

# Woodlands and the farm business



Julian Bell, Senior Rural Business Consultant



# Woodland establishment and the farm business



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## 1) Prospects for agriculture

- Current subsidies, returns crops & livestock
- Brexit – what we know, timelines

## 2) Integration of farm woodlands

- Land and farm type – hill livestock / arable
- Relative returns, income foregone, land values

## 3) Woodlands and farm business strategy

- Intensify – aid efficiency
- Extensify – semi- retirement
- Diversify / succession

## 4) Case studies

## 5) Questions for the audience

# Scotland agricultural output



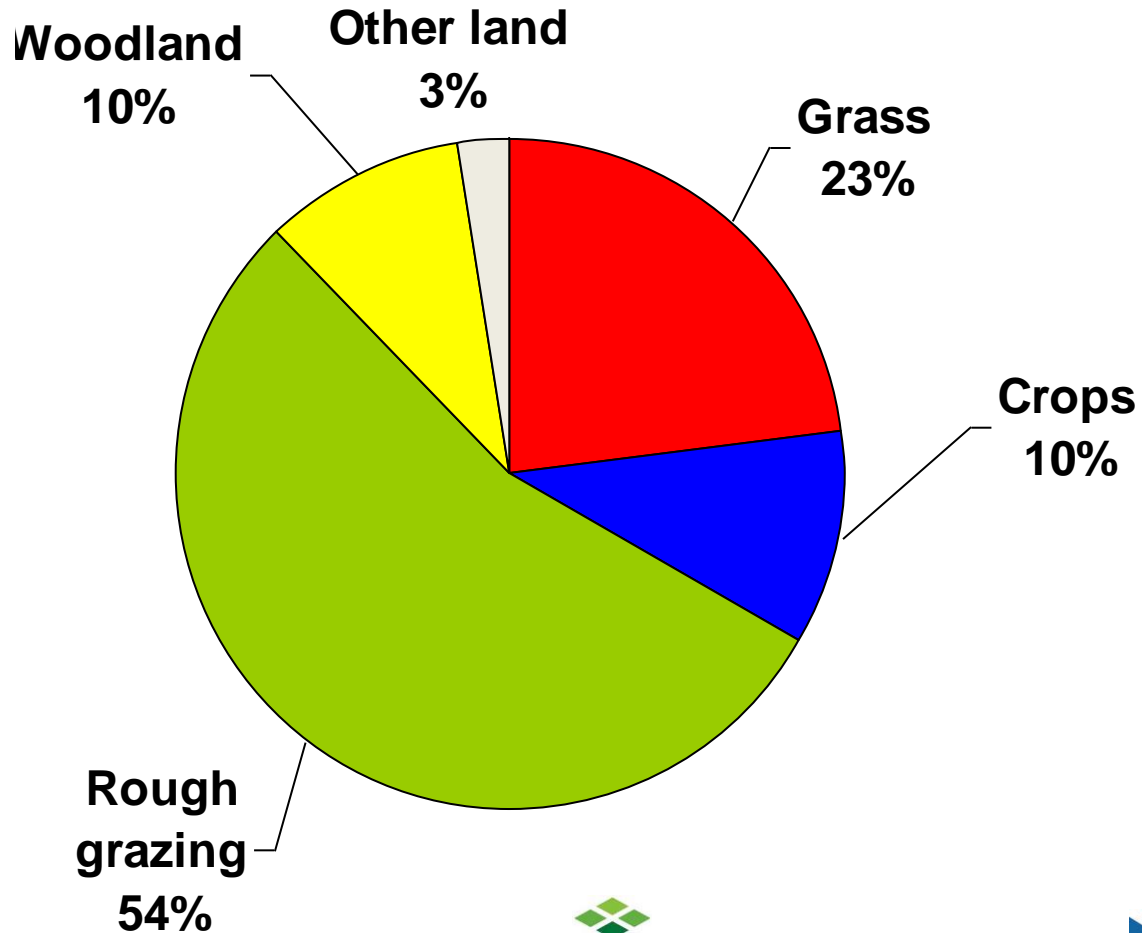
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	2007		2016		Change in output share 2017 vs 2016
	£m	%	£m	%	%
Cattle	421	20%	675	24%	4%
Cereals	348	16%	307	11%	-5%
Milk	274	13%	329	11%	-1%
Potatoes & other	258	12%	258	9%	-3%
Horticulture	179	8%	263	9%	1%
Sheep	131	6%	210	7%	1%
Poultry meat	74	3%	84	3%	-1%
Eggs	43	2%	83	3%	1%
Pigs	68	3%	89	3%	0%
Other agricultural	192	9%	320	11%	2%
Non agricultural	168	8%	253	9%	1%
<b>Gross output</b>	<b>2,156</b>	<b>100%</b>	<b>2,871</b>	<b>91%</b>	

