

# **Report on a survey of the effects of the 2001 Foot & Mouth Disease outbreak (England)**

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## Contents

<b>Executive Summary</b> .....	<b>1</b>
<b>1. Introduction</b> .....	<b>3</b>
1.1 Background .....	3
1.2 Research Objectives .....	3
<b>2. Methodology</b> .....	<b>4</b>
2.1 Sample achieved.....	5
<b>3. Results</b> .....	<b>6</b>
3.1 Shorter term changes .....	6
3.1.1 Changes in livestock as a result of FMD.....	7
3.1.2 Changes in employment .....	10
3.1.3 Managing grassland.....	12
3.2 Longer term changes .....	12
3.2.1 Changes in classification from plans prior to FMD.....	12
3.2.2 Changes in classification as a result of FMD .....	13
3.2.3 Attitudes to farming and future plans in the light of FMD.....	13
3.2.4 Diversification .....	13
3.2.5 Agri-environment .....	13
3.2.6 Organic enterprises .....	13
3.2.7 Other operational changes .....	13
3.2.8 Changes in employment .....	13
3.3 Advice .....	13
Appendix 1: Questionnaire.....	
Appendix 2: Definitions used in the report .....	
Appendix 3: Table of Confidence Intervals (for 95% confidence).....	

## List of tables

Table 1: The structure of the final sample.....	5
Table 2: Regional representation.....	5
Table 3: Changes in the nature and timing of business plans .....	6
Table 4: Whether planning to re-stock.....	7
Table 5: Re-stocking intentions (among those intending to re-stock) .....	8
Table 6: Re-stocking intentions for specific animals.....	8
Table 7: Timescale of re-stocking.....	9
Table 8: Re-stock source .....	9
Table 9: Re-stocking interim options .....	10
Table 10: Staff redundancy .....	10
Table 11: Extra staff/increased hours.....	11
Table 12: Types of staff .....	11
Table 13: Difficulties in managing grassland .....	12
Table 14: Whether changes planned prior to FMD which would affect farm classification ...	13
Table 15: Enterprises planned to change.....	13
Table 16: Changes in farm classification as a result of FMD .....	13
Table 17: Change in farming.....	13
Table 18: Future intentions .....	13
Table 19: Intention to move out of farming .....	13
Table 20: Attitude to farming and future plans.....	13
Table 21: Extent of overlap between planned changes.....	13
Table 22: Regional differences in planned changes.....	13
Table 23: Timeframe of planned changes .....	13
Table 24: Diversified enterprises .....	13
Table 25: Type of diversified enterprise .....	13
Table 26: Current participation in Agri-environment schemes.....	13
Table 27: Agri-environment schemes .....	13
Table 28: Organic enterprises .....	13
Table 29: Other operational changes.....	13
Table 30: Employment differences in June 2002.....	13
Table 31: Types of staff in June 2002.....	13
Table 32: Types of advice .....	13

# Survey of the effects of the 2001 Foot & Mouth Disease outbreak

## Executive Summary

The Foot & Mouth Disease (FMD) outbreak which started in February 2001 came at a time when agriculture in the UK was already experiencing economic difficulties, exacerbated by BSE and swine fever. There had been speculation on the extent to which FMD might create an opportunity for change in the farming industry but DEFRA required independent, factual evidence of the effects of the outbreak. To this end, ADAS Consulting was commissioned to conduct a survey of farms in England to:

- Assess the extent to which the plans of farms had been affected by the FMD outbreak
- Assess the extent to which farmers are taking the opportunity to re-appraise their business strategies
- Assess the effects on FMD of employment on farms
- Evaluate these outcomes for farms of varying sizes and for both those directly affected (in infected areas/with culled animals) and those which may have been only indirectly affected.

Telephone interviews were conducted with a sample of 1,005 farms across all regions of England. The sample was structured to ensure subsamples of adequate size for analysis of each size and FMD status (see Appendix 2 for definitions of categories). This methodology - a telephone survey using knowledgeable interviewers - has provided a good and efficient means of gathering sensitive and detailed information.

The key findings from the survey were:

- Although some farmers will take the opportunity to exit the industry, the overall reduction will not be very great.  
E.g. Only 6% of farmers on Infected Premises (IPs) said that they definitely intend to move out of farming.
- Although some extra employment was created, overall employment in farming decreased as a direct result of FMD with full time staff (mainly principle farmers and regular workers) being made redundant as well as reductions in hours.  
E.g. 10% of IPs employed extra staff, but 24% reduced the number of people working on the farm. 55% of IPs saw a reduction in staff or hours or both.
- Overall, farmers anticipate that the numbers employed on their holding in June 2002 will be lower than in June 2000, which is a continuation of the long term trend.  
On IPs 20% expect the number to change, 83% of these expect the change to be a reduction, with the North East and Yorks & Humberside being worst affected.
- Although 78% of IPs and 65% of Dangerous contacts intend to restock, only 34% of IPs and 26% of dangerous contacts intend to return exactly to pre-FMD levels. Their plans indicate that the population of sheep will see significant reduction in the short term (although this may recover in the longer term). The population of cattle will also fall in

the short term, but to a lesser extent, and the numbers of dairying enterprises will decrease, although dairy production may not fall, due to greater efficiency/productivity and expansion of those enterprises which remain.

- In addition to changes in livestock and employment, this survey indicates other structural change in the industry, with up to 25% of farms (in E. Midlands region) planning to set up diversified enterprises, up to 12% (in the South East and North East regions) planning to move some or all of their holding into environmental schemes and a number of farms saying that they plan to go organic which would create a doubling of the number of organic enterprises. These changes will have implications for the management of grant schemes but also there is potential for an imbalance between the numbers of organic livestock and the number of suppliers of organic feed.
- Although there will be increases of up to 2% in the numbers of farms engaged in contract and share farming, it is the use of contractors – already between 50-80%, depending on type of enterprise – which will see the greatest growth.

This report is a summary of the findings of this survey. There is also a considerable amount of detailed numeric data on livestock numbers and employment which is available for further analysis.

## **1. Introduction**

### **1.1 Background**

The Foot & Mouth Disease (FMD) outbreak which started in February 2001 reached unprecedented dimensions. It came at a time when agriculture in the UK was already experiencing economic difficulties, exacerbated by BSE and swine fever. It has been clear that the farming industry is in need of restructuring, and there had been speculation on the extent to which FMD might create an opportunity for change.

It was in this context that, in September 2001, DEFRA's ESD commissioned ADAS Consulting to conduct a survey of farms to provide independent, factual evidence of the effects on the industry of the outbreak.

### **1.2 Research Objectives**

- To assess the extent to which the plans of farms had been affected by the FMD outbreak
- To assess the extent to which farmers are taking the opportunity to re-appraise their business strategies
- To assess the effects on FMD of employment on farms
- To evaluate these outcomes for farms of varying sizes and for both those directly affected (in infected areas/with culled animals) and those which may have been only indirectly affected.

## 2. Methodology

It was agreed that a postal survey would be an inappropriately impersonal means of contacting farms, under the circumstances. ADAS Consulting was therefore asked to conduct a telephone survey, using consultants who, through their ongoing work with farmers, could be sensitive to the issues and sufficiently knowledgeable not to cause irritation or offence.

The questionnaire was initially drafted by ESD in consultation with their internal clients and then adapted by ADAS's experts in survey design for use as a telephone interview, in which responses are input directly on computer. Computer-aided interviewing facilitates both quite sophisticated routing processes (i.e. skipping of irrelevant questions) and a faster turn-around of results. Data from both the June 2000 census and the FMD database of numbers of animals culled was used to ensure that only those questions relevant to the farm's enterprises were asked.

Prior to the main survey, in September, a pilot study of 40 interviews was conducted to check:

- The willingness of farmers to respond to the questions
- The length of the questionnaire
- The operation/comprehensibility of the questions.

The questionnaire was revised in the light of the experience of the pilot, but the appropriateness of the topics and methodology was confirmed.

For the main survey, a target sample of 1,000 farms was set, constructed as a stratified random sample, with interlocking quotas on farm size (3 categories) and FMD status (5 categories). Definitions of the categories are given in Appendix 2.

It was agreed that 2 interlocking quotas were a sufficient degree of complexity, given the need to achieve the sample within a limited time and that therefore quotas would not be imposed for region or numbers of animals (i.e. they would be allowed to fall out randomly).

The sample of farms to be interviewed was drawn by ESD from the June 2000 Census database. All types of farm except horticulture were included. Following the pilot, it was agreed that farms on which animals had been culled since June (where identifiable) should be excluded from the sample. This was on two grounds:

- To avoid unnecessary distress to respondents
- In recognition that the future plans of such farms would not yet have been resolved.

A copy of the questions asked is presented in Appendix 1. The format of this Appendix does not represent the questionnaire, as such, since the questionnaire was computerised (effectively a "virtual" questionnaire).

The average length of the interviews was 15 minutes, but varied considerably.

## 2.1 Sample achieved

**Table 1: The structure of the final sample**

FMD status*	Size*			TOTAL
	Small	Medium	Large	
Infected premises	61	65	63	189
Dangerous contacts/slaughtered on suspicion	78	69	67	214
Welfare scheme	45	51	47	143
Within 3km of an IP or in an infected area	104	107	110	321
Outside infected areas, at risk, provisionally free	48	46	44	138
<b>TOTAL</b>	<b>336</b>	<b>338</b>	<b>331</b>	<b>1,005</b>

\* for definitions and population statistics, see Appendix 2.

The regional representation of the sample reflects the requirement to sample the areas most affected by FMD:

**Table 2: Regional representation**

	NE	NW	Y&H	E. Mids	W. Mids	Eastern	SE	SW	TOTAL
Sample %	7	30	9	5	12	5	6	27	100
Population %	4	12	11	11	13	12	13	25	100

In order to obtain the 1,005 interviews, 2,766 telephone numbers were called, providing a “hit rate” of 36%, which is very good for telephone survey work.

