

ADAPTING TO THE IMPACT OF CLIMATE CHANGE ON AGRICULTURE

FINAL REPORT

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Prepared for

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Creedy Associates is an independent South West based team comprising:

John Morgan –a farm business advisor
David Munday –a dairy/arable farmer
Dr Brian Pain –an agricultural scientist

Scientific input on climate change was provided by Dr Stephen Jarvis.

Administrative support was provided by Jean Howard and Bryony Lennox.

www.creedyassociates.com

BACKGROUND

Most scientists agree that climate change is real and happening now, that this has resulted from man's activities and that there is urgent need to take action to limit its effects. Agriculture is very involved in this because:

- It will be very much affected if the predicted effects take place
- It impacts on some of the things that cause climate change.

The UK government along with those of most of other countries have made climate change a major part of their policy platforms.

Evidence of effects are often much more obvious at the global scale than at local or farm scales. However, a recent survey by the Royal Agricultural College showed that 80% of farmers had noticed effects on their own farms but over half of these admitted that their own knowledge on what would happen on their farm in the future was not good.

The likelihood is that agriculture will experience both short term (and we may be experiencing some of these now) and longer term problems such as:

- Changing weather patterns- hotter summers, more frequent but irregular heavy rainfall/storm events
- Changing risks to pests and diseases
- Reduced opportunity to grow current crops

On the other hand, there may be positive outcomes that could be to agriculture's benefit such as:

- Opportunity to grow new crops with new markets
- Providing alternative energy sources and supplies to fossil fuels
- Enhancing farm carbon storage and so reduce carbon dioxide emission to the atmosphere
- Reducing agricultural impact on some of the causal agents of climate change (reduced emissions of greenhouse gases such as methane, nitrous oxide emissions etc), with possible win-wins by optimising resources and reducing inputs such as fertilisers etc.

The SW has a diversity of agricultural managements that will have to respond in different ways to these effects.

OBJECTIVES

The objectives of this project were to:

- Raise awareness of climate change and the evidence for it.
- Increase knowledge of the potential effects on farming.
- Increase knowledge of the effects of farming on climate change.
- Outline options for adapting to climate change.
- Assess how well individual farm businesses might cope with climate change.

APPROACHES

The objectives were achieved by designing, preparing and delivering six one-day workshops on the causes, impacts and options to adapt to changes in climate for farming in SW England.

DELIVERY TEAM

The workshops were led by Creedy Associates on behalf of Natural England. Creedy Associates is an experienced team in leading such workshops with farmer, advisory and scientific expertise to guide and inform the meeting. The workshops were run on a similar workshop format that has been very successfully used by Creedy Associates to deliver previous knowledge transfer projects funded by Defra, Natural England, MDC, FWAG etc.

VISUAL AIDS

Powerpoint was used in designing a series of presentations to support the main sessions planned for the workshops. A series of posters were designed, printed at A1 size and laminated for use in outdoor sessions on host farms.

VENUES

We selected six venues were for the workshops to give good coverage of the South West region, mainly to the east of Exeter. Each workshop was based around a suitable indoor venue (village hall, meeting room in public house or converted farm buildings) near to a host farm. Host farms were visited prior to the workshops to discuss details with the farmer, arrange sites for on-farm demonstrations and indoor venues for presentations. Catering was arranged with a public house or a local catering company.

All the workshops were run in February and March 2008. The dates and locations of the workshops are given in Table: 1.

Table: 1 Dates and location of the six workshops

Date	Location
5 February	Aldbourn, Wiltshire
12 February	Nr Weymouth, Dorset
14 February	Pilton, Somerset
26 February	Nr Cirencester, Gloucestershire
4 March	Nr Exeter, East Devon
11 March	Nr Crediton, Mid Devon

An earlier workshop was arranged for the 4th February near Marlborough but was cancelled following consultation with the Project Manager because only 7 people booked in for the event. This was replaced at short notice by the workshop held in Mid Devon on 11th March.

AUDIENCE

Individual invitations (see Appendix 1) were posted to all farmers within easy travelling distance of each venue two – three weeks prior to each event. In addition, the events were advertised through contacts with other relevant organisations and farmer buying and discussion groups etc.

The workshops attracted a wide range of interests although, despite considerable effort to inform about and advertise the events, we did not meet a target audience of 25/workshop. Nevertheless, evaluation of the events (see later) showed that they were very well received by attendees and that objectives were met. Table 2 gives the numbers and occupation of attendees at each workshop.

Table: 2 Numbers and occupation of attendees

Workshop	Farmer			Agri-business	Agri-advisor	Other	Total
	Livestock	Arable	Mixed				
Aldbourn	7	4	4	1	2	0	18
Weymouth	5	1	9	0	4	0	19
Pilton	5	0	6	1	4	0	16
Cirencester	4	1	1	2	1	0	9
Exeter	1	2	8	3	3	1	18
Crediton	2	2	10	0	1	0	15

Some audiences were larger than indicated in Table 2 (up to 26). Latecomers sometimes failed to sign in. Eighteen booked to attend the event at Cirencester but only 9 turned up on the day.