# Scotland agricultural land area



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Scottish Government  
Riaghaltas na h-Alba  
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**Source: Scottish Government**

# Scotland agricultural land area – large increase in woodlands planned



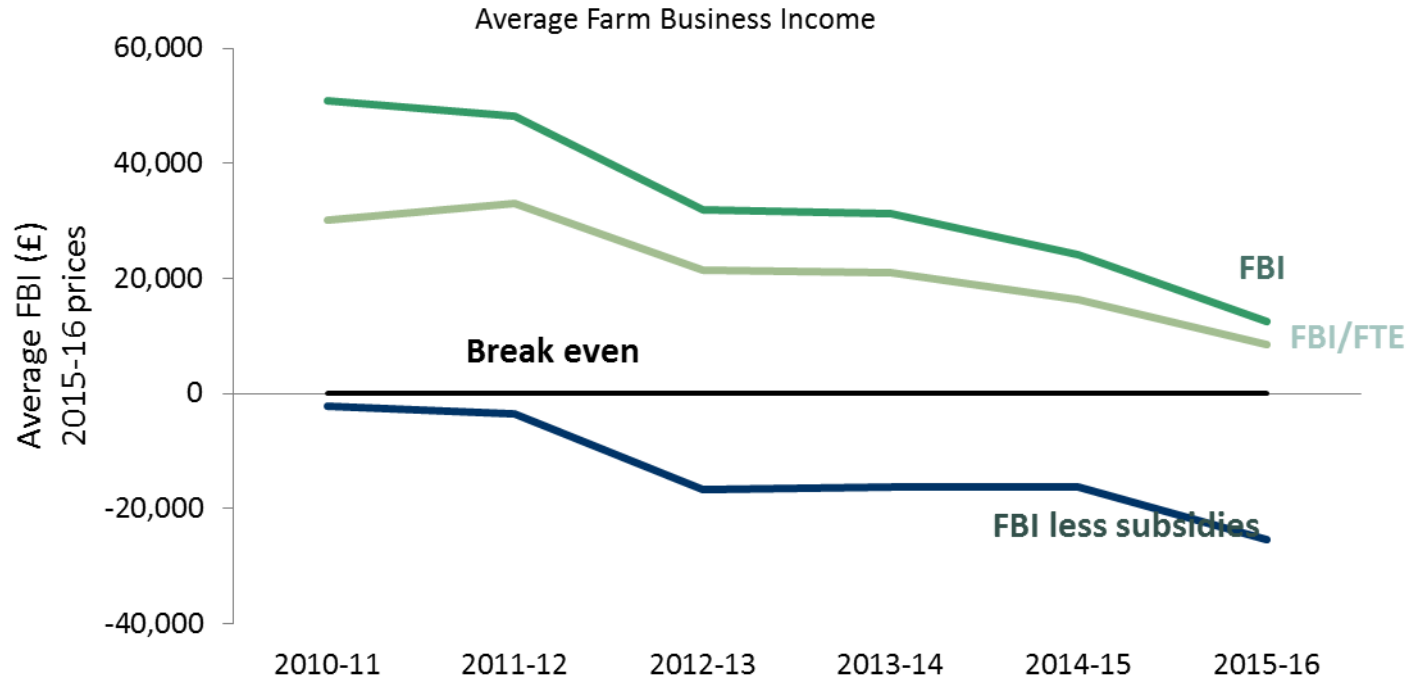
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	<b>2009</b>	<b>2050</b>	<b>Change</b>	<b>Change</b>
	('000's ha)	('000's ha)	('000's ha)	(%)
<b>Grass</b>	1,364	1,184	-180	-13%
<b>Crops</b>	587	574	-40	-7%
<b>Rough grazing</b>	3,429	3,009	-420	-12%
<b>Built-up area</b>			-10	
<b>Woodland area</b>	1,341	1,991	+650	+48%

