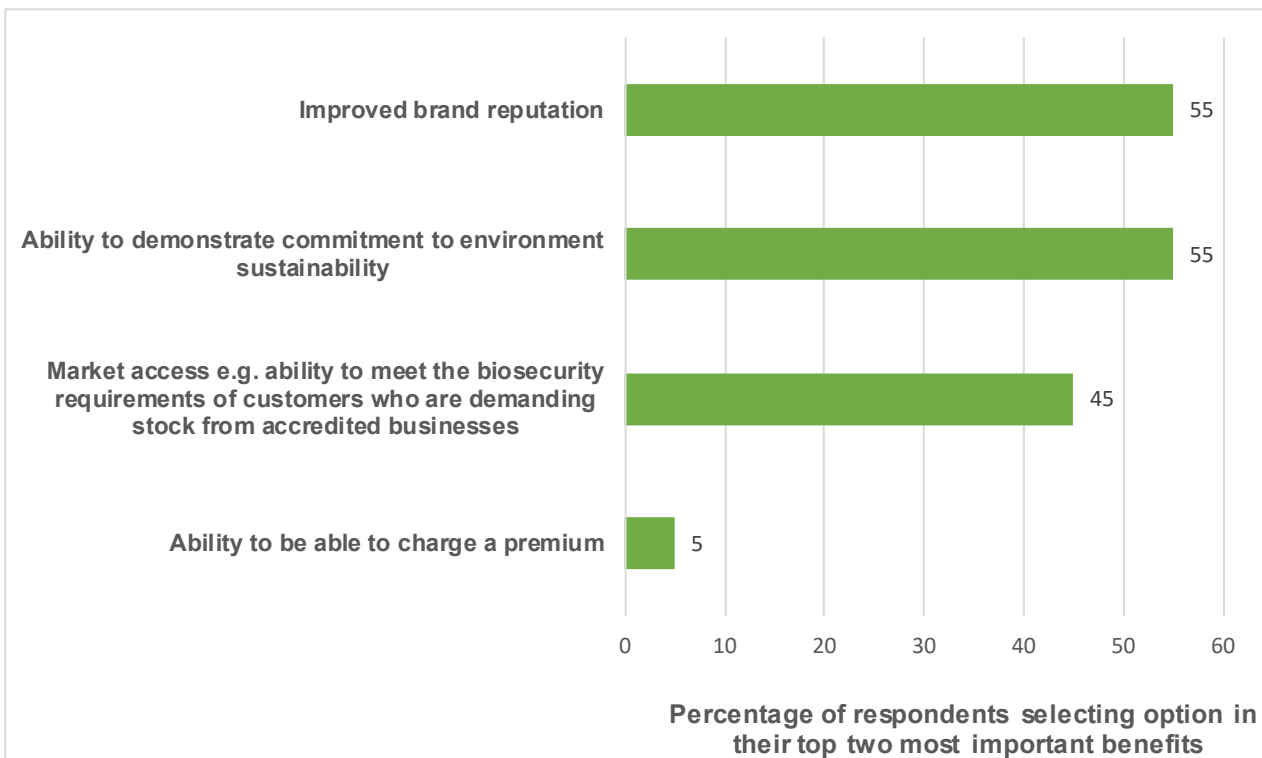


Figure 16 is a chart showing what benefits respondents think assurance schemes need to offer in order for them to join or maintain membership.

Within the trade, brand reputation and the ability to demonstrate environmental commitments are the two most important factors in the decision to engage with assurance schemes.

Only 11 respondents provided additional discussion of the benefits of their participation in assurance schemes. These included:

- Following best practice and the resultant legitimacy
- Receiving updates on pests and diseases
- Being able to meet customer requirement

Figure 17: What are the barriers to the growth of domestic production?

Sample size = 144

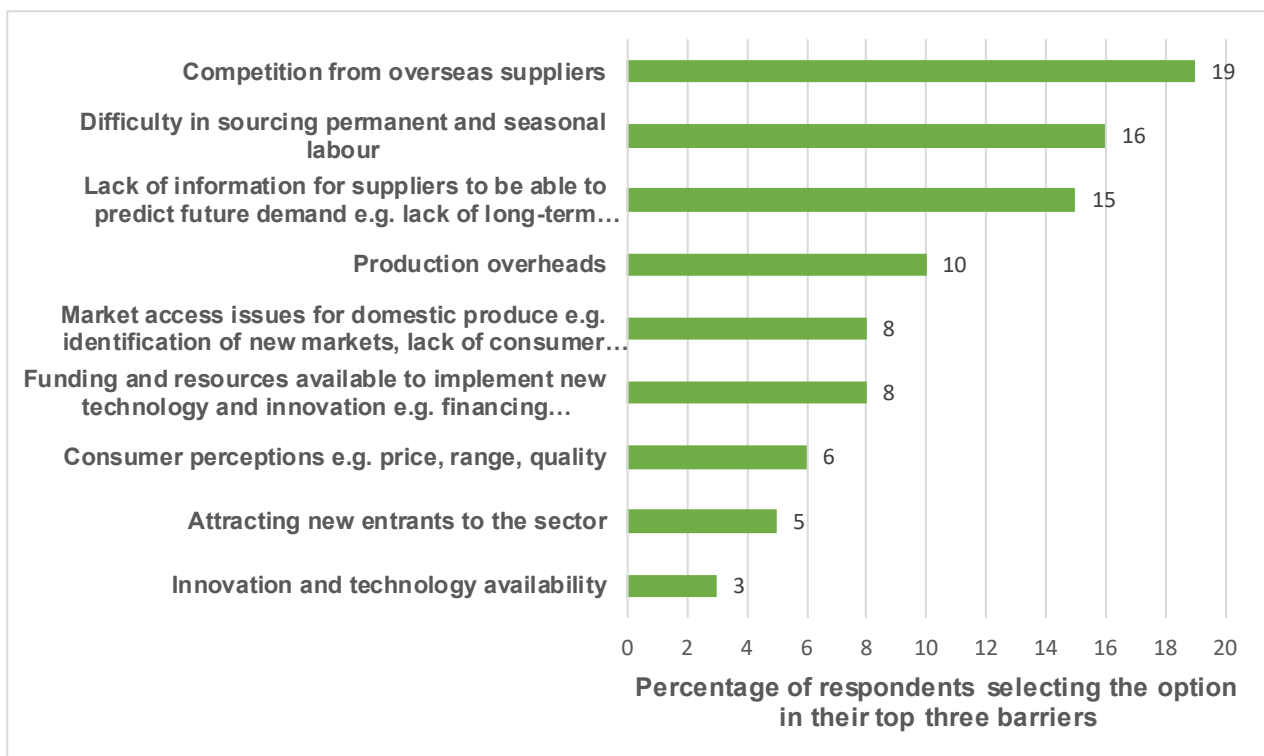


Figure 17 is a chart showing what respondents feel are the barriers to the growth of domestic production based on those selected as the respondents top three ranked options.

The role of domestic production in enhancing UK biosecurity was one of the most frequently raised issues in the consultation with a wide range of opinions ranging from trying to phase out imports in their entirety to emphasising that the globalised nature of existing systems means that a focus on domestic production may be too narrow to achieve the stated biosecurity goals.

Respondents identified competition from overseas suppliers (19%) as a key barrier followed by labour issues (16%) and difficulty in predicting demand (15%).

Many comments, particularly from within the trade, picked up on the theme of ongoing uncertainties around future demand, noting that the multi-year time scales associated with changing patterns of production, as well as the risk burden of potential changes to rules around imports, were significant factors in restricting investment within the sector (particularly where upfront costs remain high and availability of trained staff limited). The structure of the current tree planting grant process, with its two year limit on delivery, was particularly highlighted as a constraint for long term estimation of demand. By contrast the availability of technology and attracting new entrants into the sector were generally not considered strong barriers to domestic production.

Table 5: What are the barriers to the growth of domestic production? By broad group (expressed as a percentage).