WORKSHOP AGENDA

Each workshop commenced at 10.00 h with coffee and ended between 15.30 and 16.00 h. and each included the sessions listed in Table: 3.

Table: 3 Outline agenda for workshop

Morning

Coffee

Powerpoint presentations, discussion and demonstration indoors:

1. What is climate change?
2. What is the evidence for climate change?
3. What is likely to happen?
4. What are the potential effects on farming?
5. What effects is farming having on climate change?

Walk, talk, discussion and demonstrations supported by posters on host farm:

6. Soil management issues
7. Cropping and farm energy
8. Farm greenhouse gas emissions

Lunch

Afternoon

Interactive SWOT exercise and discussion indoors

9. How might climate change affect your farm?

Completion of evaluation forms and depart.

The length and content of each session varied from workshop to workshop depending on the interests and inputs from the attendees. More details of the information and discussion included within each session are given in Table 4.

Table: 4. Workshop content.

Session 1. What is climate change?

Natural climate variability, impact of human activity, enhanced greenhouse effect and global warming.

Session 2. What is the evidence for climate change?

Global evidence: ice core carbon dioxide levels, rising temperatures, ice melt, rising sea levels.

UK evidence: temperature data, drier summers/wetter winters, less frost days, longer growing season, sea level rises at UK ports.

South West evidence: local temperature rises, change in rainfall patterns.

Session 3. What is likely to happen?

Global predictions.

UK predictions: temperature and rainfall changes (pattern and intensity) for low and high greenhouse gas emission scenarios.

South West predictions: higher temperatures, wetter winter/drier summers, longer growing season, sea level rises.

Interactive discussion on “Have you noticed any changes on your farm”, “Do you believe the evidence for climate change?”

Session 4. What are the potential effects on farming?

Opportunities versus challenges. Opportunities: improved productivity, cost savings, market improvements, tourism. Challenges: reduced productivity, increased costs, pests and diseases, resource management.

Session 5. What effect is farming having on climate change?

Carbon storage: removal of carbon dioxide from atmosphere, importance of soil organic matter, woodland/hedges and permanent pasture as carbon stores, pros and cons of “energy crops”.

Greenhouse gas emissions from farming: relative importance of carbon dioxide, methane and nitrous oxide, extent and sources of agricultural emissions. Options for mitigating emissions.

Importance of soil structure: coping with increased heavy rainfall and risks of run-off, flooding and pollution. Avoiding soil compaction, increasing soil organic matter, impacts of cultivations.

Practical demonstration to illustrate the range of organic matter content in different soils and how readily stored carbon can be oxidised to carbon dioxide e.g. through aerating effects of ploughing. An oxidising agent (dilute hydrogen peroxide) was added to sand, sub soil, top soil and peat and differences in “bubbling off” of carbon dioxide were observed).

Sessions 6, 7 and 8 were run on the host farm and supported by a series of eight A1 sized posters.

Session 6. Soil management issues.

Impacts of more frequent, heavy rainfall and minimisation of risks, recognising soil compaction, impact of reduced rates of water infiltration on run-off, flooding etc and reduced soil aeration.

Demonstration to compare rates of water infiltration on compacted and non-compacted areas of field.

Session 7. Cropping and farm energy.

Discussion on impact of crops currently grown on farm and how these might be minimised e.g. through growing tolerant varieties or alternative crops. Pros and cons of growing crops on farm for burning, production of transport fuels or feeding an anaerobic digester for biogas production.

Session 8. Greenhouse gas emissions.

Processes releasing methane or nitrous oxide; sources of emission on host farm and options for their reduction.

Session 9. How might climate change affect your farm?

The final session was an interactive exercise designed to assess the features of individual farms that may have negative or positive effects in relation to climate change. A modified form of SWOT analysis was used to score farm features as a strength, weakness, threat or opportunity on scales from 0 – 3 (see Table: 3). This was used in conjunction with a scoring guide that gave descriptions for each score (see Table: 4). On completion of the form, scores were added and the following equation used to obtain an overall score for the farm:

STRENGTHS – WEAKNESSES + OPPORTUNITIES – THREATS = OVERALL SCORE

In practice, following an explanation of the method, volunteer farmers in the audience were asked to describe briefly their farm before assigning scores for each of the features on the form. Farmers were generally keen to take part in this exercise so there was opportunity to consider several different types of farm during each workshop. Overall scores ranged from 4 to 15 with livestock farms often scoring lower than arable farms because of unavoidable methane emissions from ruminants. However, it was stressed that the exercise was not in any way competitive but designed to review messages and information from the morning sessions, to encourage farmers to consider how their own farm business might cope with climate change and where they could make improvements.