Of the remaining calls, 43% did not produce interviews for reasons such as unavailability or no answer and only 16% were refusals to participate. 5% of the numbers called were incorrect (e.g. number unobtainable, or named contact not on the number given). Given the circumstances and the topic, the degree of co-operation by farmers was admirable.

### 3. Results

The following text covers the main points of the data obtained in the survey. A supplementary set of detailed tables is available from DEFRA's Economics and Statistics Directorate, on request<sup>1</sup>.

Those results relating principally to short term effects on individual farms are presented in Section 3.1, while Section 3.2 examines those changes which will have a longer term impact on the industry.

Note: because the sample was stratified to ensure adequate numbers in each farm size/FMD status cell, the structure of the sample does not reflect the structure of the farming industry. Therefore results are either presented for the categories specifically sampled or are weighted to be representative (see text following Table 20).

Information on the calculation of confidence intervals for percentages shown in this report are contained in Appendix 3.

#### 3.1 Shorter term changes

For those not directly affected by FMD, the question was put specifically, to what extent had the outbreak brought about changes in the nature and timing of business plans.

**Table 3: Changes in the nature and timing of business plans**

*Q. Has the foot and mouth outbreak caused you to change the nature of your business plans in any way?*

*Q. Has the foot and mouth outbreak caused you to change the timing of your business plans in any way?*

	Within 3km %	Oia %
<b>Nature:</b>		
A great deal	24	12
A little	33	30
Not at all	44	57
<b>Timing:</b>		
A great deal	18	13
A little	38	33
Not at all	44	54
Total/Base: All those not leaving farming	314 (100%)	138 (100%)

<sup>1</sup> 01904 455244

Over half of those within 3 km of an infected premise and nearly half of those outside infected areas claim to have been affected by the FMD outbreak, with one in 4 of the former category experiencing significant effects. The region least affected is Eastern, with three quarters saying that the nature and timing of their plans have not been affected at all.

The majority of the comments elicited about the effects experienced related to the inability to move stock and has been/will be resolved as movement restrictions have been lifted and auction markets re-open:

**Nature**

Couldn't sell stock/take stock to market	23%
Couldn't move stock/feed issues	21%
Couldn't buy stock	10%
Cash flow problems, loss/lack of income, low prices for stock	26%
Reconsidering future/system changes/change of use of land	14%

**Timing**

Licensing problems, delays in moving/selling stock	50%
Delayed plans (building/buying stock/expanding/AI)	34%
Cashflow problems	12%

**3.1.1 Changes in livestock as a result of FMD**

A series of statements about their plans for the future were put to farmers. One of these related to re-stocking (see Section 3.2.3 for the remainder):

**Table 4: Whether planning to re-stock**

I intend to re-stock and continue as soon as possible	IP %	Dangerous contacts %
Yes/Definitely	78	65
Possibly	10	14
Unlikely	6	3
No	6	11
Don't know	2	6
Total/Base: All not leaving farming	178 (100%)	205 (100%)

Responses to this statement suggest that the preferred option for the majority of affected farmers is to carry on as before, rather than instigate any change. However, later questions obtained further detail:

**Table 5: Re-stocking intentions (among those intending to re-stock)**

*Q. Are you intending to re-stock entirely to your pre-Foot & Mouth levels, or are you planning to change your stocking levels in any way?*

	IP %	Dang. contacts %	Small %	Medium %	Large %
Re-stock entirely to pre-FMD levels	34	26	37	22	32
Change level of stock in any way	54	64	51	67	58
Haven't decided yet	12	10	13	11	10
Total/Base: N <sup>o</sup> . of farms intending to restock	138 (100%)	133 (100%)	87 (100%)	94 (100%)	90 (100%)

The majority are planning some kind of change to their stocking levels, but more are planning reductions than increases:

**Table 6: Re-stocking intentions for specific animals**

*Q. Do you intend to have more or fewer (stock type) than you had in June 2000?*

	Dairy herd females	Beef herd females	Breeding ewes
Not restocking/undecided/leaving farming	31%	29%	30%
Restock entirely to pre-FMD levels	28%	31%	29%
Undecided on restocking level	8%	10%	10%
Intend to have more	14%	11%	5%
Mean increase (no.s)	84	43	277
Intend to have fewer	19%	19%	27%
Mean decrease (no.s)	69	23	250
Total/Base: IPs/Dang. Contacts with type of animal in June 2000	180 (100%)	219 (100%)	294 (100%)

*The number of IPs/Dangerous Contacts with pigs was too small for analysis (<20 farms).*

For breeding ewes there is a great excess of those planning reductions in numbers over those planning increases, indicating significantly smaller sheep numbers in England, in the short term. However, this effect may not be an enduring one, since such enterprises are relatively easy to expand. For cattle the excess of farms reducing numbers over farms increasing numbers is smaller. The average size of decrease is also less than the average size of increase, so that the overall effect on cattle populations will be smaller.

**Table 7: Timescale of re-stocking**

*Q. Within what timescale do you expect to complete the re-stocking of \_\_\_\_\_?*

	Within 3-4 months	Next Spring	Next Summer	Next Autumn	By end 2002	Within 2-3 years	Within 5 years	No idea	Base/ Total
Dairy herd females %	30	13	12	4	7	5	2	27	110 100%
Beef herd females %	31	19	6	6	6	6	0	26	134 100%
Breeding ewes %	33	9	5	10	12	4	2	25	179 100%

**Table 8: Re-stock source**

*Q. Where do you intend to source your \_\_\_\_\_?*

	Auction - UK	Auction - Europe	Buy direct from UK farm	Buy direct from other farm	Don't know	Base/ Total
Dairy herd females %	25	2	59	5	35	110 100%
Beef herd females %	27	1	60	0	33	134 100%
Breeding ewes %	28	1	62	2	30	179 100%

The most common expectation is that replacement stock will be sourced within the year, from within the UK and from farms, rather than Auctions, although many farmers commented that this is largely because the suspension of auctions has left them with no alternative.

A follow-up question of what farmers would do in the interim (while building up their stocks) showed that half see no need to take interim measures:

**Table 9: Re-stocking interim options**

*Q. Which, if any, of the following options do you intend to pursue in the interim (that is, before you complete your re-stocking?)*

	%
Grow forage or a crop on land previously used for grazing	20
Rent out some or all of your grazing land	10
Buy in store cattle	18
Buy in store lambs	13
Buy in (extra) pigs	1
Other	6
None (incl. already started/re-stocking over time)	50
Total/Base: N <sup>o</sup> of farms intending to restock	271 (100%)

### 3.1.2 Changes in employment

Respondents were asked about changes in the farm's employment as a result of the FMD outbreak. Although this has been included in the 'short term change' section, some of these changes will also be permanent, as reflected in Section 3.2.8.

**Table 10: Staff redundancy**

*Q. As a result of the foot and mouth outbreak, have any of the (staff type) been made redundant, been laid off or had their hours reduced?*

	IP %	Dangerous contacts %	Welfare %	Within 3km %	Oia %
Fewer staff (laid off or redundant)	24	19	14	9	3
Staff working fewer hours	38	25	13	4	4
No reduction in staff or hours	45	59	74	87	93
Total/Base: All not leaving farming	178 (100%)	205 (100%)	140 (100%)	314 (100%)	138 (100%)

*Note: columns need not add to 100%, since some have both reduced staff and reduced hours.*

In IPs more than half of farms have seen reductions in labour (numbers or hours). For Dangerous contacts the picture is not so severe, although 2 in 5 have reduced labour. For farms not directly affected the reductions are much smaller, but even those outside infected areas have seen some reductions.

It was expected that FMD would also have created extra work in some instances, so a question was also asked on increases. (Note: in some cases, farms will have made both increases and reductions in labour, to change the mix of staff/hours worked).

**Table 11: Extra staff/increased hours**

*Q. Have you employed any extra staff on your holding or increased the hours worked by existing staff as a result of foot and mouth?*

	IP %	Dangerous contacts %	Welfare %	Within 3km %	Oia %
Extra staff	10	9	1	2	0
Staff working more hours	8	14	33	24	16
No extra staff/hours	82	78	66	75	83
Total/Base: All not leaving farming	178 (100%)	205 (100%)	140 (100%)	314 (100%)	138 (100%)

Although the greatest requirement for existing staff to work more hours has been among the Welfare category, every category has experienced some increase. For those directly affected extra staff was an option taken by a significant minority, while the requirements of those indirectly affected (which will mostly have related to husbandry of larger-than-normal numbers of livestock) were generally met by increased hours.

The types of staff involved are as follows:

**Table 12: Types of staff**

	Fewer staff %	Fewer hours %	Extra staff %	More hours %
Principle farmers – FT	34	67	5	82
Principle farmers – PT	34	18	7	20
Salaried managers – FT	2	1	0	3
Salaried managers – PT	0	3	0	0
Regular workers – FT	32	16	11	15
Regular workers – PT	1	8	16	7
Casual or gang workers - FT	12	1	18	3
Casual or gang workers – PT	1	1	50	6
Total/Base: N <sup>o</sup> of farms which decreased/increased staff/hours	134 (100%)	156 (100%)	44 (100%)	186 (100%)

*Note: with the exception of “extra staff”, the percentage increasing or decreasing is dependant on the farm already employing that type of staff. For example, the low proportion of fewer/extra hours worked by salaried managers is in large part a reflection of the small proportion of farms which employ salaried managers at all.*

The reductions in staff and hours have mostly been made among principle farmers, although full-time regular workers have been laid off/made redundant on a third of the farms which reduced staff.