Barrier	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Competition from overseas suppliers	15	31	18	17	30
Difficulty in sourcing permanent and seasonal labour	4	15	18	22	35
Lack of information for suppliers to be able to predict future demand	2	23	20	13	30
Production overheads	-	15	15	13	20
Market access issues for domestic produce	8	8	2	4	25
Funding and resources available to implement new technology and innovation	6	-	18	4	-
Consumer perceptions e.g. price, range, quality	6	8	2	9	10
Attracting new entrants to the sector	-	15	2	9	10
Innovation and technology availability	-	-	5	-	10

Table 5 shows what respondents feel are the barriers to the growth of domestic production based on those selected as the respondents' top three ranked options and aggregated into broader groups based on respondents' roles in plant health.

In general, trade respondents focused on the concerns around competition, labour availability and predicting demand. Landowners and managers also highlighted competition and predicting demand as key barriers whilst sourcing labour was a barrier within the research and education group.

Figure 18: Of the options below, which would be the most effective ways of addressing the main barriers to domestic production that you have identified?

Sample size = 144

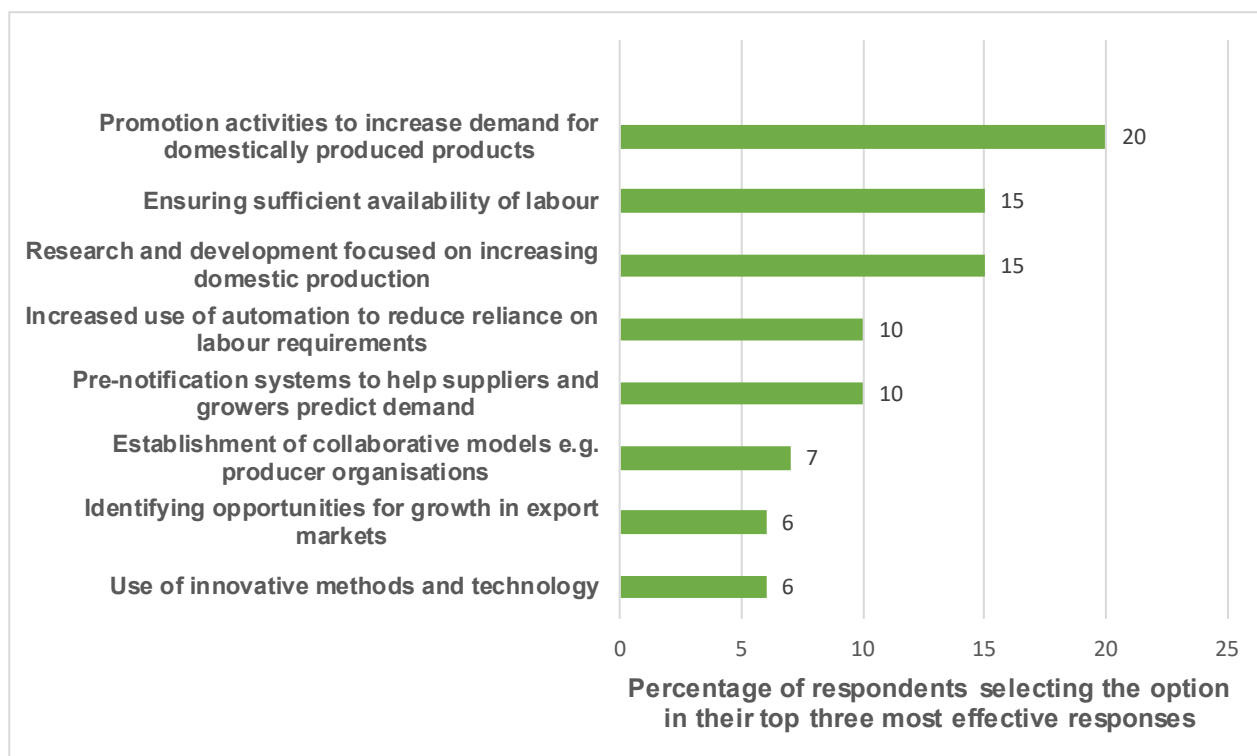


Figure 18 is a chart showing what respondents feel would be the most effective ways of addressing the main barriers to domestic production based on ranking of the respondents three top responses.

Promotion activities to increase demand were considered the most effective way of addressing barriers to domestic production (20%) alongside labour supply (15%) and research and development (15%).

Table 6: Of the options below, which would be the most effective ways of addressing the main barriers to domestic production that you have identified? By broad group.

Means of addressing barriers	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade

	<i>sample:</i> 48	<i>sample:</i> 13	<i>sample:</i> 40	<i>sample:</i> 23	<i>sample:</i> 20
Promotion activities to increase demand for domestically produced products	15	23	20	13	40
Ensuring sufficient availability of labour	4	8	15	22	40
Research and development focused on increasing domestic production	8	15	20	17	15
Increased use of automation to reduce reliance on labour requirements	4	15	10	9	25
Pre-notification systems to help suppliers and growers predict demand	-	31	15	9	10
Establishment of collaborative models e.g. producer organisations	4	8	2	13	15
Identifying opportunities for growth in export markets	4		2	4	20
Use of innovative methods and technology	4	-	5	9	10

Table 6 shows what respondents feel would be the most effective ways of addressing the main barriers to domestic production based on ranking of the respondents top 3 responses and aggregated into broader groups based on respondents' roles in plant health.

The most endorsed option, particularly within the trade, was incentivising demand for domestic production. Respondents were divided on whether this was best achieved through better management of UK demand or by erecting increased barriers to imports. Ensuring availability of labour (especially skilled graduate labour) was considered as

effective by the trade and research sectors, alongside research and development considerations. Landowners emphasised the role that pre-notification systems might play in predicting demand, although this was viewed as less effective by the trade. Access to export markets were generally considered to be low concern (especially outside the trade) with most respondent's comments being focused on the situation internally to the UK.

Some respondents felt that biosecurity concerns necessitated a reduction in imports, and a resultant increase in domestic production, while others highlighted the challenges such an approach would face, as below:

“Domestic production means [...] increased production costs in redevelopment of businesses. [...] Space is a premium and new facilities cost money, need staff and change in logistics [...] Consortiums of large growers working together could bridge that gap providing the consumer will pay the premium UK production demands”.

In terms of other opportunities for increasing domestic production, 50 respondents gave suggestions. These included better labelling and awareness of the benefits of buying UK-grown, easing entry into the nursery sector, building higher biosecurity requirements into grants and internal procurement, greater regulation of imports, support for sustainable transitions in the industry (i.e., renewable energy, move to peat free etc.), reduced cost of inspection/compliance (especially for smaller businesses or new entrants), and finally, fund research and development, as well as training pathways.

Outcome 4: An enhanced technical capability

What percentage of government research spending should focus investment on strategic long-term research?

Priorities for research funding revealed a preference for strategic long-term research over reactive approaches, with the majority of respondents answering in the range of committing 50% to 70% of funding towards longer term research objectives.

Figure 19: In order to remain at the forefront of biosecurity, in what areas should GB be focusing R&D investment over the next five years?