HANDOUTS

Each attendee was given a spiral bound handout comprising copies of all the Powerpoint slides and the posters shown during the day together with a SWOT analysis form and scoring guide. A copy of the handout is included at Appendix 2.

EVALUATION OF WORKSHOPS.

All attendees were invited to complete an evaluation form (see Appendix 3) at the end of the workshop on which they were asked to rate as excellent, good, fair or poor aspects of the workshop relating to the overall event, how well objectives were met and each of the main sessions.

TABLE: 3 SWOT ANALYSIS FORM.

ADAPTING TO CLIMATE CHANGE

SWOT ANALYSIS: SCORING YOUR FARM

	FARM A. TOPOG- -RAPHY B. LAYOUT	SOIL A. TYPE B. MANAG- -EMENT	NUTRIENT PLAN A. FERT. B. MANURE	ENERGY A. USE B. GENERA- -TION	CARBON STORE A. SOIL B. WOODS	FLOOD or STORM RISKS	DROUGHT POTENT- -IAL	DISEASE & PESTS	RUMINANT	NEW INITIATIVES	PUBLIC & FAMILY GOOD				SCORE	
STRENGTHS (0 to 3)	A															
	B															
WEAKNESSES (0 to 3)	A															
	B															
OPPORTUN- -ITIES (0 to 3)																
THREATS (0 to 3)																
STRENGTHS - WEAKNESSES + OPPORTUNITIES - THREATS =																

SCORE 0 or 1 = LOW, 2 = MEDIUM, 3 = HIGH

TABLE: 4. SWOT SCORING GUIDE

SWOT: Strengths (positive), Weaknesses (negative), Opportunities (positive) and Threats (negative) scores	
FARM	
A. Topography	<p>3: level land, slight slopes only on small areas, (<10%), no cultivation difficulties: little or no run off 2: something in between 1: some sloping land (>10%), slight risk of run off in some areas 3: much highly sloping land (>50%), difficult to cultivate, high risk of run off 2: something in between 1: some steeply sloping land (20%), some risk of run off</p>
B. Layout	<p>3: farmstead centrally placed, good access to all land; good access to external infra structures, markets, etc 2: something in between 1: most land easily accessible, reasonable access to other requirements 3: poor distribution of land, farmstead not centrally placed, other off site land, significant surface water systems, poor access to other infra structures, markets etc 2: 50% of above 1: one or two features of above</p>
SOIL	
A. Type	<p>3: easily worked soil; loam sandy loam, good drainage; low draft requirements (>75% of holding) 2: between 50-75% of land as above 1: 25-50% as above 3: difficult soil (clay, silty clay etc), poor drainage on more than 75% of holding 2: between 50-75% of holding as above 1: 25-50% of land as above</p>
B. Management	<p>3: good crumb structure on majority of land, little or no panning, good organic matter content (straw incorporation, min till), functioning drainage system 2: most of the above features on much of the land 1: some of the above on > 50% of land 3: poor soil structure on majority of land, panning in some areas, low organic matter content (straw removal etc), poor drainage 2: most of the above features on much of the land 1: some of the above on > 50% of land</p>
NUTRIENT PLAN	
A. Fertiliser	<p>3: fertiliser plan, RB209 use, independent advice, soil testing, adherence to plan 2: something in between 1: some of the above 3: no fertiliser plan, no RB209, no uptake of advice, no soil tests, just do what happened last year 2: something in between 1: one or two of the above</p>
B: Manure plans	<p>3: good knowledge of nutrient contents, on farm tests, proper plan for spreading on land 2: some of the above 1: one or two of the above 3: no knowledge of nutrients, disposal main/only aim, same fields used year on year, manures exported 2: some of the above 1: one or two of the above</p>
ENERGY	
A. Use	<p>3: planned energy use, accurate accounting, minimal big energy requirements on farm, overall low demand 2: some of the above 1: one or two of the above 3: no energy budget or accounting, high energy requirements (draft etc) etc, big kit demands 2: something in between 1: one or other of the above</p>
B: Production	<p>3: significant production of on farm energy: AD, wind, solar (others?) 2: wind and/or solar power 1: solar power 0: none of the above</p>
CARBON STORE	
	<p>3: significant woodland, hedgerows, soil carbon, permanent pastures 2: some of the above 1: one of the above 3: active removal of woodland hedges, ploughing of grassland, straw exported from farm 2: two or more of the above 1: one of the above</p>
RUMINANTS	
	<p>3: majority of farm enterprise (75%) based on dairy, beef or sheep livestock 2: more than 50% of land as above 1: more than 25% of land as above 0: none of the above</p>
FLOOD OR STORM RISKS	
	<p>3: majority (75%) of land at or below, sea level, or in flood plain, susceptible crops 2: more than 50% of land as above 1: more than 25% of land as above 0: none of the above</p>
DROUGHT POTENTIAL	
	<p>3: majority (75%) of land on 'droughty' soils, susceptible crops 2: more than 50% of land as above 1: more than 25% of land as above 0: none of the above</p>
DISEASES AND PESTS	
	<p>3: p/d potential high, close contact with potential infection sources etc 2: some risks 1: slight risks 0: minimal/ normal risks</p>
NEW INITIATIVES	
	<p>3: uptake of ESSs, new "crop" potential, local markets/products (reduce road miles), other "non" agricultural use of land; low, responsible inputs 2: two or more of the above 1: one of the above 0: none of the above</p>
PUBLIC & FAMILY GOOD	
	<p>3: hand on farm to next generation in good heart, optimise status for economic and environmental good of farm, locality and wider scale, want to contribute to societal good. 2: most of the above 1: some of the above 0: none of the above, not worried about next generation not bothered about environment etc</p>

EVALUATION OF WORKSHOPS.