The majority of extra staff have been casual or gang workers, while the extra hours have mostly been performed by the principle farmers.

### 3.1.3 Managing grassland

A question was asked about the difficulties experienced in managing grassland as a result of FMD. This was asked in the context of a lack of livestock and the effects on the grazing land, but many commented that their problem was excess livestock. It was also commented that the matching of livestock to available grazing was a normal land/farm management issue, rather than a “difficulty”.

**Table 13: Difficulties in managing grassland**

*Q. A lack of livestock can cause difficulties in managing grassland. Have you had any difficulty managing the grassland on your holding due to a reduction in livestock as a result of Foot & Mouth?*

	IP %	Dangerous contacts %	Welfare %	Within 3km %	Oia %
Yes	80	73	28	27	19
No	20	27	72	73	80
Total/Base: All not leaving farming	178 (100%)	205 (100%)	140 (100%)	314 (100%)	138 (100%)

As would be expected, it is the IPs and Dangerous Contacts who had the most problems but around one in four of those not directly affected also experienced problems.

Respondents were asked how they had sought to overcome the difficulties. Management of grassland is a natural part of managing a farm and so many were simply doing more of what they would do anyway: producing more silage/hay, “topping”/mowing off the stemmy material more frequently, reducing inputs to match production to demand. Where animals were not culled, but movement restrictions were in place, the problems were more about getting the stock and the fodder in the same place. Only very small numbers (2-5% of the different FMD status categories) just left the grass to grow.

## 3.2 Longer term changes

### 3.2.1 Changes in classification from plans prior to FMD

Relatively few farms had been planning changes prior to FMD which might have led to a change in their farm type classification. There was a slight tendency for this to be less likely among the largest farms:

**Table 14: Whether changes planned prior to FMD which would affect farm classification**

*Q. As a result of your Census return in June 2000 your holding was classified as a (farm type) holding. Prior to the foot and mouth outbreak, were you planning any major changes to the livestock or cropping on this holding which may have led to a change in classification of this holding?*

	Small %	Medium %	Large %
Yes	9	8	5
No	91	92	95
Total/Base: All farms	337 (100%)	338 (100%)	331 (100%)

The largest single category among those planning changes were Dairy farms:

**Table 15: Enterprises planned to change**

*Q. Which Livestock or Cropping enterprises were you planning to change?*

Enterprise to which planning to make change:	Farm type			
	Dairy %	Cattle & Sheep (lowland) %	Pigs & Poultry or Mixed %	Others %
Beef	47	32	27	54
Dairy	70	16	13	8
Sheep	17	42	20	31
Cereals	10	11	13	15
Pigs	0	5	40	0
General cropping	3	0	20	8
Total/Base: N <sup>o</sup> of farms planning changes prior to FMD	30 (100%)	19 (100%)	15 (100%)	13 (100%)

(Some farms were planning changes to more than one enterprise).

### 3.2.2 Changes in classification as a result of FMD

Higher proportions than those planning change were having change imposed on them, and not only among those most obviously and directly affected:

**Table 16: Changes in farm classification as a result of FMD**

*Q. As a result of foot and mouth, do you think that describing your holding as (farm type) will still be relevant in June 2002?*

	IP %	Dangerous contacts %	Welfare %	Within 3km %	Oia %
No	18	24	15	10	14
Yes	82	76	85	90	86
Total/Base: All farms	189 (100%)	214 (100%)	143 (100%)	321 (100%)	138 (100%)

The highest proportions planning change are in the NE (21%) and SW (19%).

Again, those most likely to see a change are the Dairy and Cattle & sheep farm types:

**Table 17: Change in farming**

*Q. Which of the following do you think will best describe your holding in June 2002?*

Farm type in June 2002:	Current farm type			
	Dairy %	Cattle & Sheep %	Pigs & Poultry or Mixed %	Others %
Beef	57	35	33	47
Dairy		10	13	27
Sheep	27	40	8	27
Cereals	7	7	13	40
Pigs	0	2	17	0
General cropping	10	0	29	7
Diversified/selling up	13	10	4	0
Total/Base: N <sup>o</sup> of farms expecting to change as a result of FMD	60 (100%)	60 (100%)	24 (100%)	15 (100%)

A high proportion of the changes are from Dairy to Beef, reflecting the commitment and investment required in dairying which in recent years has suffered from very low profitability. Many farms are now suffering from the lack of investment but are still unable to finance it and so are exiting the sector. However, while this may result in a reduction in the number of farms in the sector, it is unlikely to cause a reduction in production as larger/more efficient dairy businesses take up the milk quotas<sup>2</sup>. Among the farms classified as Cattle & sheep there would appear to be tendency towards concentrating on either sheep or dairy or beef. In

<sup>2</sup> This reason is clear from ADAS's ongoing work with farm businesses, rather than a topic covered explicitly in this survey.

particular, responses to questions on numbers of livestock (see Section 3.1.2) show that farms are reducing the number of sheep.

### 3.2.3 Attitudes to farming and future plans in the light of FMD

Respondents were asked their level of agreement with a number of attitudinal statements. The first of these was whether they intended to move out of farming.

Anyone who said yes to this and then that they planned to exit within a year was not asked any of the subsequent questions. This means that the maximum sample base for all the following questions is reduced.

**Table 18: Future intentions**

*Q. In the light of the foot and mouth outbreak, I would now like to ask you some questions about your attitude to your farming business and future plans. I will read out a number of options and I would like you to tell me the likelihood that you would take this course of action*

I intend to move out of farming	IP %	Dangerous contacts %	Welfare %	Within 3km %	Oia %
Yes/Definitely	6	5	3	3	0
Possibly	4	4	11	8	9
Unlikely	8	12	9	8	9
No	78	76	72	79	81
Don't know	2	2	5	2	1
Total/Base: All farms	189 (100%)	214 (100%)	143 (100%)	321 (100%)	138 (100%)

There is a relatively small difference in the response to this statement between those directly and indirectly affected. 6% of the farms which were infected premises and 5% of those which were dangerous contacts have already decided that they intend to get out of farming. There is a tendency for the larger farms to be less likely to leave:

**Table 19: Intention to move out of farming**

I intend to move out of farming	Small %	Medium %	Large %
Yes/Definitely/Possibly	14	12	6
Unlikely/No	83	86	92
Don't know	3	2	2
Total/Base: All farms	337 (100%)	338 (100%)	331 (100%)

None of those in our sample who have decided to exit are in the NE or E. Mids.

Of the 36 farmers who had decided to leave farming, 26 (72%) were intending to get out within a year, with only 3 (8%) intending to leave in 3+ years.

Those exiting the industry were offered the opportunity to comment on the circumstances of their leaving. The most common reasons given were:

No market. Not financially viable. Working 7 days a week	7
Retirement. Too old to start again	7
Fed up with DEFRA/MAFF. Fed up with paperwork	7

There was a range of other reasons indicating that FMD had provided the impetus, rather than the reason for leaving (Note: some farmers declined to comment further):

Had already decided to quit. Getting out before FMD	2
Restructuring. Timing was right	2
Farm had TB	2
Ill health	1
Other comments on the farming industry	4

The rest of the attitudinal statements put to farmers not intending to leave the industry, and their responses, are shown in the table below:

**Table 20: Attitude to farming and future plans**

Weighted percentages *	Yes/ definitely	Possibly	Unlikely	No	Don't know	Unwtd base
I have been unaffected by the foot and mouth disease, I intend to carry on as before	49	13	9	26	4	592 <sup>1</sup>
I intend to sell out and buy a farm elsewhere	1	4	4	90	1	975
I intend to expand the farming activity on this holding	9	13	7	69	2	975
I intend to reduce the farming activity on this holding	9	11	4	75	1	975
I intend to invest in farming activities overseas	<1	2	3	94	<1	975
I intend to diversify into non-traditional / non-farming activities on this holding	12	13	10	62	2	975
I intend to move some or all of the holding into environmental schemes	5	20	11	60	3	975
I intend to move into other methods of production	1	8	7	81	1	975
I intend to increase the number of enterprises on the farm	6	10	5	78	1	975
I intend to reduce the number of enterprises on the farm	4	7	6	82	<1	975

<sup>1</sup> only asked of Types 3, 4 and 5 (Welfare, Within 3 km, Outside infected areas). Interpretation of this statement is hampered by the fact that it is in fact two statements: respondents may be saying Yes/ No to one half or all

\* Data weighted to represent proportions of each FMD status and size in the population (see Appendix 2)

The farms most directly affected (particularly those in the Dangerous Contacts category) are those most likely to be planning on at least one of the courses of action listed and there is a

tendency for larger firms to be more likely to be planning change. Since this survey sampled these types disproportionately, the data has been re-weighted to reflect the population profile as shown in Appendix 2, Table A2.

The responses to these statements suggest an unwillingness to change among the majority:

69% said that they will not expand farming activity and 75% that they will not reduce farming activity.

78% say that they will not increase the number of enterprises and 82% that they will not reduce the number.

Moving their farming activity, or investing overseas, are both rejected by 90+%.

The following table shows that there is some degree of overlap between the statements but it is by no means the case that there is a small group of people interested in a number of the options for change. For example, 27% of those saying that they would diversify also said that they intended to increase the number of enterprises on their holding.

Overall, 378 of the farmers asked, representing 30% of all farmers in England intending to continue in farming, said that they would definitely be making at least one of the changes. Only 24, representing less than 1% of all the farmers in England intending to continue in farming, definitely rejected all options for change.