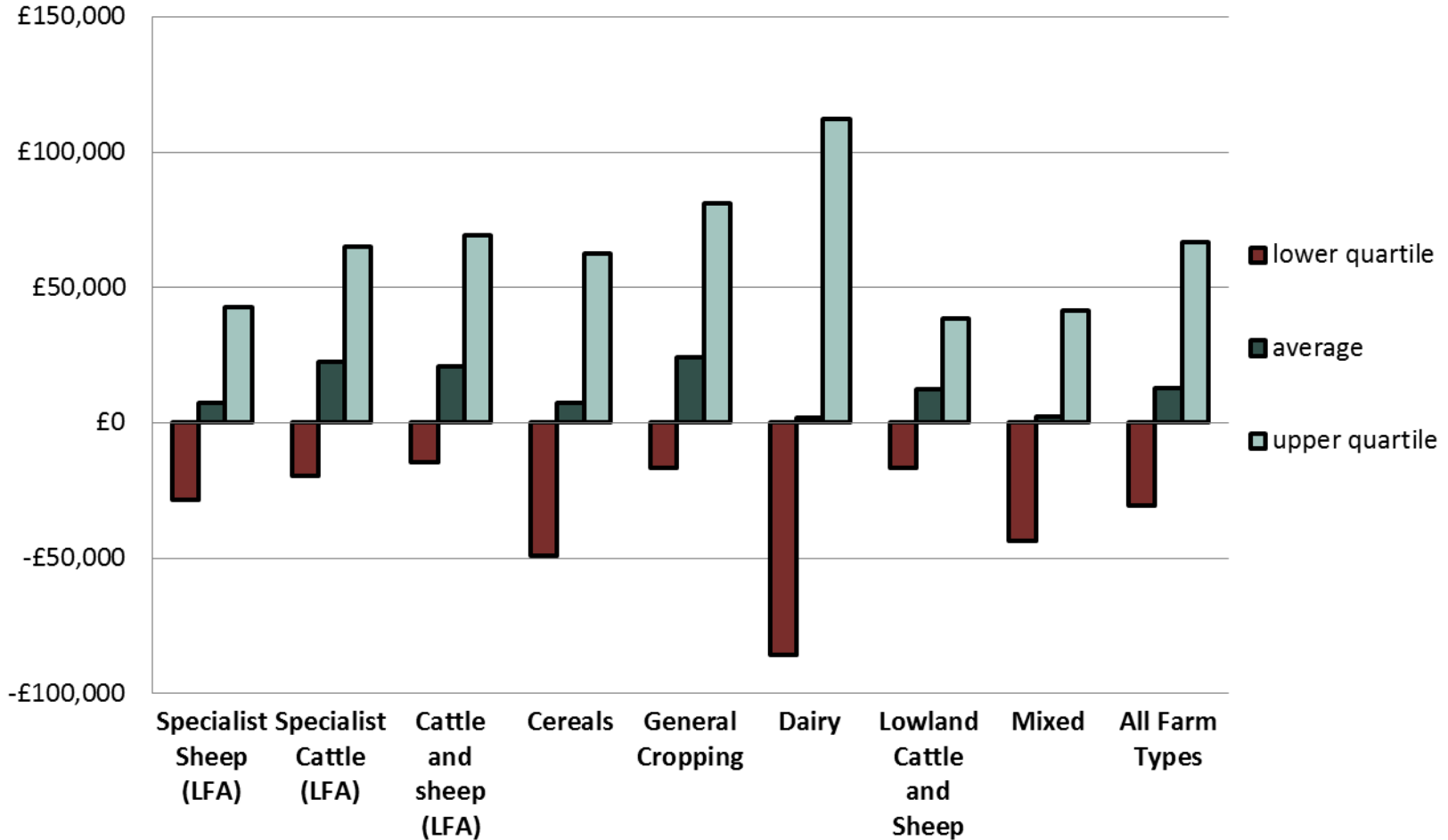
# Scottish farm incomes declining – a loss on average without subsidies