Participants were provided with the opportunity to assess components of the work shop with the following categories: excellent, good, fair and poor. We provide an analysis of each of the six workshops on the basis of the percentage of the respondents assessing the workshop in the terms described above. The Tables below in section A show for each of the venues the % rating for each category of response for each of the questions asked in the assessment form provided (the numbers of participants, not necessarily the same as the number of attendees, providing assessments are given in parentheses after the venue name). A copy of the assessment is provided.

The pie chart beside each table shows the overall allocation of assessments to each of the three workshop session, namely the general assessments of the day and its operation, the success in achieving the objectives of the day and the assessments of the three sessions of the workshop.

The histograms in section B show the combined results for all of the responding participants (89) for all of the work shops for all of the questions posed in each of the three main categories on the questionnaire, again expressed as % of responses providing excellent, good, fair or poor assessments.

The Tables and Figures are self explanatory but we provide a few overall initial general comments and some final conclusions for the assessments.

Given the very broad scale of climate changes and its various attendant issues, the varied depth and focus of the background of the farmers and the very wide range of the farming sectors represented at the workshops, we are very pleased with the very positive nature of the responses. On average, more than 90% (range 85- 94 for the six workshops) of all participants rated the three main areas of the assessments (overall for the day, achievement of objectives, successes of sessions) as being good or excellent. Whilst there were some differences between the six workshops, they all followed similar trends in participant's reactions. One individual (at Weymouth) provided a 'poor' assessment for some categories: we understand that this was because he was looking for a higher plane of information exchange than the course was designed to provide.

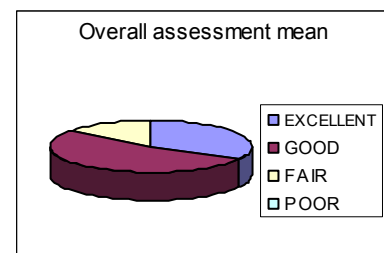
All workshops worked in a very interactive way which was very much encouraged; the form of the interaction and the discussion around it varied considerably between the different venues. We were very pleased with the breadth and depth of discussion that the workshops provoked.

Other comments and conclusions are provided in the final part of this assessment section.

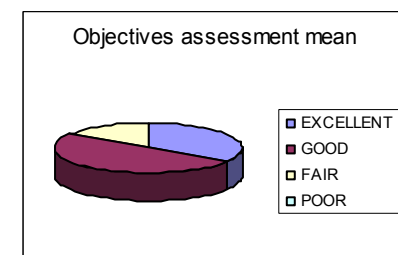
A. Analysis of ratings at each workshop: values are % of respondents scoring excellent, good, fair or poor. Pie charts show the distribution of responses for the three main categories of assessments.

Aldbourne (14 respondents)

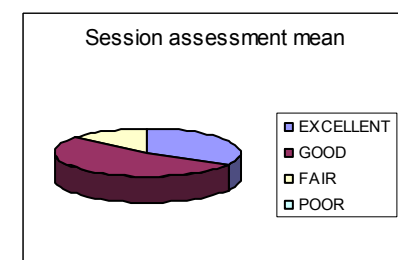
<i>1. Overall assessment</i>	Excellent	Good	Fair	Poor
Organisation of day	36	64	0	-
Visual aids	14	79	7	-
Delivery team performance	36	57	7	-
Venue	36	57	7	-
Catering	29	64	7	-
Event assessment	50	43	7	-



<i>2. Assessment of objectives</i>	Excellent	Good	Fair	Poor
Raise awareness of CC	36	50	14	-
knowledge of effects on farming	36	50	14	-
Knowledge of effects of farming	43	43	14	-
Outline of options	29	57	14	-
Assessment of own farm	29	50	21	-



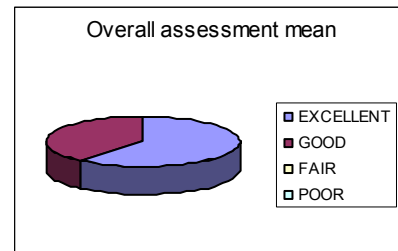
<i>3. Assessment of sessions</i>	Excellent	Good	Fair	Poor
Morning introduction	29	64	7	-
Morning outdoors	22	57	21	-
Afternoon SWOT	50	36	14	-