**Table 21: Extent of overlap between planned changes**

	Expand farming activity %	Diversify %	Reduce farming activity %	Environmental schemes %	Reduce enterprises %	Increase enterprises %	Other prod'n methods %	Not just restock & continue %
Expand farming activity	100	25	<1	4	6	23	25	6
Diversify	31	100	21	29	20	53	20	22
Reduce farming activity	<1	16	100	24	47	30	11	42
Environmental schemes	2	14	15	100	12	28	17	10
Reduce enterprises	2	6	19	8	100	1	16	16
Increase enterprises	14	27	20	30	1	100	20	7
Other methods	3	2	1	3	5	4	100	4
Sell out, buy elsewhere	2	1	<1	0	21	0	1	0
Total/Base: Yes/definitely take this course of action	124 (100%)	118 (100%)	91 (100%)	86 (100%)	58 (100%)	56 (100%)	37 (100%)	33 (100%)

The farm types and regions are proportionately represented in the 378 planning at least one change, with the exception of Yorks & Humberside, where the proportion who have definitely decided on a change is low for most of the courses of action listed:

**Table 22: Regional differences in planned changes**

Weighted percentages	NE %	NW %	Y&H %	E. Mids %	W. Mids %	Eastern %	SE %	SW %
Expand farming activity	11	12	5	8	7	12	8	10
Diversify	4	8	4	26	6	5	24	11
Reduce farming activity	1	13	1	8	15	2	6	14
Environmental schemes	12	5	1	<1	5	5	11	5
Reduce enterprises	<1	4	1	0	2	7	<1	8
Increase enterprises	<1	2	2	10	1	8	6	10
Other methods	1	3	0	1	<1	<1	2	1
Not just restock & continue	1	<1	<1	<1	<1	0	0	1
Sell out, buy elsewhere	<1	<1	0	2	0	5	0	0
Invest overseas	0	0	0	<1	3	0	0	0
Any of these	27	32	7	30	34	30	39	33
Total/Unwtd base: N <sup>o</sup> of farms sampled in region	73 (100%)	298 (100%)	86 (100%)	52 (100%)	119 (100%)	46 (100%)	58 (100%)	274 (100%)

Farmers in the E. Mids and SE are much more likely to be planning to diversify, especially when compared with those in the NE and Yorks & Humberside.

Nearly half (47%) of those who said they were planning one or more of the changes listed were also farms which said they had already planned changes prior to the FMD outbreak.

For several of the questions, on planned changes, a timeframe was sought:

**Table 23: Timeframe of planned changes**

*Q. When are you likely to achieve this?*

	Expand farming activity %	Reduce farming activity %	Invest in farming overseas %	Environmental schemes %	Diversify %
Within a year	36	62	9	42	44
Within 2 years	21	12	6	15	16
Within 3 years	11	4	6	2	3
Longer than 3 years	6	3	15	1	2
Don't know	25	19	65	39	35
Total/Base: Yes/definitely/Possibly take this course of action	305 (100%)	221 (100%)	34 (100%)	339 (100%)	291 (100%)

Reduction is likely to be most rapidly seen, with nearly two thirds expecting to achieve it within a year. Investment in farming overseas is the most tentative plan: two thirds have no timeframe for this.

### 3.2.4 Diversification

All respondents were asked whether they ran any diversified enterprises.

**Table 24: Diversified enterprises**

*Q. Do you currently run any non-traditional or non-farming diversified enterprises on this holding?*

Weighted percentages	%
None	69
Tourism	7
Sports and recreation	8
Agric/hortic services	5
Retailing	4
Lettings/conversions	3
Haulage/storage/construction	3
Other	6
Total/Unwtd base: All not leaving farming	975 (100%)

The region with the highest percentage of farms running diversified enterprises is the SE, with 57%. This region also had a high proportion planning to diversify. This is likely to reflect the greater availability of potential customers within a viable distance and with money to spend.

25% of respondents said at the earlier question that they were planning to diversify and they were asked what sort of enterprise they were planning:

**Table 25: Type of diversified enterprise**

*Q. You indicated that you are considering starting a non-traditional or non-farming diversified enterprise on your farm. What type of enterprise are you considering*

Weighted percentages	%
Nothing specific/not sure/anything	18
Lettings/conversions	24
Sports and recreation	21
Tourism	19
Agric/hortic services	9
Non-traditional agriculture (e.g. worms, ostriches)	6
Retailing	4
Novel crops	5
Other	8
Total/Unwtd base: All yes/definitely/Possibly planning to diversify	291 (100%)

A wide range of ideas is being considered, from llamas and worm farming to wind turbines and telephone masts.

As noted in Table 23 above, 44% expect to start the new enterprise within a year.

### 3.2.5 Agri-environment

All respondents were asked whether they participate in any agri-environment schemes.

**Table 26: Current participation in Agri-environment schemes**

*Q. Which, if any, agri-environment schemes do you currently partake in?*

Weighted percentages	%	Greater representation among:
None	75	
Countryside Stewardship	9	Larger farms, cereals/cropping, NE, WM and IPs
ESAs	8	Cattle & sheep farms, NW, Dangerous contacts
Hill Farm Allowance	3	Smaller farms, Cattle & sheep farms, NE, EM, Dangerous contacts
Woodland Grant	3	NE
Farm Woodland Premium	2	NE
SSSI	2	
Moorland	1	EM
Arable stewardship	<1	WM
NSAs	<1	
Countryside access	<1	
Others (incl. non-specific and general environmental works)	2	
Total/Unwtd Base: All not leaving farming	975 (100%)	

The region with the highest participation (35% in at least one scheme) is the East Midlands. The region with the lowest participation (9%) is Yorks/Humberside.

25% of respondents said to the earlier question that they were considering moving some or all of their land into agri-environment schemes and they were asked which schemes they were considering:

**Table 27: Agri-environment schemes**

*Q. You indicated that you are considering moving some or all of your land into agri-environment schemes. Which schemes are you considering?*

<b>Weighted percentages</b>	<b>%</b>	<b>Higher representation among:</b>
Countryside Stewardship	41	Larger farms, Welfare, SW
Woodland Grant	20	Smallest farms, Welfare, Oia
Farm Woodland Premium	15	
ESAs	11	Smallest farms, Oia
Arable stewardship	4	
Countryside access	2	
Moorland	1	
Hill Farm Allowance	<1	
NSAs	<1	
Others (incl. non-specific)	1	
Total/Unwtd Base: All yes/definitely/ Possibly considering Agri-env schemes	339 (100%)	

There is clearly considerable interest in joining agri-environment schemes, although not all those currently considering them will necessarily be eligible (e.g. ESA scheme is specific to certain parts of the country). As noted in Table 23 above, 42% expect to join the chosen scheme within a year. This may not be a realistic expectation in some cases.

Respondents were asked whether they would like DEFRA to send them more information on diversification and agri-environment schemes and 46% said yes. Many of these were then very non-specific as to what information that they wanted/needed. There was a feeling that they are aware that there might be something that they could do, but that they don't really know what it is, and they lack the knowledge/skill/time to find out.

### 3.2.6 Organic enterprises

Some respondents mentioned organic production in response to the agri-environment questions, but a separate question on this topic was explicitly asked:

**Table 28: Organic enterprises**

*Q. Do you currently, or do you plan to, run any organic enterprises?*

Weighted percentages	All farms	Cereals/ cropping %	Dairy %	Cattle & Sheep %	Other %
Yes, currently run	2	<1	5	3	1
Yes, plan to run	2	<1	1	1	4
No / Don't know	96	98	95	96	95
Total/Unwtd base: All not leaving farming	975 (100%)	155 (100%)	296 (100%)	343 (100%)	181 (100%)

If all of those saying that they plan to run an organic enterprise do so, it would amount to a doubling of the number of organic enterprises, although since the intent is higher among the smaller farms, the volumes of organic produce would not necessarily double.

Cereals/cropping farms were those least likely to be considering or currently running an organic enterprise. There is potential for problems in the imbalance between cereals and livestock farms converting to organic, in that a supply of organic feed is required for organic livestock.

Of the total of 29 farms planning to run an organic enterprise, 52% said that they plan to start it within a year and 34% said that they weren't sure when they would start it, indicating that their plans are not yet fully thought-through.

### 3.2.7 Other operational changes

Three further types of operational change were considered:

**Table 29: Other operational changes**

*Q. Do you currently undertake, or do you plan to undertake, any contract farming?*

*Q. Do you currently undertake, or do you plan to undertake, any share farming?*

*Q. Do you currently use agricultural contractors on your farm?*

*Q. Do you plan to make more use of agricultural contractors on your farm?*

Weighted percentages	Cereals/ cropping %	Dairy %	Cattle & Sheep %	Other %
<b>Contract farming:</b>				
Yes, currently run	24	8	5	10
Yes, plan to run	2	1	1	<1
No	71	92	94	89
<b>Share farming:</b>				
Yes, currently run	9	3	1	2
Yes, plan to run	2	1	<1	2
No	86	96	99	96
<b>Agricultural contractors:</b>				
Yes currently use*	74	81	60	51
Yes plan to use more*	14	33	14	12
No (neither use nor plan to use more)	22	18	40	47
Total/Unwtd base: All not leaving farming	155 (100%)	296 (100%)	343 (100%)	181 (100%)

\* Note: these answers are not mutually exclusive.

Both contract farming and share farming are most common in cropping enterprises (and in Eastern region, where they are more prevalent). Of the total of 22 farms planning to undertake contract farming, 36% said that they plan to start it within a year and 45% said that they weren't sure when they would start it. Of the total of 17 farms planning to undertake share farming, 18% said that they plan to start it within a year and 59% said that they weren't sure when they would start it, suggesting that these plans are very tentative.

The use of contractors is widespread and set to expand, with one in four of our sample expecting to make greater use of contract labour/equipment. Eastern and South East regions are least likely to be using/planning to use contractors and West Midlands and North West are the most likely. Although dairy farmers are most likely to be using contractors currently, they are also most likely to be planning to increase their use.