Sample size = 144

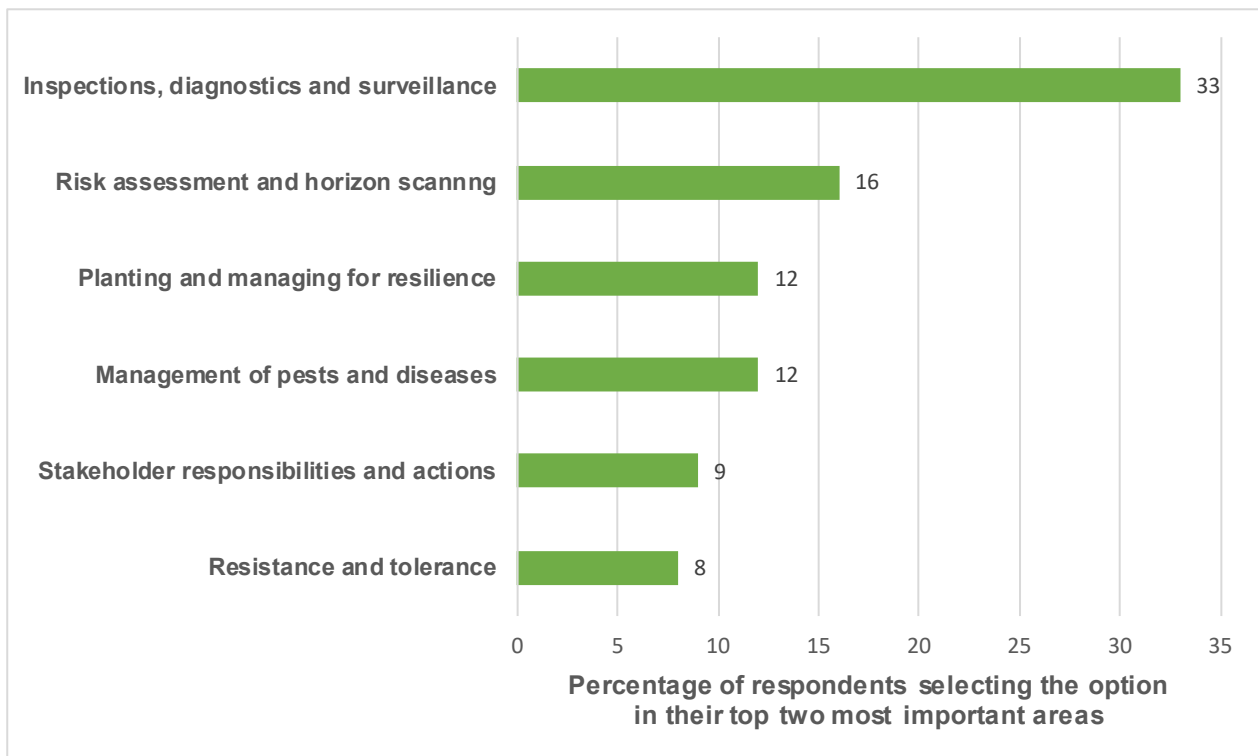


Figure 19 is a chart showing in which areas respondents feel GB should focus R&D investment over the next five years based on respondents' top two choices.

Inspections, diagnostics and surveillance (33%) are identified as the category with the greatest overall importance among respondents.

Table 7: In order to remain at the forefront of biosecurity, in what areas should Great Britain be focusing R&D investment over the next five years? By broad group (expressed as a percentage).

Focus of R&D	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Inspections, diagnostics and surveillance	27	31	25	56	35
Risk assessment and horizon scanning	8	8	20	17	30
Planting and managing for resilience	19	15	5	9	15

Management of pests and diseases	15	8	18	4	5
Stakeholder responsibilities and actions	17	15	8	-	-
Resistance and tolerance	4	15	10	9	5

Table 7 shows in which areas respondents feel Great Britain should focus R&D investment over the next five years based on respondents' top two choices and aggregated into broader groups based on respondents' roles in plant health.

The importance of inspections, diagnostics and surveillance was highlighted by all groups for investment. Risk assessment and horizon scanning were identified as important for the trade, research and education and NGOs/charities/other professionals group, whereas planting and managing for resilience were highlighted by the general public and landowner groups.

Table 8: Priority topics for research

Theme	Sub-Topics
Risk assessment & horizon scanning	Modelling emerging threats
	Assessing trade risks
	Predicting impact
	Natural resistance
	Impact of biodiversity loss
	Control measures
	Forms of transmission
Inspection, diagnostics & surveillance	Rates and effectiveness of inspection
	Novel technologies

	Rapid diagnostics
	Forms of transmission
	Individual behaviour
	Cost effectiveness
	Citizen science
	Operationalising existing research
Management of pests & diseases	Best practice and mitigation
	Control measures
	Forms of transmission
	Information access and support
Resistance & tolerance	Existing resistance
	Gene editing
	Climate resilience
	Information access and support
Planting & managing for resilience	Natural regeneration
	Species selection
	Climate resilience
	Replacement strategies
	Impact of biodiversity loss

	Information access and support
Stakeholder responsibilities & actions	Individual behaviour
	Industry co-operation
	Cost effective inspection
	Impact of policy
	Supply chain analysis

Table 8 shows the sub-topics selected by respondents as priority areas for future research.

Learning from other sectors

50 (of the total 144) respondents provided suggestions on activities in other sectors that could offer shared learning. A few respondents drew parallels with public health and epidemiology, including a focus on prevention, and other sectors referenced included animal health, weather modelling and communications. Specific developments that were mentioned repeatedly included potential expansion in the use of remote sensing and artificial intelligence.

New technologies

68 (of the total 144) respondents gave further detail on how the government can support R&D, including in relation to new technologies. The focus was generally on research funding, investment and effective collaboration.

For example:

“Through supporting ongoing engagement between the scientific and technological sectors and those on the ground (and their representative bodies) who may apply certain technologies when they are deployable. Articles in generalist and trade press about potential applications, seminars and webinars etc can help inform the development of products/techniques and engender support making eventual deployment easier.”

Cost was identified by most respondents as the biggest barrier to embedding new technologies. Ignorance or intentional subversion were also often cited, as were issues with the number of qualified plant health inspectorate staff.

Collaborative partners

66 (of the total 144) respondents proposed ways of expanding research capacity, with a great diversity of responses. These included:

- Universities and research institutes
- Nurseries and industry partners
- Foreign countries with effective biosecurity policies
- Local and voluntary groups, citizen scientists

Additional biosecurity measures for high-risk trees

Questions in this section aimed to gain a deeper understanding of stakeholder views on additional biosecurity measures associated with specific risks from trees and to inform policy thinking around pre-border, at the border and inland biosecurity measures targeted specifically at these issues.

General note on interpretation

As noted above (see overview of responses) questions on additional biosecurity measures for import of high-risk trees, were an optional annex to the original consultation. As a result, findings and percentage values in this section are based on the 125 respondents who answered at least one of the questions in the annex to the original survey. The board demographics of those who provided answers to the annex were very similar to the overall demographics of respondents and included representatives of all the major interest groups.

Awareness and effectiveness of current measures

Figure 20: How aware are you of the current biosecurity measures in place for the import of high-risk tree species?

Sample size = 125

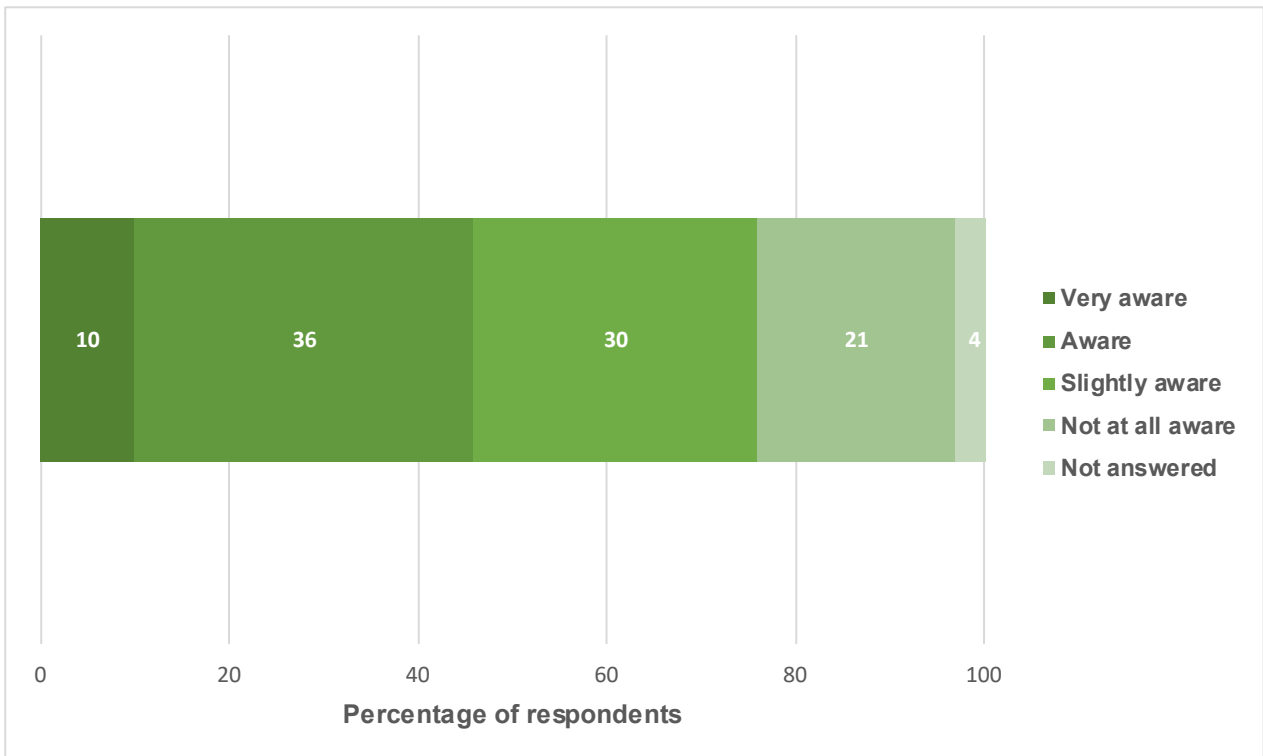


Figure 20 is a chart showing how aware respondents are of current biosecurity measures that are in place for the import of high-risk tree species.