Pilton (15 respondents)

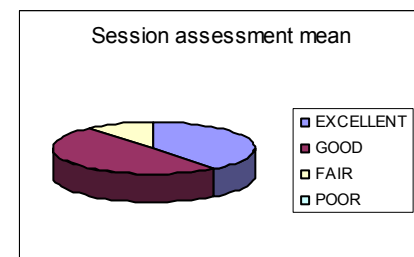
1. Overall

<i>assessment</i>	Excellent	Good	Fair	Poor
Organisation of day	60	40	-	-
Visual aids	47	53	-	-
Delivery team performance	60	40	-	-
Venue	80	20	-	-
Catering	53	47	-	-
Event assessment	67	23	-	-



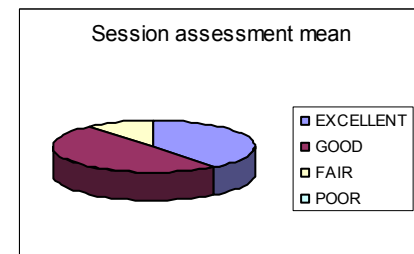
2. Assessment of objectives

	Excellent	Good	Fair	Poor
Raise awareness of CC	60	40	-	-
Knowledge of effects on farming	53	47	-	-
Knowledge of effects of farming	67	27	6	-
Outline of options	20	40	40	-
Assessment of own farm	47	27	26	-



3. Assessment of sessions

	Excellent	Good	Fair	Poor
Morning introduction	47	53	-	-
Morning outdoors	27	67	6	-
Afternoon SWOT	47	27	26	-

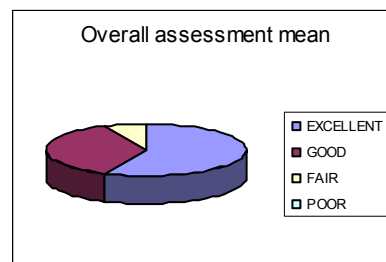


Weymouth (12 respondents)

1. Overall

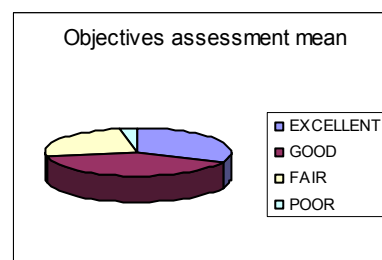
assessment

	Excellent	Good	Fair	Poor
Organisation of day	67	25	8	-
Visual aids	58	34	8	-
Delivery team performance	58	34	8	-
Venue	50	50	-	-
Catering	58	42	-	-
Event assessment	50	34	16	-



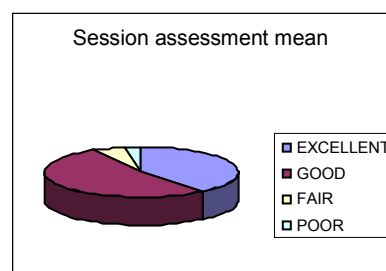
2. Assessment of objectives

	Excellent	Good	Fair	Poor
Raise awareness of CC	42	42	8	8
Knowledge of effects on farming	34	50	16	-
Knowledge of effects of farming	34	42	24	-
Outline of options	25	34	41	-
Assessment of own farm	25	34	34	7



3. Assessment of sessions

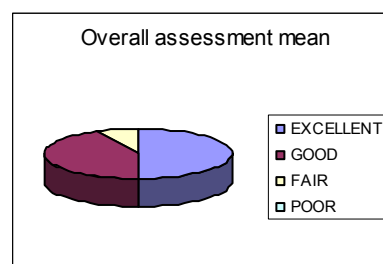
	Excellent	Good	Fair	Poor
Morning introduction	43	50	-	7
Morning outdoors	34	66	-	-
Afternoon SWOT	42	42	16	-



Exeter (14 respondents)

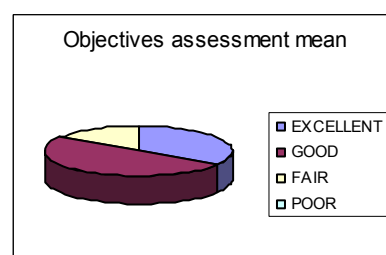
1. Overall

<i>assessment</i>	Excellent	Good	Fair	Poor
Organisation of day	57	36	7	-
Visual aids	50	43	7	-
Delivery team performance	43	50	7	-
Venue	50	50		-
Catering	57	36	7	-
Event assessment	43	43	14	-



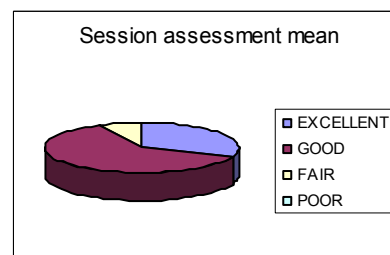
2. Assessment of objectives

	Excellent	Good	Fair	Poor
Raise awareness of CC	50	36	14	-
Knowledge of effects on farming	50	36	14	-
Knowledge of effects of farming	36	50	14	-
Outline of options	14	72	14	-
Assessment of own farm	21	58	21	-