### 3.2.8 Changes in employment

Respondents were asked whether and how employment on their holdings would be different by June 2002:

**Table 30: Employment differences in June 2002**

*Q. Do you expect the number of people working on your holding in June 2002 to be different to the number working on it in June 2000?*

Change by 20002	IP %	Dangerous contacts %	Welfare %	Within 3km %	Oia %
Different	20	26	21	15	14
The same	63	66	71	81	80
No idea	17	8	6	4	6
Total/Base: All not leaving farming	178 (100%)	205 (100%)	140 (100%)	314 (100%)	138 (100%)

Even among the farms most directly affected, nearly two thirds expect to have the same number of people working in June 2002 as they had in June 2000, although these are also the farms who feel least able to predict the future (17% saying “no idea”).

**Table 31: Types of staff in June 2002**

Types of staff	More %	Fewer %
Principle farmers – FT	3	21
Principle farmers – PT	3	16
Salaried managers - FT	1	1
Regular workers – FT	14	25
Regular workers – PT	8	11
Casual or gang workers - FT	2	3
Casual or gang workers – PT	4	10
None (no more/no fewer)	69	26
Total/Base: N <sup>o</sup> . of farms expecting change by 2002	185 (100%)	

74% of those who do anticipate change, expect to have fewer, but 31% expect more of at least some types of worker, so that the overall effect will be a decrease in farming employment, which is in line with the trends experienced prior to FMD.

### 3.3 Advice

In order to help DEFRA develop the most appropriate strategy to help the industry rebuild after the foot and mouth outbreak, respondents were asked about the types of advice they had used and intended to use, to help them deal with the foot and mouth outbreak.

**Table 32: Types of advice**

*Q. Can I therefore ask you if you HAVE USED any of the following types of advice?*

*Q. And do you INTEND TO USE any of the following types of advice?*

Weighted percentages	% have used	% intend to use
Financial	10	5
Diversification	7	10
Planning (for buildings)	5	4
Education and/or Training	3	3
DEFRA/DEFRA website	1	0
Business Link/FBAS	2	1
Other farm advisor/ consultant/ land agent	1	1
Vet	<1	0
NFU	<1	<1
National Trust	<1	0
Environmental/conservation/ environmental scheme/CSS	<1	1
Technical	<1	<1
Marketing		<1
Other	2	3
None	77	78
Total/Unwtd base: All not leaving farming	975 (100%)	

The majority have not sought advice, nor intend to do so. The most common type of advice sought in the past is financial, and the advice most likely to be sought in the future is for diversification.



## Appendix 1: Questionnaire

### Survey of the Effects on Farming of the 2001 outbreak of Foot and Mouth Disease

	<p>Introduction Hello, my name is _____, I work for ADAS and I am carrying out some research on behalf of DEFRA I wonder if it would be possible to speak to the person who has overall responsibility managing your farm?</p>	<p>1. Yes - available for interview 2. Not available</p>	
6	Can I confirm that the CPH number of this holding is	<p>1. Yes - correct 2. No - incorrect</p>	
	If No, please could you tell me the correct CPH number	Correct CPH No.	
7	Do you have any other holdings associated with your farm business?	<p>1. Yes 2. No</p>	
8	If Yes, what is the CPH Number(s) of that (those) holding(s)?	CPH No.	
	<p>Background to research ADAS have been asked to carry out this research to gain a better understanding of how farmers intend to respond to the foot and mouth outbreak so that DEFRA can ensure that the right sort of support is available. We are surveying a mixture of farms across the country. This interview should take about 20 minutes, and anything you tell me will be treated in confidence: the data will only be divulged to DEFRA's Statistics division on whose behalf we are running this survey.</p> <p>I need to establish the status of this holding [Q6NO] regarding the foot and mouth outbreak <i>Interviewer: If there are two CPH holding numbers shown above - read out the second (correct) CPH holding number only</i></p>		
12	Can I confirm that there were Foot and Mouth infected livestock on this holding?	<p>1. Yes 2. No</p>	
13	Can I confirm that this holding had livestock culled because of dangerous contacts, or because the holding was classed as contiguous to an infected holding?	<p>1. Yes 2. No</p>	
14	Can I confirm that your holding was not infected with Foot and Mouth, but did have animals slaughtered under the Livestock Welfare Disposal Scheme?	<p>1. Yes 2. No</p>	
15	Can I confirm that this holding was within a Foot and Mouth Disease Surveillance Zone but did not have any animals culled because of the Foot and Mouth Outbreak?	<p>1. Yes 2. No</p>	
16	Can I confirm that this holding is not in a surveillance zone and has not had any animals culled because of the Foot and Mouth Outbreak?	<p>1. Yes 2. No</p>	
17	<p><i>ASK: DEFRA FMD type was incorrect</i> TYPE2. Which ONE of the following descriptions best describes your holding ...</p>	<p>1. Infected premises 2. Dangerous contacts/slaughtered on suspicion 3. Had Animals Culled under the Animal Welfare Disposal Scheme 4. Within 3km of an IP or in an infected area 5. Outside infected areas, provisionally free and no animals culled</p>	
17C	Our records show that you had [...] cattle culled, is this correct?	<p>1. Yes 2. No</p>	
	If No, Please could you tell me the correct number of cattle you have had culled:	Correct no.	
	Our record shows that you had [...] sheep culled, is this correct?	<p>1. Yes 2. No</p>	
	If No, Please could you tell me the correct number of sheep you have had culled:	Correct no.	
	Our records show that you had [...] pigs culled, is this correct?	<p>1. Yes 2. No</p>	

	If No, Please could you tell me the correct number of pigs you have had culled:	Correct no.	
	I now want to ask some questions aimed at obtaining an understanding of the short and long-term effects the Foot and Mouth outbreak have had on your business		
19	As a result of your Census return in June 2000 your holding was classified as a [...] holding. Prior to the foot and mouth outbreak, were you planning any major changes to the livestock or cropping on this holding which may have led to a change in classification of this holding?	1. Yes 2. No	
	If Yes, changes planned		
20	Which Livestock or Cropping enterprises were you planning to change?  <i>INTERVIEWER: No prompting, interviewer to select responses mentioned</i>	1. Cereals 2. General cropping 3. Dairy 4. Beef 5. Sheep 6. Poultry 7. Pigs 8. Horticulture 9. Other (specify) 10. None	
20C	What changes were you planning with regard to CEREALS? ..... to GENERAL CROPPING? ..... to DAIRY? ..... to BEEF? ..... to SHEEP? ..... to POULTRY ..... to PIGS? ..... to HORTICULTURE? ..... to [OTHER]	1. Increase 2. Decrease 3. Stop altogether 4. Start new 5. Not relevant	
21	As a result of foot and mouth, do you think that describing your holding as [Farm classification] will still be relevant in June 2002?	1. Yes 2. No	
22	If No, which of the following do you think will best describe your holding in June 2002?  <i>INTERVIEWER: Don't read out "Non-specialist"- only use code if no other is acceptable.</i>	1. Cereals 2. General Cropping 3. Dairy 4. Beef 5. Sheep 6. Poultry 7. Pigs 8. Horticulture 9. Other (specify)	
23	You mentioned that you had an interest in other holdings. As a result of the Foot and Mouth outbreak, are you planning to change the livestock or cropping on this holding?	1. Yes 2. No	
24	At your other holding(s), which crop or livestock enterprises were you planning to change?  <i>INTERVIEWER: No prompting, interviewer to select responses mentioned.</i>	1. Cereals 2. General Cropping 3. Dairy 4. Beef 5. Sheep 6. Poultry 7. Pigs 8. Horticulture 9. Other (specify)	

24C	What changes were you planning with regard to CEREALS? - at other holding(s) ..... to GENERAL CROPPING? ..... to DAIRY? ..... to BEEF? ..... to SHEEP? ..... to POULTRY ..... to PIGS? ..... to HORTICULTURE? ..... to [OTHER]	1. Increase 2. Decrease 3. Stop altogether 4. Start new 5. Not relevant	
25	I would now like to look in more detail at your livestock enterprises. For each livestock category I would like ask about your planned level of stock at June 2001- assuming that there had not been a foot and mouth epidemic.		
26	I would now like to look in more detail at your livestock enterprises. For each livestock category I would like to ask about your planned level of stock at June 2001- assuming that there had not been a foot and mouth epidemic - and also your actual level of stocking.		
28	You had [...] dairy herd females in June 2000 how many had you planned to have in June 2001?		
29	And how many dairy herd females did you have in June 2001		
30A	You had [...] beef herd females in June 2000 how many had you planned to have in June 2001?		
	And how many beef herd females did you have in June 2001.		
30B	You had [...] other cattle in June 2000 how many had you planned to have in June 2001?		
	And how many other cattle did you have in June 2001.		
30C	You had [...] breeding sows (including maiden gilts) in June 2000 how many had you planned to have in June 2001?		
	And how many breeding sows (including maiden gilts) did you have in June 2001.		
30D	You had [...] boars used for service in June 2000 how many had you planned to have in June 2001?		
	And how many boars used for service did you have in June 2001.		
30E	You had [...] piglets under 20kg in June 2000 how many had you planned to have in June 2001?		
	And how many piglets under 20kg did you have in June 2001		
30F	You had [...] other pigs in June 2000 how many had you planned to have in June 2001?		
	And how many other pigs did you have in June 2001		
30G	You had [...] breeding ewes in June 2000 how many had you planned to have in June 2001?		
	And how many breeding ewes did you have in June 2001.		
30H	You had [...] lambs in June 2000 how many had you planned to have in June 2001?		
	And how many lambs did you have in June 2001.		
30I	You had [JOSP] other sheep in June 2000 how many had you planned to have in June 2001?		
	And how many other sheep did you have in June 2001.		
	In the light of the foot and mouth outbreak, I would now like to ask you some questions about your attitude to your farming business and future plans. I will read out a number of options and I would like you to tell me the likelihood that you would take this course of action ...		
	There are four responses to choose from, these are Definitely, Possibly, Unlikely, and No. If you feel you can not answer the question, there is an additional option of 'Don't know'. Please ask me to repeat these options at any time.		
32	I intend to move out of farming	1. Yes/Definitely 2. Possibly 3. Unlikely 4. No 5. Don't know	
	<i>If yes/definitely or Possibly, skip to Q101</i>		
33	I intend to re-stock and continue as soon as possible	1. Yes/Definitely 2. Possibly 3. Unlikely 4. No 5. Don't know	