Just under half of respondents (46%) indicated they were very aware or aware of current biosecurity measures in place for the import of high-risk tree species.

Table 9: How aware are you of the current biosecurity measures in place for the import of high-risk tree species? By broad group (expressed as a percentage).

Awareness level	General public	Landowner or manager	NGOs/charities/ other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Very aware	2	8	22	5	11
Aware	12	39	41	57	56
Slightly aware	39	31	25	24	22
Not at all aware	44	23	9	5	6
Not answered	2	-	3	10	6

Table 9 shows how aware respondents are of current biosecurity measures that are in place for the import of high-risk tree species aggregated into broader groups based on respondents' role in plant health.

Responses from the general public indicated they were at most only slightly aware of measures, while the majority of professionals indicating themselves as being aware of the current measures with the NGOs/charities/other professionals and trade groups having high proportions indicating themselves as very aware of current measures.

Many responses on this topic, argued that the limits of current measures were self-evident, whether due to being insufficient or due to poor adherence. There were some exceptions to this.

As one respondent put it:

“Current Defra investment in the plant health inspection service has increased considerably with more feet on the ground and the support they give our business is much appreciated.”

Figure 21: How satisfied are you with the effectiveness of the current biosecurity measures in place for the import of high-risk tree species?

Sample size = 125

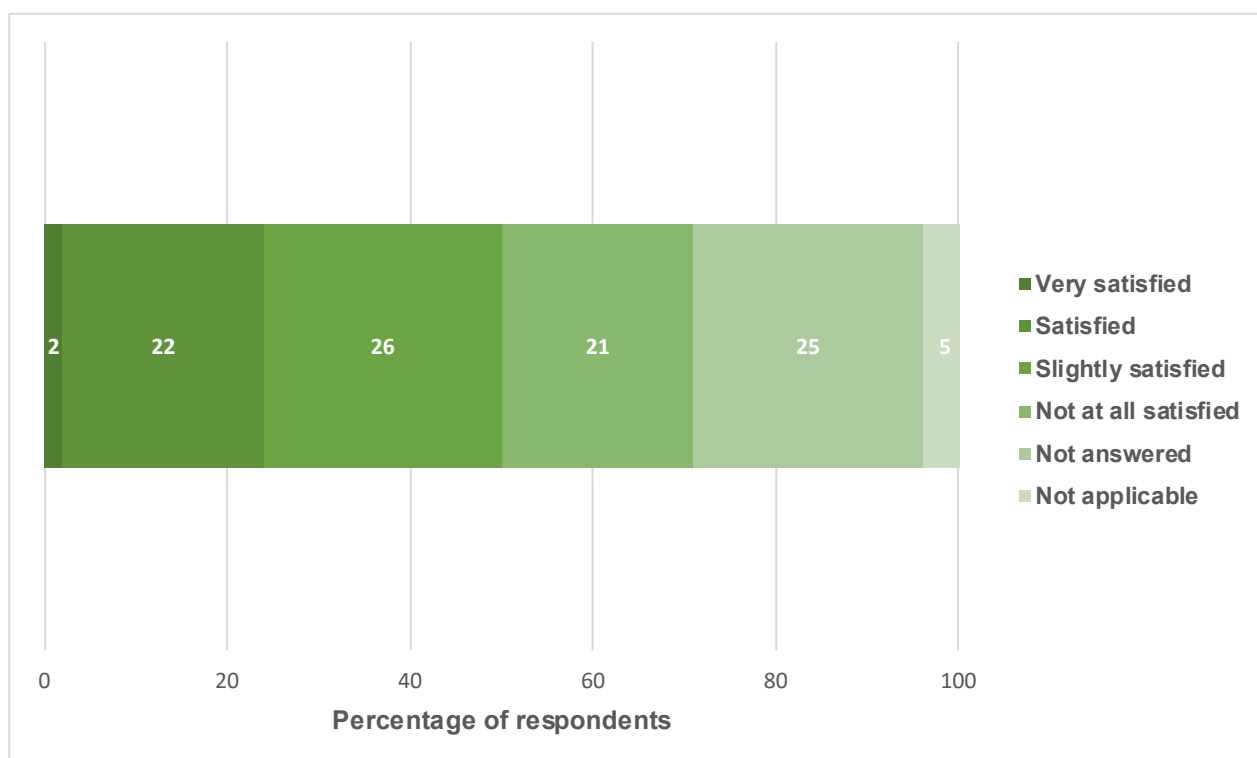


Figure 21 is a chart showing how satisfied respondents are with the effectiveness of the current biosecurity measures in place for the import of high-risk tree species.

Just under one-quarter (24%) of respondents indicated they were very satisfied or satisfied with the effectiveness of current biosecurity measures in place for the import of high-risk

tree species, however a further quarter did not answer and 5% of respondents indicated the question was not applicable to them.

Table 10: How satisfied are you with the effectiveness of the current biosecurity measures in place for the import of high-risk tree species? By broad group (expressed as a percentage).

Satisfaction level	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Very satisfied	-	8	-	-	6
Satisfied	15	23	16	29	39
Slightly satisfied	24	23	28	29	28
Not at all satisfied	20	31	31	10	11
Not answered/Not applicable	42	15	25	33	17

Table 10 shows how satisfied respondents are with the effectiveness of the current biosecurity measures for the import of high-risk tree species, aggregated into broader groups based on respondents' roles in plant health.

Satisfaction with current measures tended to mirror awareness, although with a much greater proportion of respondents (30%) providing no interpretable response. In general respondents in the trade showed the greatest rates of overall satisfaction, while dissatisfaction was most common among the NGO/charities/other professional and landowner or manager group.

When asked to provide more details, many respondents cited concerns over the visibility and scale of existing systems, as well as the evidence of historic pest incursions as systemic failures of the existing process.

Figure 22: What factors are you most concerned about with the import of high-risk trees?