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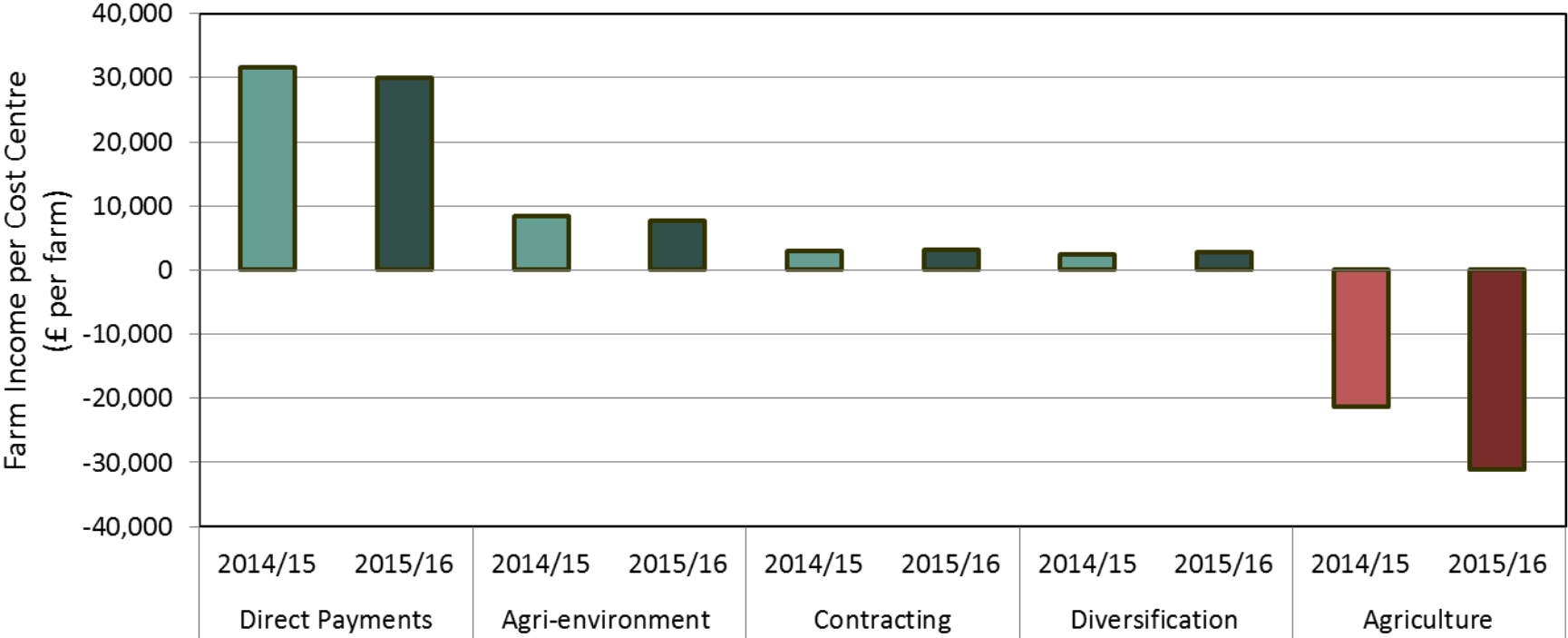