34	I have been unaffected by the foot and mouth disease, I intend to carry on as before	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
36	I intend to sell out and buy a farm elsewhere	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
37	What type of farm will this be?	<ol style="list-style-type: none"> <li>1. Dairy</li> <li>2. Beef</li> <li>3. Sheep</li> <li>4. Arable</li> <li>5. Mixed</li> <li>6. Pigs</li> <li>7. Don't know</li> </ol>	
38	Will it be in this country?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
39	I intend to expand the farming activity on this holding	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
40	When are you likely to achieve this?	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
41	I intend to reduce the farming activity on this holding	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
42	When are you likely to achieve this?	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
43	I intend to invest in farming activities overseas	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
44	When are you likely to achieve this?	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
45	I intend to diversify into non-traditional or non-farming activities on this holding	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
46	I intend to move some or all of the holding into environmental schemes	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	

47	I intend to move into other methods of production	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
48	I intend to increase the number of enterprises on the farm	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
49	I intend to reduce the number of enterprises on the farm	<ol style="list-style-type: none"> <li>1. Yes/Definitely</li> <li>2. Possibly</li> <li>3. Unlikely</li> <li>4. No</li> <li>5. Don't know</li> </ol>	
51	Has the foot and mouth outbreak caused you to change the nature of your business plans in any way?	<ol style="list-style-type: none"> <li>1. A great deal - ask for details</li> <li>2. A little</li> <li>3. Not at all</li> </ol>	
52	Has the foot and mouth outbreak caused you to change the timing of your business plans in any way?	<ol style="list-style-type: none"> <li>1. A great deal - ask for details</li> <li>2. A little</li> <li>3. Not at all</li> </ol>	
53	Do you currently run any non-traditional or non-farming diversified enterprises on this holding?	<ol style="list-style-type: none"> <li>1. Agricultural/Horticultural Services</li> <li>2. Tourism</li> <li>3. Sports and recreation</li> <li>4. Office or industrial lettings</li> <li>5. Direct sales through farm shops/PYO/Mail order</li> <li>6. Processing or food manufacturing</li> <li>7. Novel crops - obtain details</li> <li>8. Other - obtain details</li> <li>9. None</li> </ol>	
54	You indicated that you are considering starting a non-traditional or non-farming diversified enterprise on your farm. What type of enterprise are you considering	<ol style="list-style-type: none"> <li>1. Agricultural/Horticultural Services</li> <li>2. Tourism</li> <li>3. Sports and recreation</li> <li>4. Office or industrial lettings</li> <li>5. Direct sales through farm shops/PYO/Mail order</li> <li>6. Processing or food manufacturing</li> <li>7. Novel crops (obtain details)</li> <li>8. Other (obtain details)</li> </ol>	
55	When do you plan to start this enterprise	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
56	Which, if any, agri-environment schemes do you currently partake in?	<ol style="list-style-type: none"> <li>1. Countryside Stewardship</li> <li>2. Environmentally Sensitive Areas</li> <li>3. Farm Woodland Premium Scheme</li> <li>4. Hill Farm Allowance Scheme</li> <li>5. Woodland Grant Scheme</li> <li>6. Arable Stewardship Scheme</li> <li>7. Countryside Access Scheme</li> <li>8. Nitrate Sensitive Areas</li> <li>9. Moorland Scheme</li> <li>10. Other - obtain details</li> <li>11. None</li> </ol>	

57	You indicated that you are considering moving some or all of your land into agri-environment schemes. Which schemes are you considering?	<ol style="list-style-type: none"> <li>1. Countryside Stewardship</li> <li>2. Environmentally Sensitive Areas</li> <li>3. Farm Woodland Premium Scheme</li> <li>4. Hill Farm Allowance Scheme</li> <li>5. Woodland Grant Scheme</li> <li>6. Arable Stewardship Scheme</li> <li>7. Countryside Access Scheme</li> <li>8. Nitrate Sensitive Areas</li> <li>9. Moorland Scheme</li> <li>10. Other - obtain details</li> <li>11. Don't know</li> </ol>	
58	When do you plan to join these scheme(s)?	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
59	Do you currently, or do you plan to, run any organic enterprises?	<ol style="list-style-type: none"> <li>1. Yes, currently run</li> <li>2. Yes, plan to run</li> <li>3. No</li> </ol>	
60	When do you plan to start the organic enterprise(s)?	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
61	Do you currently undertake, or do you plan to undertake, any contract farming?	<ol style="list-style-type: none"> <li>1. Yes, currently undertake</li> <li>2. Yes, plan to undertake</li> <li>3. No</li> </ol>	
62	When do you plan to undertake a contract farming enterprise?	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
63	Do you currently undertake, or do you plan to undertake, any share farming?	<ol style="list-style-type: none"> <li>1. Yes, currently undertake</li> <li>2. Yes, plan to undertake</li> <li>3. No</li> </ol>	
64	When do you plan to undertake a share farming enterprise?	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
65	Do you currently use agricultural contractors on your farm?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
66	Do you plan to make more use of agricultural contractors on your farm?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
67	Before I move on to the next section, can you tell me whether you would like DEFRA to send you more information on diversification and agri-environment schemes?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
68	A lack of livestock can cause difficulties in managing grassland. Have you had any difficulty managing the grassland on your holding due to a reduction in livestock as a result of Foot & Mouth?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	

69	What steps did you take to overcome these difficulties?	<ol style="list-style-type: none"> <li>1. Reduce grassland area/ increase area of other crops</li> <li>2. More production of conserved forage (silage and hay) and less reliance on grazing</li> <li>3. Rent out grassland</li> <li>4. Reduce fertiliser rates</li> <li>5. "Top" (mow off stemmy material) more frequently</li> <li>6. Other - obtain details</li> </ol>	
70	You indicated that you intend to restock and carry on as usual. We would like to obtain some indication whether you intend to restock on a like-for-like basis and the time scale involved.		
71	Are you intending to re-stock entirely to your pre-Foot & Mouth levels, or are you planning to change your stocking levels in any way?	<ol style="list-style-type: none"> <li>1. Restock entirely to pre-FMD levels</li> <li>2. Change level of stock IN ANY WAY</li> <li>3. Haven't decided yet</li> </ol>	
72	Do you intend to have more or fewer dairy herd/beef herd females/Breeding Sows (including maiden gilts)/Piglets under 20kg/Breeding Ewes than you had in June 2000?	<ol style="list-style-type: none"> <li>1. More</li> <li>2. Fewer</li> <li>3. No change to dairy herd/beef herd females</li> </ol>	
73	Roughly, how many more/fewer?		
74	Within what timescale do you expect to complete the re-stocking of Dairy Herd/Beef Herd Females/Breeding Sows (including maiden gilts)/Piglets under 20kg/Breeding Ewes?	<ol style="list-style-type: none"> <li>1. Within the next 3 to 4 months</li> <li>2. Next Spring</li> <li>3. Next Summer</li> <li>4. Next Autumn</li> <li>5. By the end of next year (2002)</li> <li>6. Within 2-3 years (by end 2004)</li> <li>7. Within 5 years (by end 2006)</li> <li>8. No idea</li> </ol>	
75	Where do you intend to source your Dairy Herd/Beef Herd Females/Breeding Sows (including maiden gilts)/Piglets under 20kg/Breeding Ewes?	<ol style="list-style-type: none"> <li>1. Auction - UK</li> <li>2. Auction - Europe</li> <li>3. Auction - Elsewhere</li> <li>4. Buy direct from another farm - UK</li> <li>5. Buy direct from another farm - Europe</li> <li>6. Buy direct from another farm - Elsewhere</li> <li>7. Don't know</li> </ol>	
77	Which, if any, of the following options do you intend to pursue in the interim (that is, before you complete your re-stocking)?	<ol style="list-style-type: none"> <li>1. Rent out some or all of your grazing land</li> <li>2. Buy in store cattle</li> <li>3. Buy in store lambs</li> <li>4. Buy in (extra) pigs</li> <li>5. Grow forage or a crop on land previously used for grazing</li> <li>6. Other - obtain details</li> <li>7. None of these</li> </ol>	
	I now need to ask about the labour used on this holding and how it has changed due to the Foot and Mouth outbreak. I will ask you a series of questions about the number of full and part time staff on your farm and details about any reduction in labour which is a direct result of foot and mouth. Full time staff are those who spend at least 39 hours a week working on the farm.		
	Can I ask you firstly about full-time principal farmers, this includes farmers, partners, directors and spouses working at least 39 hours a week on the farm...		
79	In the June 2000 census you indicated that [...] full-time principal farmers worked on the holding. How many were working on the holding in June 2001?		
80	In the June 2000 census you indicated that [...] part-time principal farmers worked on the holding. How many were working on the holding in June 2001?		