Sample size = 125

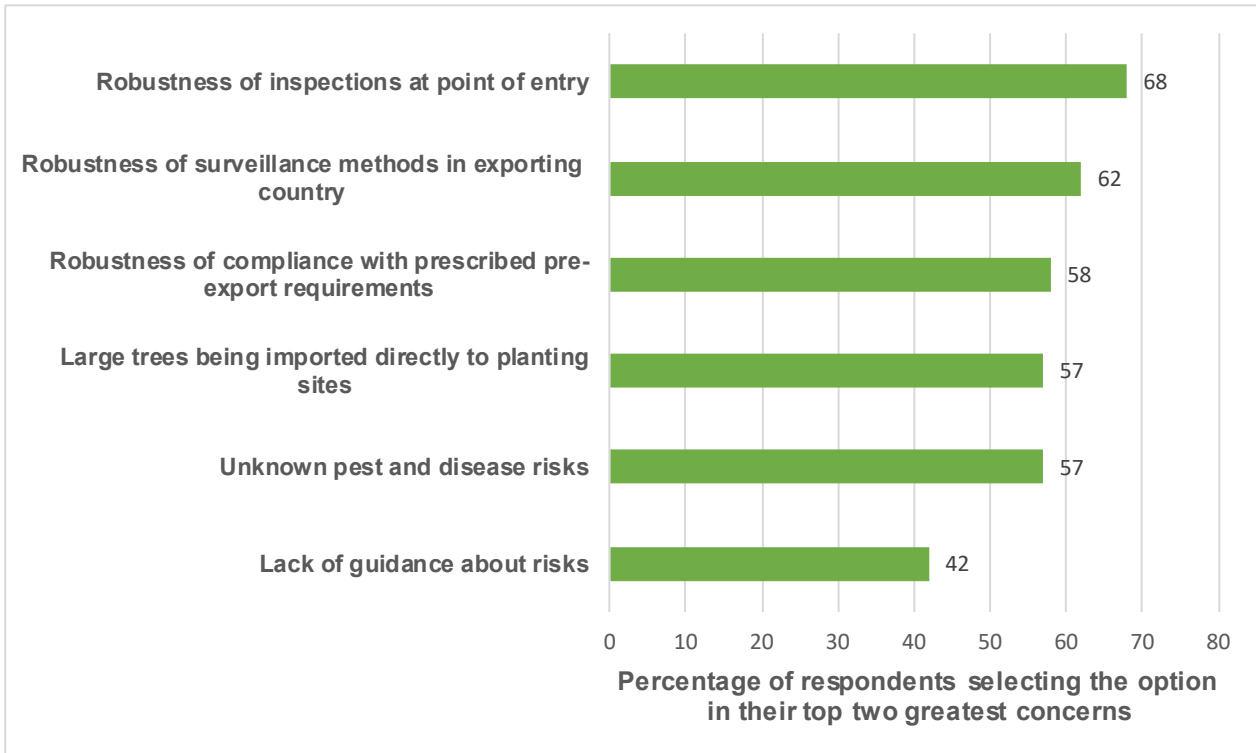


Figure 22 is a chart showing the top concerns about the import of high-risk tree species based on the top two rankings of respondents.

The greatest concerns cited by respondents around the import of high-risk trees was the robustness of inspection activity at the point of entry (68%) and the robustness of surveillance methods in exporting countries (62%).

Table 11: What factors are you most concerned about with the import of high-risk trees? (Expressed as a percentage.)

Concerns	General public	Landowner or manager	NGOs/charities/ other professionals	Research and education	Trade
	sample: 48	sample: 13	sample: 40	sample: 23	sample : 20
Robustness of inspections at point of entry	73	85	75	52	50
Robustness of surveillance methods in exporting country	63	69	72	43	56
Robustness of compliance with prescribed pre-export requirements	66	77	59	29	56
Large trees being imported directly to planting sites	56	85	56	29	72
Unknown pest and disease risks	56	54	62	48	61
Lack of guidance about risks	49	38	47	19	50

Table 11 shows the top concerns about the import of high-risk tree species based on the top two rankings of respondents and aggregated into broader groups based on respondents' roles in plant health.

This robustness of inspections at point of entry was the main concern for all groups, however the landowner or manager group also identified large trees being imported directly to planting sites as having the same level of concern.

Comments centred on a mix of economic, reputational and environmental themes with a lot of cross over with the more general perceived risk to plant health. Members of the public (and environmental NGOs), tended to be more focused on the potential outcomes of at-risk imports (i.e., the establishment of novel pests into the landscape), while members of the trade were often more focused on the practicalities and issues around the operation of the current system. The challenge of dealing with asymptomatic plants, notably including hosts of the emerging pathogen *Xylella fastidiosa*, was mentioned several times, as was the lack of clear guidance and traceability of stock, particularly when directed at the general public and other small-scale consumers.

As one respondent commented:

“Reduced biodiversity in planting schemes. Risk of being responsible for the procurement of infected specimens. Loss of professional credibility and standing in the industry.”

21 respondents offered suggestions on how additional biosecurity measures should be targeted and so these have been summarised in the table below.

Assessment of additional proposed biosecurity measures and suggestions

Transport restrictions

Containerised transport rather than open-top, travel restrictions for high risk areas, transport in seasons when pest/disease is most visible. But risk of plant deterioration and additional driver shortage if transport is delayed.

Growing season inspections in exporting country

Virus testing, seasonal pests, focus on highest risks, collaboration with other countries. But would increase overheads if not a free service.

Pre-treatment or testing of all plants for planting

Focus on testing, contingent on reliability of tests, not possible for all plants due to number, should focus on highest risks i.e. Xylella.

Plants must be grown in protected conditions

Not possible for many crops, could extend growing season to allow greater inspections, may only be possible when grown under glass or polythene.

Prohibiting entry of specified plants

Split in responses between limiting imports and focusing on testing instead, won't work with current border control, targeted at high risk species such as ash based on horizon scanning.

Tighter restrictions on imports of large trees with soil and growing media

No soil should be imported, may require improved resources for enforcing and penalties for non-compliance, benefits in relation to pests such as OPM which prefer mature trees, require quarantine.

Only allow imports of resistant varieties of plants

Difficult to police, compliance difficult with current available information/existing varieties, resistant varieties can still transmit pests and diseases.

No imports of trees/plants over a certain size

Size needs to be evidence based, could help with space for quarantine, need sufficient inspections to enforce, would limit choice of trees in UK and thus biodiversity, could focus on high risk i.e. oak for OPM.

Increasing inspection regime

Needs to be cheap and quick, shouldn't delay deliveries and thus cause extra costs, some P&Ds cannot be detected even if inspected.

Risk targeting of official import inspections

Can be seasonal, could inspect at destination, reduced burden of inspection on compliant businesses, focus on high risk.

Absolute quarantine

Should be recorded, space difficult, could be barrier to trade, less effective than banning bulk imports, will still need to inspect, practical concerns as plants need tending.

Containment under physical protection

Timeframe of two weeks, during dormancy only, not suitable for many crops, would require facilities around the UK, impractical, still reliant on inspection.

Isolation of trees growing season inspections before onwards sale

Likely high cost, barrier to trade, will need to work with testing and inspection, practical concerns.

Post planting inspections

During first new growth season, observations recorded, practical concerns, would require staff training, focus on high risk, practical concerns, could make origin of P&D unclear.

Voluntary post planting inspections

Mandatory for high-risk, during first growth season, compensation if stock destroyed, training required, practical concerns, potential minimum while other measures put in place, could make origin of P&D unclear.

Record keeping of planting sites

Complex supply chains make this difficult, could be used to enhance plant passports, would need a new recording system, final site may not be known, could be focused on high-risk.

Figure 23: How effective do you think the additional pre-border measures are in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees?

Sample size = 125

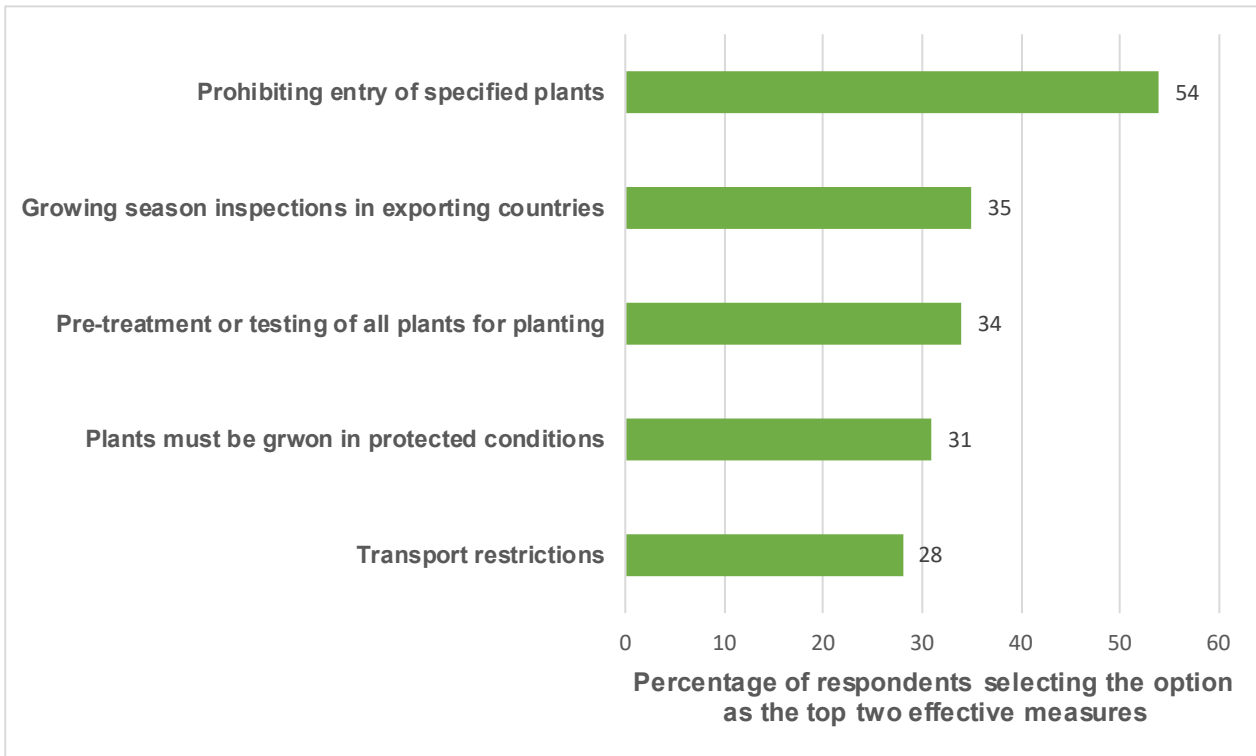


Figure 23 is a chart showing how effective respondents feel the suggested additional pre-border biosecurity measures would be in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees based on respondents' top two choices.