3. Assessment of sessions

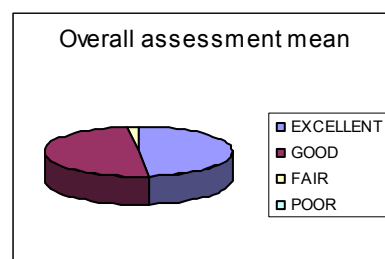
	Excellent	Good	Fair	Poor
Morning introduction	29	64	7	-
Morning outdoors	29	64	7	-
Afternoon SWOT	36	57	7	-



Cirencester (9 respondents)

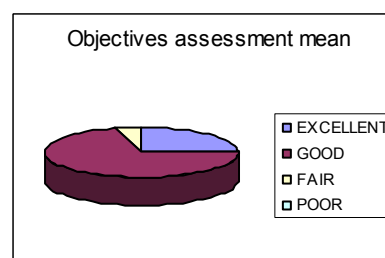
1. Overall assessment

	Excellent	Good	Fair	Poor
Organisation of day	44	56	-	-
Visual aids	67	33	-	-
Delivery team performance	67	33	-	-
Venue	33	67	-	-
Catering	22	67	11	-
Event assessment	55	45	-	-



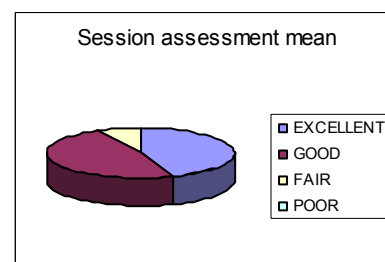
2. Assessment of objectives

	Excellent	Good	Fair	Poor
Raise awareness of CC	68	11	11	-
Knowledge of effects on farming	22	78	-	-
Knowledge of effects of farming	22	78	-	-
Outline of options	-	100	-	-
Assessment of own farm	-	89	11	-



3. Assessment of sessions

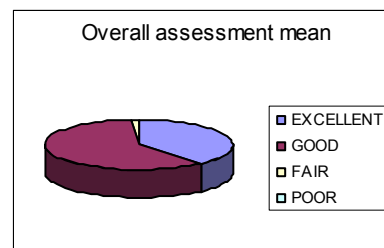
	Excellent	Good	Fair	Poor
Morning introduction	67	33	-	-
Morning outdoors	56	44	-	-
Afternoon SWOT	11	67	22	-



Sandford (17 respondents)

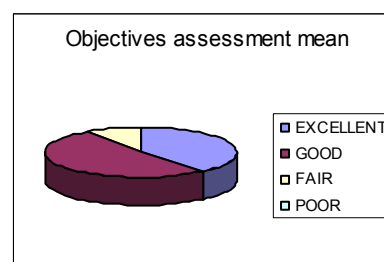
1. Overall assessment

	Excellent	Good	Fair	Poor
Organisation of day	53	47	-	-
Visual aids	35	59	6	-
Delivery team performance	53	47	-	-
Venue	35	65	-	-
Catering	24	76	-	-
Event assessment	29	71	-	-



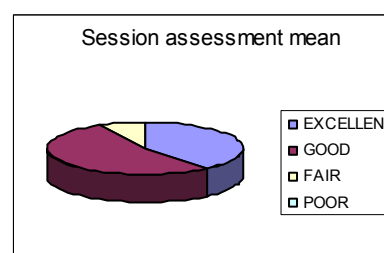
2. Assessment of objectives

	Excellent	Good	Fair	Poor
Raise awareness of CC	47	53	-	-
Knowledge of effects on farming	53	47	-	-
Knowledge of effects of farming	35	59	6	-
Outline of options	24	53	23	-
Assessment of own farm	35	47	18	-