<b>81</b>	As a result of the foot and mouth outbreak, have any of the principal farmers ceased working on the farm or reduced the hours they work? <i>If respondent indicates that there will be a reduction of labour, the interviewer to probe to get the detail below.</i>	<ol style="list-style-type: none"> <li>1. Full-time staff ceased working on farm</li> <li>2. Part-time staff ceased working on farm</li> <li>3. Full-time staff reduced hours</li> <li>4. Part-time staff reduced hours</li> <li>5. None of the above</li> </ol>	
<b>84</b>	Can I now ask about salaried managers. In June 2000 census you indicated that [...] full-time salaried managers were working on the holding. How many salaried managers were working on the farm in June 2001?		
<b>85</b>	In the June 2000 census you indicated that [...] part-time salaried managers worked on the holding. How many part-time salaried managers were working on the farm in June 2001?		
<b>86</b>	As a result of the foot and mouth outbreak, have any of the salaried managers been made redundant, been laid off or had their hours reduced? <i>If respondent indicates that there has been a reduction of labour, the interviewer to probe to get the detail below.</i>  <i>For each: How many _____ salaried managers have been made redundant?</i>	<ol style="list-style-type: none"> <li>1. Full-time staff made redundant</li> <li>2. Part-time staff made redundant</li> <li>3. Full-time staff laid off</li> <li>4. Part-time staff laid off</li> <li>5. Full-time staff reduced hours</li> <li>6. Part-time staff reduced hours</li> <li>7. None of the above</li> </ol>	
<b>89</b>	Can I now ask about paid regular MALE workers. In the June 2000 census you indicated that you had [...] full-time regular MALE workers on the holding. How many MALE paid, regular workers were working full-time on the farm in June 2001?		
<b>89B</b>	And in the June 2000 census you indicated that you had [...] full-time regular FEMALE workers on the holding. How many FEMALE paid, regular workers were working full-time on the farm in June 2001?		
<b>90A</b>	In the June 2000 census you indicated that [...] MALE part-time regular workers were employed on the holding. How many MALE paid, regular workers were working part-time on the farm in June 2001?		
<b>90B</b>	And in the June 2000 census you indicated that you had [...] part-time regular FEMALE workers on the holding. How many FEMALE paid, regular workers were working part-time on the farm in June 2001?		
<b>91</b>	As a result of the foot and mouth outbreak, have any of the regular workers been made redundant, been laid off or had their hours reduced? <i>If respondent indicates that there has been a reduction of labour, the interviewer to probe to get the detail below.</i>  <i>For each: How many _____ regular farm workers have been made redundant?</i>	<ol style="list-style-type: none"> <li>1. Full-time Male staff made redundant</li> <li>2. Full-time Female staff made redundant</li> <li>3. Part-time Male staff made redundant</li> <li>4. Part-time Female staff made redundant</li> <li>5. Full-time Male staff laid off</li> <li>6. Full-time Female staff laid off</li> <li>7. Part-time Male staff laid off</li> <li>8. Part-time Female staff laid off</li> <li>9. Full-time Male staff reduced hours</li> <li>10. Full-time Female staff reduced hours</li> <li>11. Part-time Male staff reduced hours</li> <li>12. Part-time Female staff reduced hours</li> <li>13. None of the above</li> </ol>	
<b>91A</b>			
<b>91B</b>	How many PART-TIME REGULAR FARM WORKERS have been made redundant?		
<b>91C</b>	How many FULL-TIME REGULAR FARM WORKERS have been laid off?		
<b>91D</b>	How many PART-TIME REGULAR FARM WORKERS have been laid off?		
<b>91E</b>	How many FULL-TIME REGULAR FARM WORKERS are working reduced hours?		
<b>91F</b>	How many PART-TIME REGULAR FARM WORKERS are working reduced hours?		
	Can I now ask about casual and gang workers, these are staff employed for part of the year, usually for less than 20 weeks and were employed on 1 June.		
<b>95A</b>	Do NOT include any contract cleaners employed to carry out FMD duties In the June 2000 census you indicated that you had [...] male casual or gang workers employed on the holding. How many male casual workers were working on the farm in June 2001?		
<b>96A</b>	In June 2000 census you indicated that you had [...] female casual or gang workers employed on the holding. How many female casual workers were working on the farm in June 2001?		

97	<p>As a result of the foot and mouth outbreak, have you employed fewer casual or gang workers or have you employed them for fewer hours?  <i>If respondent indicates that there has been a reduction of labour, the interviewer to probe to get the detail below.</i>  <i>For each:</i> How many fewer _____ casual or gang workers were employed?</p>	<ol style="list-style-type: none"> <li>1. Fewer full-time staff employed</li> <li>2. Fewer part-time staff employed</li> <li>3. Full-time staff working reduced hours</li> <li>4. Part time working reduced hours</li> <li>5. None of the above</li> </ol>	
I'd now like to ask some questions about any INCREASE in labour usage as a direct result of foot and mouth.			
98	<p>Have you employed any extra staff on your holding or increased the hours worked by existing staff as a result of foot and mouth?</p>	<ol style="list-style-type: none"> <li>1. Extra staff</li> <li>2. Staff working more hours</li> <li>3. No extra staff/hours</li> </ol>	
98E	<p>What types of extra staff have you employed as a result of Foot &amp; Mouth?   <i>For each:</i> How many extra _____ have you employed as a result of Foot &amp; Mouth?</p>	<ol style="list-style-type: none"> <li>1. Principle farmers - full time</li> <li>2. Principle farmers - part-time</li> <li>3. Salaried managers - full-time</li> <li>4. Salaried managers - part-time</li> <li>5. Regular workers - full-time</li> <li>6. Regular workers - part-time</li> <li>7. Casual or gang workers - full-time</li> <li>8. Casual or gang workers - part-time</li> </ol>	
98M	<p>Which types of staff have been working more hours as a result of Foot &amp; Mouth?  <i>Prompt for details, to identify according to list below</i>   <i>For each:</i> How many _____ have been working more hours as a result of Foot &amp; Mouth?</p>	<ol style="list-style-type: none"> <li>1. Principle farmers - full time</li> <li>2. Principle farmers - part-time</li> <li>3. Salaried managers - full-time</li> <li>4. Salaried managers - part-time</li> <li>5. Regular workers - full-time</li> <li>6. Regular workers - part-time</li> <li>7. Casual or gang workers - full-time</li> <li>8. Casual or gang workers - part-time</li> </ol>	
99	<p>Do you expect the number of people working on your holding in June 2002 to be different to the number working on it in June 2000?</p>	<ol style="list-style-type: none"> <li>1. Different</li> <li>2. The same number</li> <li>3. No idea</li> </ol>	
	<p>Which types of staff will there be more of?  <i>Prompt for details, to identify according to list below.</i>   <i>For each:</i> How many more _____ will there be?</p>	<ol style="list-style-type: none"> <li>1. No more of any type (no plans for extra staff)</li> <li>2. Principle farmers - full time</li> <li>3. Principle farmers - part-time</li> <li>4. Salaried managers - full-time</li> <li>5. Salaried managers - part-time</li> <li>6. Regular workers - full-time</li> <li>7. Regular workers - part-time</li> <li>8. Casual or gang workers - full-time</li> <li>9. Casual or gang workers - part-time</li> </ol>	
99L	<p>Which types of staff will there be fewer of?  <i>Prompt for details, to identify according to list below.</i>   <i>For each:</i> How many fewer _____ will there be?</p>	<ol style="list-style-type: none"> <li>1. No fewer of any type (no plans to reduce staff)</li> <li>2. Principle farmers - full time</li> <li>3. Principle farmers - part-time</li> <li>4. Salaried managers - full-time</li> <li>5. Salaried managers - part-time</li> <li>6. Regular workers - full-time</li> <li>7. Regular workers - part-time</li> <li>8. Casual or gang workers - full-time</li> <li>9. Casual or gang workers - part-time</li> </ol>	
100A	<p>In order to understand the most appropriate strategy to help the industry rebuild after the foot and mouth outbreak, DEFRA want to understand the types of advice farmers have used, or intend to use, to help them deal with the foot and mouth outbreak. Can I therefore ask you if you HAVE USED any of the following types of advice</p>	<ol style="list-style-type: none"> <li>1. Financial</li> <li>2. Planning (for buildings)</li> <li>3. Diversification</li> <li>4. Education and/or Training</li> <li>5. Other - obtain details</li> <li>6. None</li> </ol>	

<b>100B</b>	And do you INTEND TO USE any of the following types of advice	<ol style="list-style-type: none"> <li>1. Financial</li> <li>2. Planning (for buildings)</li> <li>3. Diversification</li> <li>4. Education and/or Training</li> <li>5. Other - obtain details</li> <li>6. None</li> </ol>	
	<i>Skip to Q104</i>		
<b>101</b>	When do you intend to move out of farming?	<ol style="list-style-type: none"> <li>1. Within a year</li> <li>2. Within 2 years</li> <li>3. Within 3 years</li> <li>4. Longer than 3 years</li> <li>5. Don't know</li> </ol>	
<b>103</b>	Would you like to continue the interview giving answers that state what you expect to happen on the holding while you are still running the farm?	<ol style="list-style-type: none"> <li>1. Yes – skip to Q33</li> <li>2. No – skip to Q105</li> </ol>	
<b>104</b>	Finally, have you any comments you would like to make about the issues that need to be considered by those looking to help the industry rebuild after the foot and mouth outbreak?		
<b>105</b>	That concludes the interview. Thank you very much for your time.		

## Appendix 2: Definitions used in the report

Respondents to the survey were classified in four ways, the first two of which were used to construct the stratified sample:

- **In accordance the holding's FMD status.** Farms were classified into one of 5 categories:  
 IP – Infected Premises: premises with infected livestock which were culled  
 Dangerous Contacts – premises contiguous to an IP, identified as dangerous contact or slaughter on suspicion (SOS)  
 Welfare - farms involved in the Livestock Welfare Disposal Scheme  
 Within 3km – farms in surveillance zones: within 3km of an infected premise or in an infected area  
 Oia – farms outside infected areas, at risk and provisionally free.