Of the additional measures that could be implemented at the pre-border, prohibiting the entry of specific plants was generally identified as the most effective response (54%).

Table 12: How effective do you think the additional pre-border measures are in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees? Top two most effective measures by broad group (expressed as a percentage).

Most effective measures	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Prohibiting entry of specified plants	49	69	50	52	61

Growing season inspections in exporting countries	27	23	41	38	50
Pre-treatment or testing of all plants for planting	27	31	38	48	28
Plants must be grown in protected conditions	27	31	38	38	22
Transport restrictions	29	23	28	29	28

Table 12 shows how effective respondents feel the suggested additional pre-border biosecurity measures would be in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees based on respondents' top two choices and aggregated into broader groups based on respondents' role in plant health.

Prohibiting the entry of specified plants was the most favoured measure from all of the groups, particularly the landowners and managers and trade groups. Respondents from the trade also showed some support for growing season inspections within the exporting country although this was considered less important by other groups.

Table 13: How easily could you or your business implement, deliver and comply with the additional pre-border measure? Top two most feasible measures by broad group (expressed as a percentage).

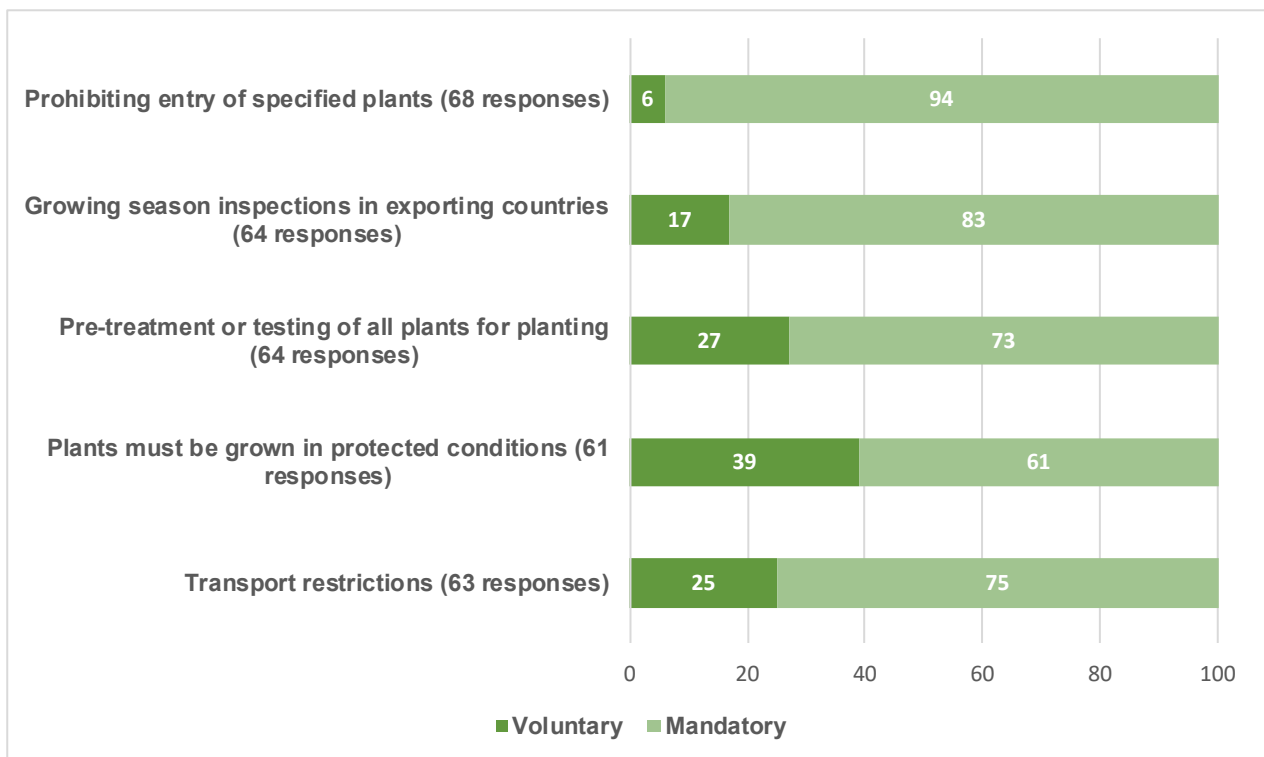
Most feasible measures	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Prohibiting entry of specified plants	7	31	12	10	39
Growing season inspections in exporting countries	7	23	9	14	17
Pre-treatment or testing of all plants for planting	5	15	12	10	17

Plants must be grown in protected conditions	5	15	3	10	6
Transport restrictions	2	8	3	14	6

Table 13 shows how feasible respondents feel it would be to implement, deliver and comply with the suggested additional pre-border biosecurity measures based on respondents' top two most feasible measures and aggregated into broader groups based on respondents' role in plant health.

In terms of feasibility, response rates were extremely low in many groups, with the most feasible response overall being prohibiting the import of specific plants, in particular by the landowner or manger (31%) and trade (39%) groups. Note however that, due to the way the question was phrased we are unable to identify what percentage of respondents who provided no answer believed that the named measure should not be implemented.

Figure 24: If you think the additional pre-border measure should be applied, what is the preferred approach? The figure shows only those respondents who agreed with each potential measure and their preferred method of implementation for that measure.



Due to how the question was posed, the sample size is unique for each measure, depending on whether the respondent thought the measure should be applied. Out of the 125 respondents who chose to respond to the questions in the annex, Figure 24 above shows those who agreed that (1) the measure should be applied and (2) had an opinion on the preferred implementation method, either voluntary or mandatory.

Prohibiting the entry of specified plants was the most favoured additional pre-border measure (68 respondents), with 94% preferring for it to be introduced as a mandatory measure.

Figure 25: How effective do you think the additional border measures are in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees?