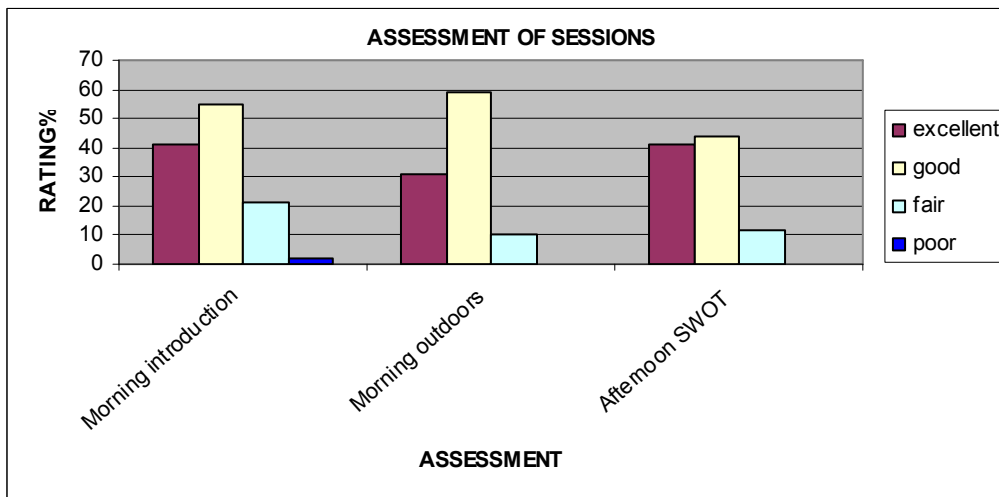
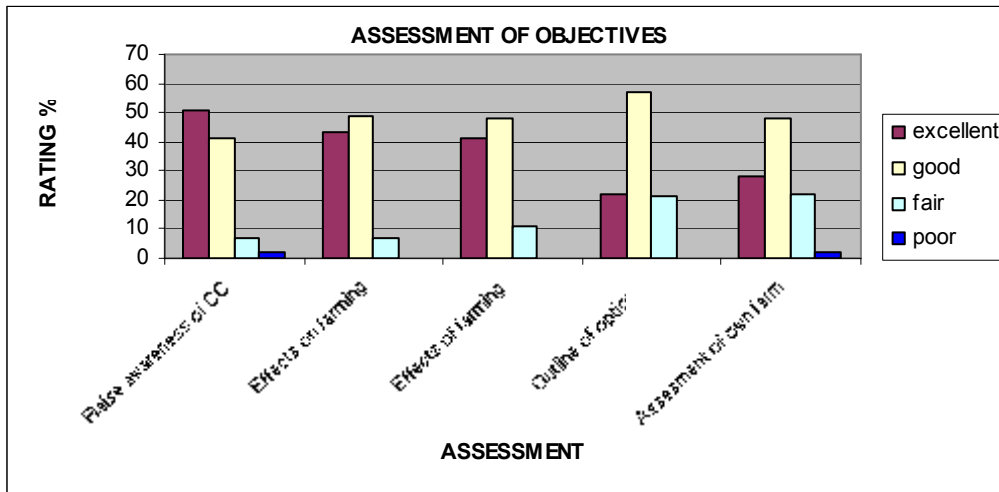
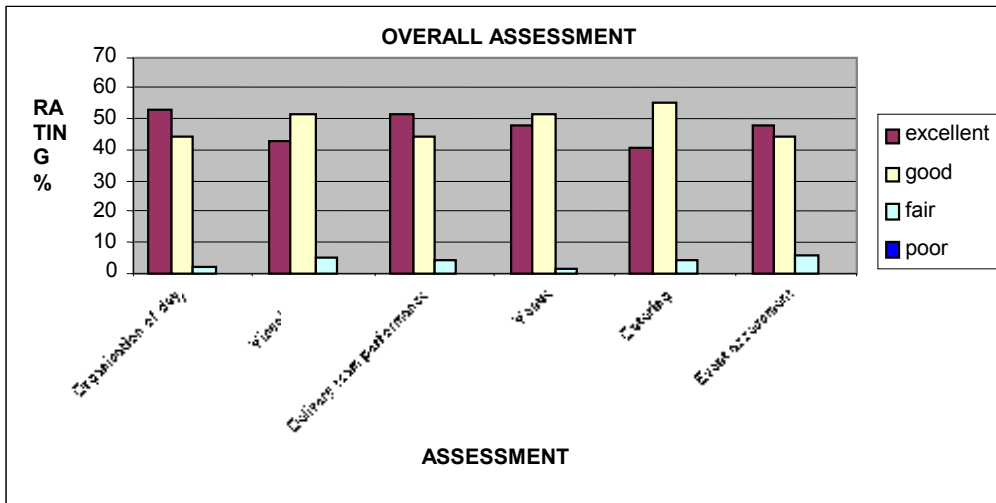


3. Assessment of sessions

	Excellent	Good	Fair	Poor
Morning introduction	41	59	-	-
Morning outdoors	29	53	18	-
Afternoon SWOT	47	47	6	-



B. Analysis of ratings for all workshops (89 respondents)



C. Specific conclusions

- The overall day, organisation and presentation were rated highly and the venues and catering were also well appreciated.
- The achievement of the objectives was also rated very highly although there was some disappointment by a limited number of farmers that the workshops did not provide specific recommendations and prescriptions. This was not an original objective for this sequence of workshops but we suggest that this could be targeted in any further development of specific sessions.
- Following on from this, there was also limited disappointment (probably from the same farmers as noted above) that the outdoor session did not expand further on some specific practical issues. We had deliberately restricted the range of possibilities for the on-farm session in order to maintain the focus of the day, but again there are possibilities to develop this further in the future. The demonstrations generally worked well even in weather conditions not at optimal.
- Although not formally recorded, there was a particularly positive response to the whole workshop day from the consultants and advisors amongst the participants.
- The SWOT procedure worked well and provided a means of focusing minds on issues discussed earlier in the day. Although there were a few who either found the concept difficult on the one hand, or wanted more detail on the other, we were very pleased with its reception and the level of enthusiasm that there was for conducting SWOT analyses. There were always volunteers keen to provide information from their holdings and to provide scores. Again, we see opportunities to develop this as a simple on-farm tool to provide an initial examination of climate change interactions with agriculture as an initial alternative to full carbon foot printing.
- The combined advisory, farmer and scientific inputs from the Creedy team again worked very well and, we believe, were particularly successful for the complex requirements for the issues of climate change.