Table A1	Population		Sample	
	Number	%	Number	%
IP	1,616	1	189	19
Dangerous contacts	3,761	3	214	21
Welfare	5,626	4	143	14
Within 3km	59,803	41	321	32
Oia	75,541	52	138	14
	<b>146,347</b>	<b>100</b>	<b>1,005</b>	<b>100</b>

- **By size.** The large, medium and small categorisations used are based on the Standard Gross margin (SGM) of the Enterprise. The SGM is a financial measure based on the concept of gross margin for farming enterprises. Because information on gross margins is not available for each farm, standards or norms have been calculated for all of the major crop and livestock enterprises. The total SGM for each farm is calculated by multiplying its crop areas and livestock numbers by the appropriate SGM coefficients and then summing the result for all enterprises on the farm. For the purposes of this study small farms have an SGM of less than 48,000. Medium sized farms have an SGM of 48,000 to 119,999, large farms have an SGM of 120,000 or more.

Table A2	Population			Sample		
	Small	Medium	Large	Small	Medium	Large
IP	0.4%	0.4%	0.3%	6.1%	6.5%	6.3%
Dangerous contacts	1.5%	0.7%	0.3%	7.8%	6.9%	6.7%
Welfare	1.5%	1.3%	1.0%	4.5%	5.1%	4.7%
Within 3km	31.3%	6.2%	3.4%	10.3%	10.6%	10.9%
Oia	36.4%	8.5%	6.8%	4.8%	4.6%	4.4%
All FMD status	71.2%	17.1%	11.8%	33.5%	33.6%	32.9%
Total/Base: No. of holdings	146,347 (100%)			1,005 (100%)		

- **By farm type.** Farms were classified as one of 8 types based on the enterprise which generates the majority of the SGM: cereals, general cropping, dairy, cattle and sheep (lowland), cattle and sheep (LFA), pigs & poultry, mixed or other. For analysis purposes (i.e. to provide more robust subsample sizes) these were grouped into 4: cereals and general cropping, dairy, cattle & sheep, others.

Table A3	Population %	Sample %
Cereals	15	9
General cropping	8	7
Dairy	12	31
Cattle and sheep (lowland)	22	22
Cattle and sheep (LFA)	8	13
Pigs & poultry	4	3
Mixed	8	10
Other	23	6
Total/Base: No. of holdings	146,347 (100%)	1,005 (100%)

- **By Government Office Region (GOR).** Farms were classified according to which of the 8 regions in which they are situated: North East (NE), Yorkshire & The Humber (Y&H), North West, including Merseyside (NW), East Midlands (E.Mids), West Midlands (W. Mids), East of England (Eastern), South East (SE), South West (SW).

Table A4	Population %	Sample %
NE	4	7
NW	12	30
Y&H	11	9
E. Mids	11	5
W. Mids	13	12
Eastern	12	5
SE	13	6
SW	25	27
Total/Base: No. of holdings	146,347 (100%)	1,005 (100%)

### Appendix 3: Table of Confidence Intervals (for 95% confidence)

To calculate the confidence interval for a given percentage figure, use the intersection of the column for the percentage and the row for the sample size.

**Examples:**

the confidence interval for a figure of 40% which is based on a sample size of 100 is:  
 40 +/- 9.6 i.e. 30.4 – 49.6%

For sample sizes/percentages not given in the table, it is possible to either use the nearest:  
 the confidence interval for a figure of 23% which is based on a sample size of 81 is:  
 23 +/- 9.5 i.e. 13.5 – 32.5%

or calculate the interval using the formula: 1.96 x Square root of (percentage x (100-percentage)/sample size):

the confidence interval for a figure of 23% which is based on a sample size of 81 is:  
 23 +/- (1.96xSQRT(23x77/81)) i.e. 23 +/- 9.2 → 13.8 – 32.2%  
 depending on the level of accuracy required

Sample size	Percentage giving response																		
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
10	13.5	18.6	22.1	24.8	26.8	28.4	29.6	30.4	30.8	31.0	30.8	30.4	29.6	28.4	26.8	24.8	22.1	18.6	13.5
15	11.0	15.2	18.1	20.2	21.9	23.2	24.1	24.8	25.2	25.3	25.2	24.8	24.1	23.2	21.9	20.2	18.1	15.2	11.0
20	9.6	13.1	15.6	17.5	19.0	20.1	20.9	21.5	21.8	21.9	21.8	21.5	20.9	20.1	19.0	17.5	15.6	13.1	9.6
25	8.5	11.8	14.0	15.7	17.0	18.0	18.7	19.2	19.5	19.6	19.5	19.2	18.7	18.0	17.0	15.7	14.0	11.8	8.5
30	7.8	10.7	12.8	14.3	15.5	16.4	17.1	17.5	17.8	17.9	17.8	17.5	17.1	16.4	15.5	14.3	12.8	10.7	7.8
35	7.2	9.9	11.8	13.3	14.3	15.2	15.8	16.2	16.5	16.6	16.5	16.2	15.8	15.2	14.3	13.3	11.8	9.9	7.2
40	6.8	9.3	11.1	12.4	13.4	14.2	14.8	15.2	15.4	15.5	15.4	15.2	14.8	14.2	13.4	12.4	11.1	9.3	6.8
45	6.4	8.8	10.4	11.7	12.7	13.4	13.9	14.3	14.5	14.6	14.5	14.3	13.9	13.4	12.7	11.7	10.4	8.8	6.4
50	6.0	8.3	9.9	11.1	12.0	12.7	13.2	13.6	13.8	13.9	13.8	13.6	13.2	12.7	12.0	11.1	9.9	8.3	6.0
55	5.8	7.9	9.4	10.6	11.4	12.1	12.6	12.9	13.1	13.2	13.1	12.9	12.6	12.1	11.4	10.6	9.4	7.9	5.8
60	5.5	7.6	9.0	10.1	11.0	11.6	12.1	12.4	12.6	12.7	12.6	12.4	12.1	11.6	11.0	10.1	9.0	7.6	5.5
65	5.3	7.3	8.7	9.7	10.5	11.1	11.6	11.9	12.1	12.2	12.1	11.9	11.6	11.1	10.5	9.7	8.7	7.3	5.3
70	5.1	7.0	8.4	9.4	10.1	10.7	11.2	11.5	11.7	11.7	11.7	11.5	11.2	10.7	10.1	9.4	8.4	7.0	5.1
75	4.9	6.8	8.1	9.1	9.8	10.4	10.8	11.1	11.3	11.3	11.3	11.1	10.8	10.4	9.8	9.1	8.1	6.8	4.9
80	4.8	6.6	7.8	8.8	9.5	10.0	10.5	10.7	10.9	11.0	10.9	10.7	10.5	10.0	9.5	8.8	7.8	6.6	4.8
85	4.6	6.4	7.6	8.5	9.2	9.7	10.1	10.4	10.6	10.6	10.6	10.4	10.1	9.7	9.2	8.5	7.6	6.4	4.6
90	4.5	6.2	7.4	8.3	8.9	9.5	9.9	10.1	10.3	10.3	10.3	10.1	9.9	9.5	8.9	8.3	7.4	6.2	4.5
95	4.4	6.0	7.2	8.0	8.7	9.2	9.6	9.9	10.0	10.1	10.0	9.9	9.6	9.2	8.7	8.0	7.2	6.0	4.4
100	4.3	5.9	7.0	7.8	8.5	9.0	9.3	9.6	9.8	9.8	9.8	9.6	9.3	9.0	8.5	7.8	7.0	5.9	4.3
150	3.5	4.8	5.7	6.4	6.9	7.3	7.6	7.8	8.0	8.0	8.0	7.8	7.6	7.3	6.9	6.4	5.7	4.8	3.5
200	3.0	4.2	4.9	5.5	6.0	6.4	6.6	6.8	6.9	6.9	6.9	6.8	6.6	6.4	6.0	5.5	4.9	4.2	3.0
300	2.5	3.4	4.0	4.5	4.9	5.2	5.4	5.5	5.6	5.7	5.6	5.5	5.4	5.2	4.9	4.5	4.0	3.4	2.5
400	2.1	2.9	3.5	3.9	4.2	4.5	4.7	4.8	4.9	4.9	4.9	4.8	4.7	4.5	4.2	3.9	3.5	2.9	2.1
500	1.9	2.6	3.1	3.5	3.8	4.0	4.2	4.3	4.4	4.4	4.4	4.3	4.2	4.0	3.8	3.5	3.1	2.6	1.9
600	1.7	2.4	2.9	3.2	3.5	3.7	3.8	3.9	4.0	4.0	4.0	3.9	3.8	3.7	3.5	3.2	2.9	2.4	1.7
700	1.6	2.2	2.6	3.0	3.2	3.4	3.5	3.6	3.7	3.7	3.7	3.6	3.5	3.4	3.2	3.0	2.6	2.2	1.6
800	1.5	2.1	2.5	2.8	3.0	3.2	3.3	3.4	3.4	3.5	3.4	3.4	3.3	3.2	3.0	2.8	2.5	2.1	1.5
900	1.4	2.0	2.3	2.6	2.8	3.0	3.1	3.2	3.3	3.3	3.3	3.2	3.1	3.0	2.8	2.6	2.3	2.0	1.4
1000	1.4	1.9	2.2	2.5	2.7	2.8	3.0	3.0	3.1	3.1	3.1	3.0	3.0	2.8	2.7	2.5	2.2	1.9	1.4