Sample size = 125

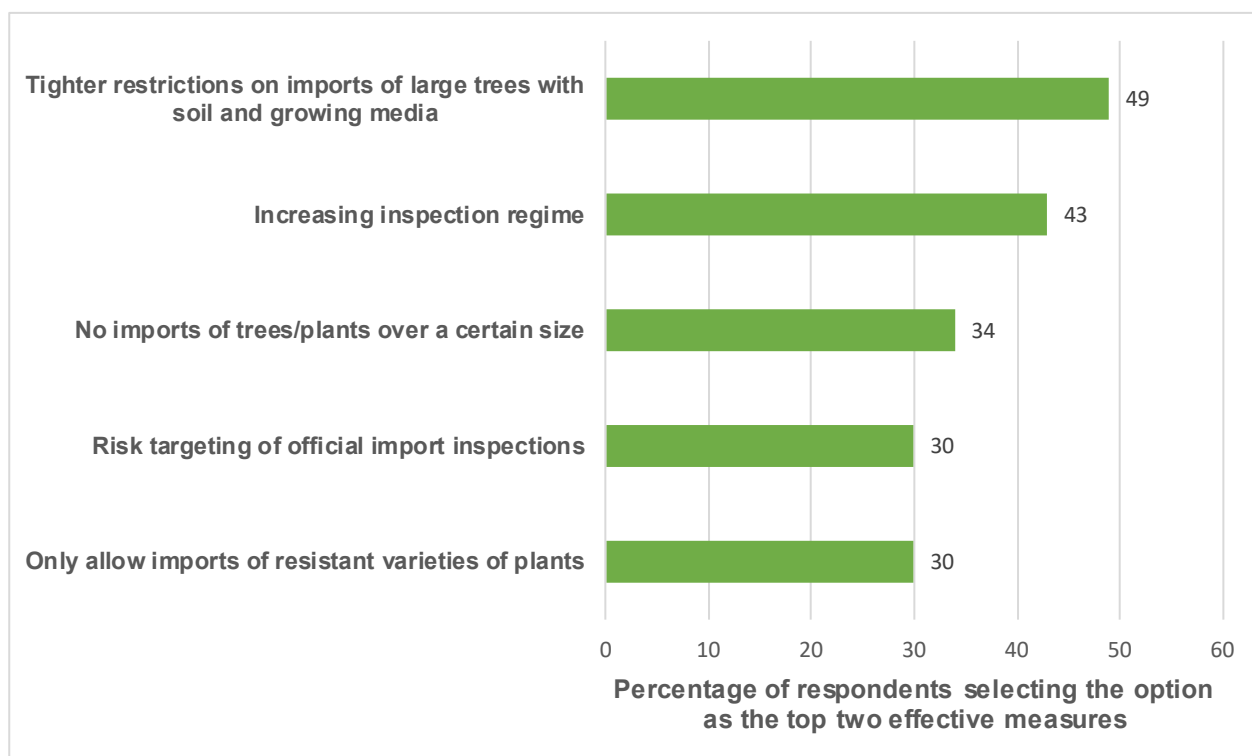


Figure 25 is a chart showing how effective respondents feel the suggested additional border biosecurity measures would be in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees, based on respondents' top two choices.

Tighter restrictions on imports of large trees with soil and growing media was viewed as one of the two most effective additional border measures by 49% of respondents followed by increasing the inspection regime (43%).

Table 14: How effective do you think the additional border measures are in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees? Top two most effective measures by broad group (expressed as a percentage).

Most effective measures	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade

	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Tighter restrictions on imports of large trees with soil and growing media	46	54	47	57	44
Increasing inspection regime	44	46	44	43	39
No imports of trees/plants over a certain size	32	23	25	48	44
Risk targeting of official import inspections	27	46	34	24	28
Only allow imports of resistant varieties of plants	44	38	22	24	17

Table 14 shows how effective respondents feel the suggested additional border biosecurity measures would be in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees based on respondents' top two choices and aggregated into broader groups based on respondents' roles in plant health.

The additional border measure of support for tighter restrictions on imports of large trees with soil and growing media was seen as most effective by all groups with 44% to 57% of responses.

Table 15: How easily could you or your business implement, deliver and comply with the additional pre-border measure? Top two most feasible measures by broad group (expressed as a percentage).

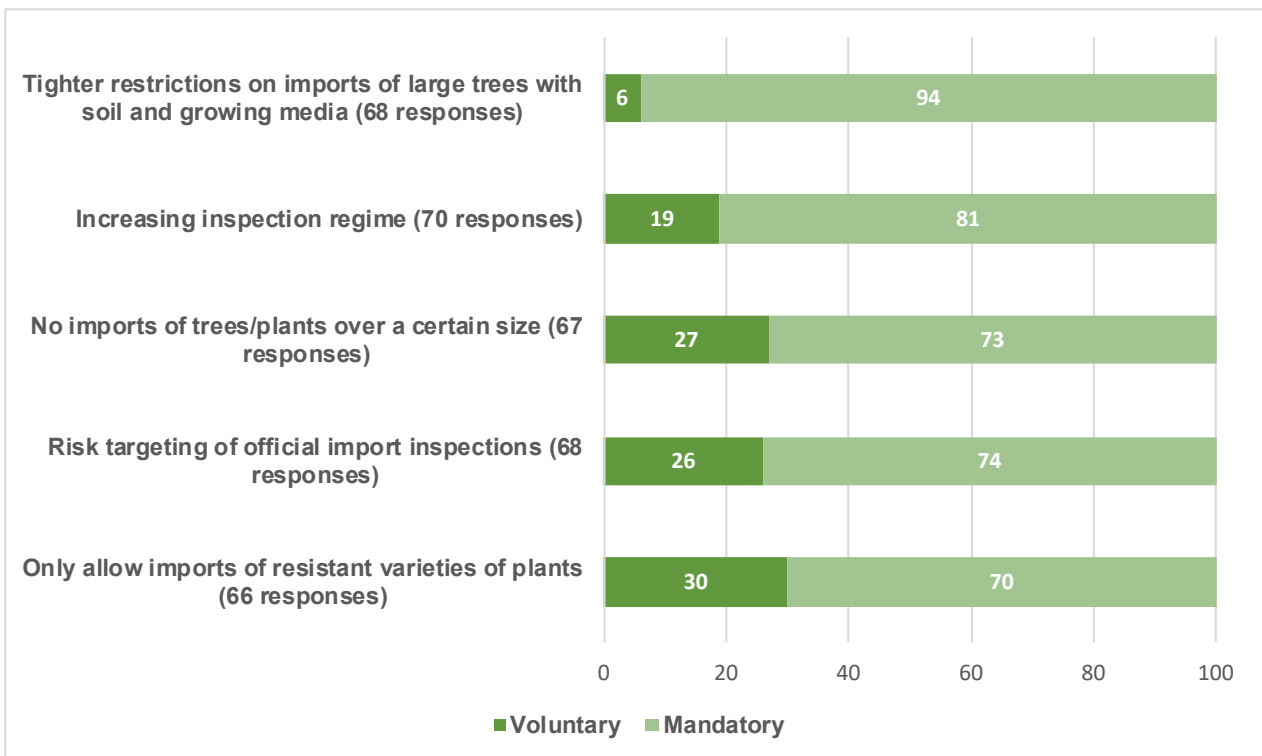
Most feasible measures	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>

Tighter restrictions on imports of large trees with soil and growing media	7	31	16	-	33
Increasing inspection regime	2	15	22	14	22
No imports of trees/plants over a certain size	2	8	16	5	39
Risk targeting of official import inspections	2	15	16	5	17
Only allow imports of resistant varieties of plants	5	23	6	10	17

Table 15 shows how feasible respondents feel it would be to implement, deliver and comply with the suggested additional border biosecurity measures based on respondents' top two most feasible measures and aggregated into broader groups based on respondents' role in plant health.

In terms of feasibility, the trade group generally indicated that restrictions of large trees and/or plants of a certain size were the most likely to be feasible (39%).

Figure 26: If you think the additional border measure should be applied, what is the preferred approach? The figure shows only those respondents who agreed with each potential measure and their preferred method of implementation for that measure.



Due to how the question was posed, the sample size is unique for each measure, depending on whether the respondent thought the measure should be applied. Out of the 125 respondents who chose to respond to the questions in the annex, Figure 26 shows those who agreed that (1) the measure should be applied and (2) had an opinion on the preferred implementation method, either voluntary or mandatory.

Increasing inspection regime was the most favoured additional border measure, with 81% preferring for it to be introduced as a mandatory measure, however it should be noted that there were a similar number of respondents for each of the five measures.

Figure 27: How effective do you think the additional inland measures are in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees?