APPENDIX 1: EXAMPLE INVITATION LETTER

Creedy Associates

(John Morgan, David Munday, Brian Pain & Jean Howard)
Park Cottage, Shobrooke, Crediton,
Devon EX17 1AE Phone/fax 01363 776162

The logo for Natural England, featuring the words "NATURAL" and "ENGLAND" stacked vertically in a bold, sans-serif font. The text is white and set against a solid yellow-green rectangular background.

Dear

ARE YOU AND YOUR FARM READY FOR CLIMATE CHANGE?

You are invited to attend a **FREE** interactive workshop sponsored by Natural England on how farms are adapting to the impact of climate change. Whether you believe it is happening or whether you are a sceptic, we hope that these workshops will be informative, stimulating, practical and interesting.

Each workshop, kindly supported by our host farmers Robert Lawton and Josh Stratton in Wiltshire, will be targeting the following questions:

- What is climate change and what is the evidence?
- What are the potential impacts on farming?
- How will this affect your farm; what opportunities and threats will it present?

The objectives of the workshops are to increase the understanding of what climate change might mean for you and how agriculture might be influenced by climate change now and in the future. We will also discuss the opportunities for farmers and the positive role they can play in mitigating climate change in an economically sustainable manner.

The workshops have been devised and will be presented by Dr Brian Pain and Dr Steve Jarvis (Research scientists), John Morgan (Farm business adviser) and David Munday (Dairy/Arable farmer), to give a balance of the scientific and practical issues.

The day will consist of a morning of discussions and practical demonstrations on farm, a **FREE LUNCH**, followed by completing an individual farm review of strengths, weaknesses, opportunities and threats.

Robert Lawton's event, will be meeting at Aldbourne near Marlborough on Wednesday 6th February at 10.30 a.m.

Both events will conclude around 3.30 p.m, we hope to see you there. Other events planned in the South West are detailed overleaf in case you are unable to attend either of the above.

To book your place please call 01363 775040, fax 01363 776162 or e mail john.morgan@creedyassociates.com

Date	Host Farm	Farm Type
12 th Feb	Charles Foot Dorchester	Arable/Dairy/Beef/Sheep
14 th Feb	Mike & Neil Christensen Shepton Mallett	Arable/Poultry/Dairy
26 th Feb	David Hardy Royal Agricultural College, Cirencester	Arable/Dairy/Beef/Sheep
4 th March	Troy Stuart Clyst St Mary Exeter	Arable/Contractor

APPENDIX 2: WORKSHOP HANDOUTS.

APPENDIX: 3. WORKSHOP EVALUATION FORM.

ADAPTING TO *CLIMATE CHANGE*

FARMER EVALUATION OF EVENT

VENUE:

DATE:

NAME (OPTIONAL):

PLEASE COMPLETE AND RETURN THIS FORM TO *CREEDY ASSOCIATES* BEFORE LEAVING TO ASSIST IN THE EVALUATION OF THE EVENT.

1. Overall assessment

Organisation of day	Excellent	Good	Fair	Poor
Visual aids	Excellent	Good	Fair	Poor
Performance of delivery team	Excellent	Good	Fair	Poor
Venue	Excellent	Good	Fair	Poor
Catering	Excellent	Good	Fair	Poor
Your assessment of the event as a whole	Excellent	Good	Fair	Poor

2. Assessment of how well the objectives of the event were met.

To raise awareness of climate change and the evidence for it	Excellent	Good	Fair	Poor
To increase knowledge of the potential effects on farming	Excellent	Good	Fair	Poor
To increase knowledge of the effects of farming on climate change	Excellent	Good	Fair	Poor
To outline options for adapting to the impacts of climate change	Excellent	Good	Fair	Poor
To assess how well your farm might cope with climate change	Excellent	Good	Fair	Poor

3. Assessment of sessions

Give your assessment of each of the main sessions: Use spaces to comment further if you wish				
Morning session indoors: Introduction to climate change, effects on farming, effects of farming	Excellent	Good	Fair	Poor
Morning session on farm: cropping & farm energy, soil management, greenhouse gas emissions	Excellent	Good	Fair	Poor
Afternoon session: SWOT analyses	Excellent	Good	Fair	Poor

5. Any other comments or suggestions?