Sample size = 125

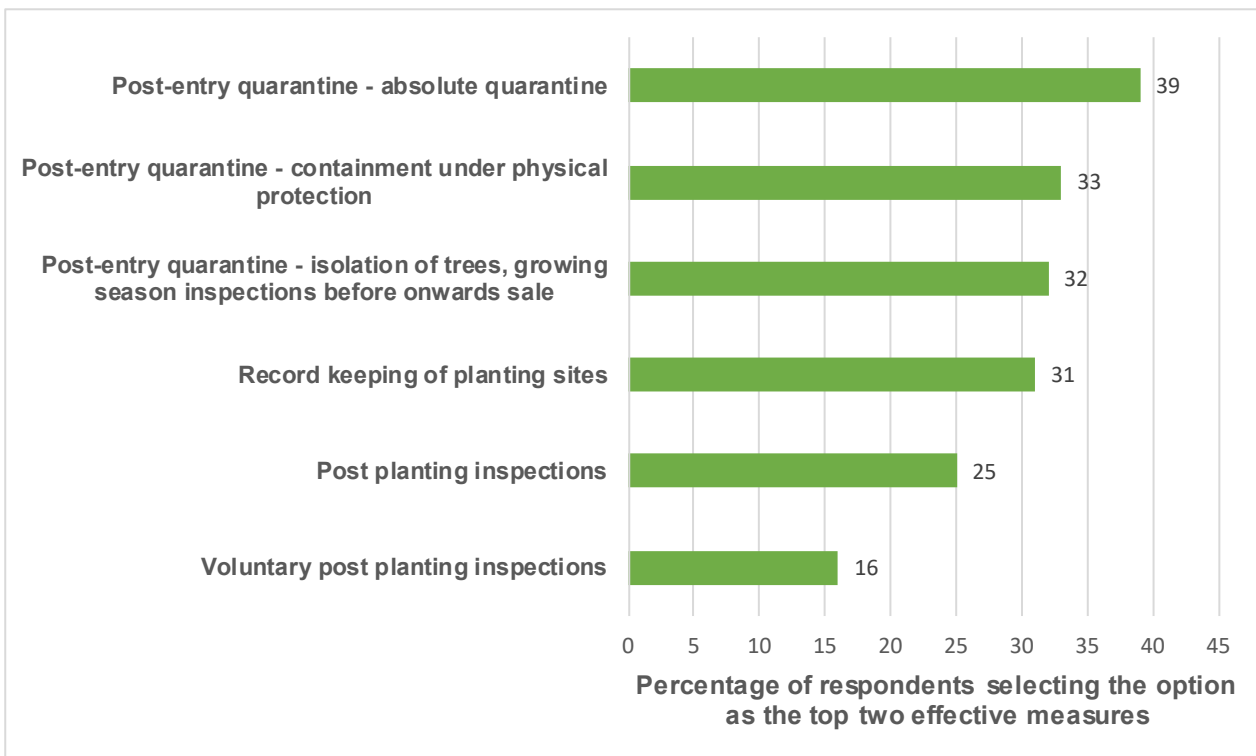


Figure 27 is a chart showing how effective respondents feel the suggested additional inland biosecurity measures would be in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees based on respondents' top two choices.

Absolute quarantine was scored as the most effective measure (39%) and voluntary post planting inspections the least (16%).

Table 16: How effective do you think the additional inland measures are in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees? Top two most effective measures by broad group (expressed as a percentage).

Most effective measures	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
	<i>sample: 48</i>	<i>sample: 13</i>	<i>sample: 40</i>	<i>sample: 23</i>	<i>sample: 20</i>
Post-entry quarantine - absolute quarantine	29	62	41	52	28
Post-entry quarantine - containment under physical protection	34	46	38	33	11

Post-entry quarantine - isolation of trees, growing season inspections before onwards sale	39	31	34	24	22
Record keeping of planting sites	24	23	41	24	44
Post planting inspections	22	31	31	24	17
Voluntary post planting inspections	15	8	22	14	17

Table 16 shows how effective respondents feel the suggested additional inland biosecurity measures would be in enhancing GB biosecurity and preventing pest and disease outbreaks associated with high-risk trees based on respondents' top two choices and aggregated into broader groups based on respondents' role in plant health.

Responses from the trade group highlighted record keeping of planting sites as the most effective inland measure (44%) whereas the landowner or manager group and the research and education group both favoured absolute quarantine (62 and 52% respectively).

Table 17: How easily could you or your business implement, deliver and comply with the additional inland measure? Top two most feasible measures by broad group (expressed as a percentage).

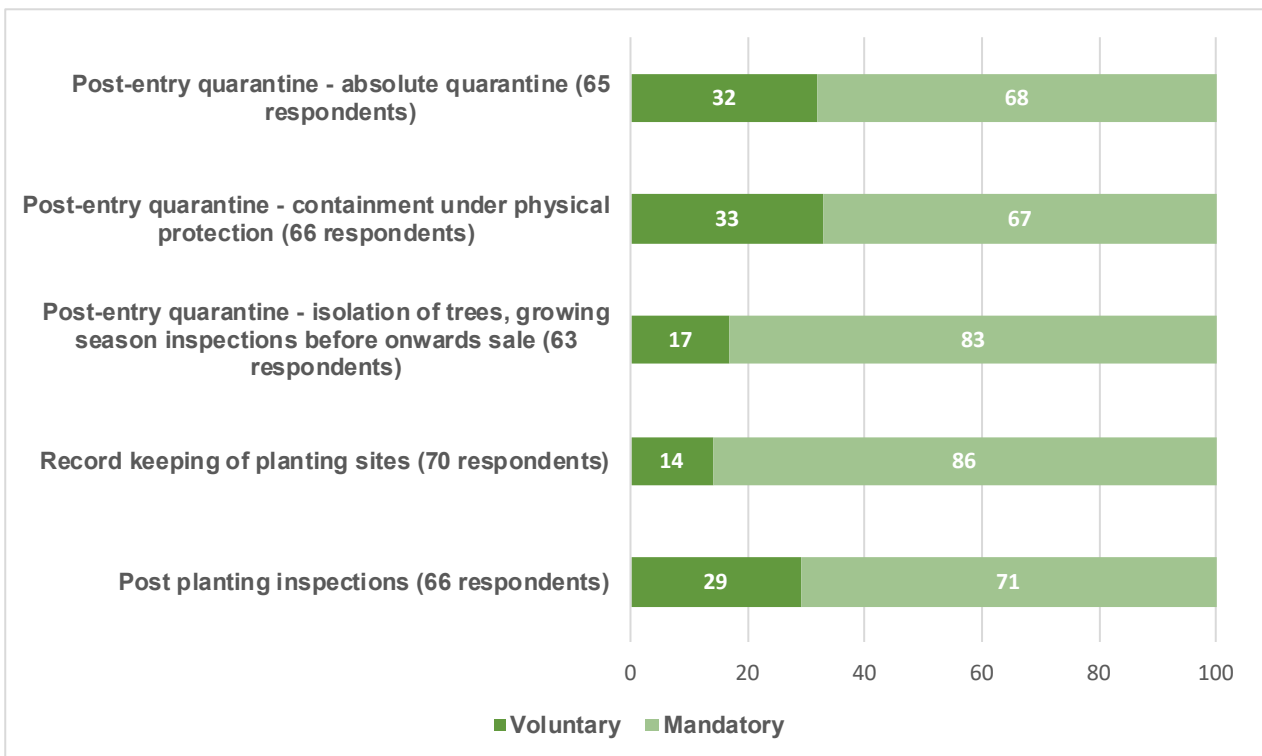
Most feasible measures	General public	Landowner or manager	NGOs/charities/other professionals	Research and education	Trade
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	<i>sample:</i> 48	<i>sample:</i> 13	<i>sample:</i> 40	<i>sample:</i> 23	<i>sample:</i> 20
Post-entry quarantine - absolute quarantine	2	15	9	14	11
Post-entry quarantine - containment under physical protection	5	15	16	14	17
Post-entry quarantine - isolation of trees, growing season inspections before onwards sale	5	15	16	10	22
Record keeping of planting sites	2	46	22	5	33
Post planting inspections	2	31	16	10	17
Voluntary post planting inspections	-	46	12	5	17

Table 17 shows how feasible respondents feel it would be to implement, deliver and comply with the suggested additional inland biosecurity measures based on respondents' top two most feasible measures and aggregated into broader groups based on respondents' role in plant health.

Record keeping of planting sites and voluntary post-planting inspections were viewed as two of the most feasible measures by landowners and managers (46% for each). Record keeping was also seen as most feasible by the trade (33%) and NGOs/charities/other professionals (22%) groups.

Figure 28: If you think the additional inland measure should be applied, what is the preferred approach? The figure shows only those respondents who agreed with each potential measure and their preferred method of implementation for that measure.



Due to how the question was posed, the sample size is unique for each measure, depending on whether the respondent thought the measure should be applied. Out of the 125 respondents who chose to respond to the questions in the annex, the figure above shows those that agreed that (1) the measure should be applied and (2) had an opinion on the preferred implementation method, either voluntary or mandatory.

Record keeping of planting sites was the most favoured additional inland measure, with 86% preferring for it to be introduced as a mandatory measure. This was followed by containment under physical protection and post-planting inspections, both of which 66 respondents thought should be applied.