# Scottish farm incomes – wide variation between sectors and farms





# Scottish farm incomes – dependent on subsidy



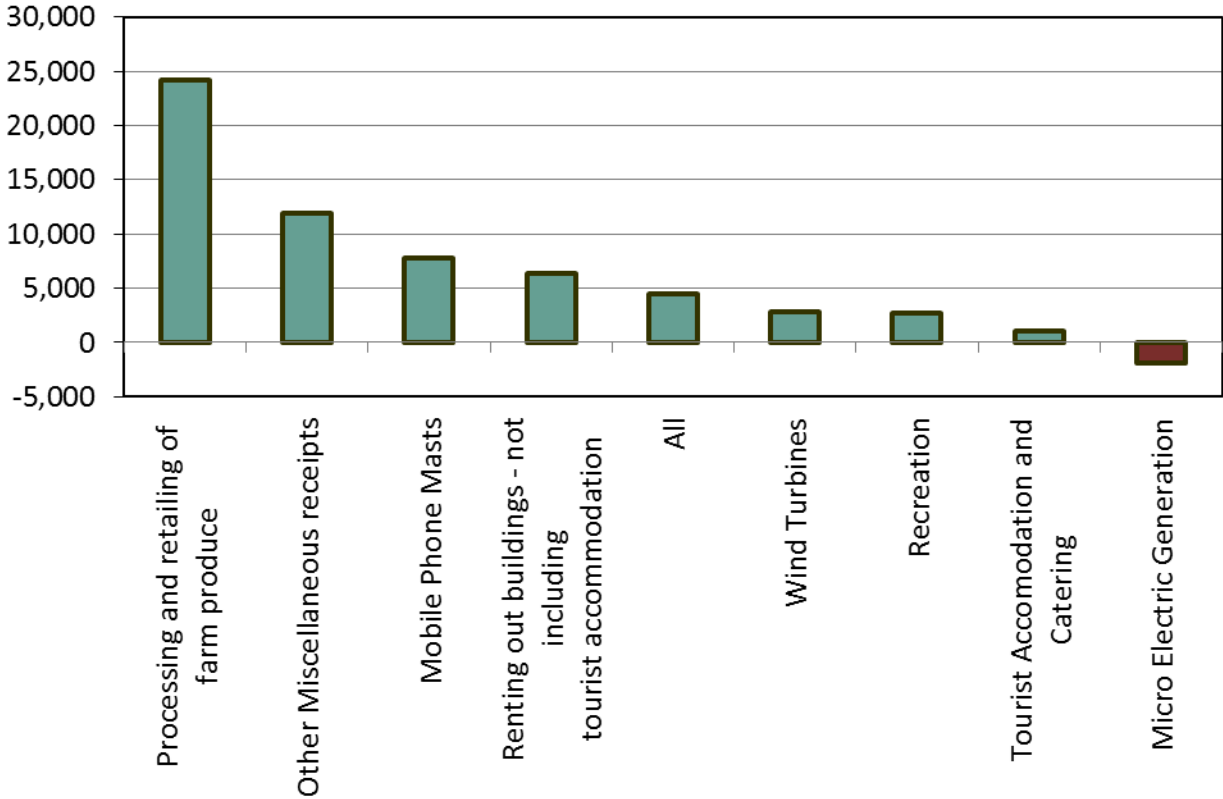
Source: Scottish Govt. 2017



# Scottish farm incomes - diversification



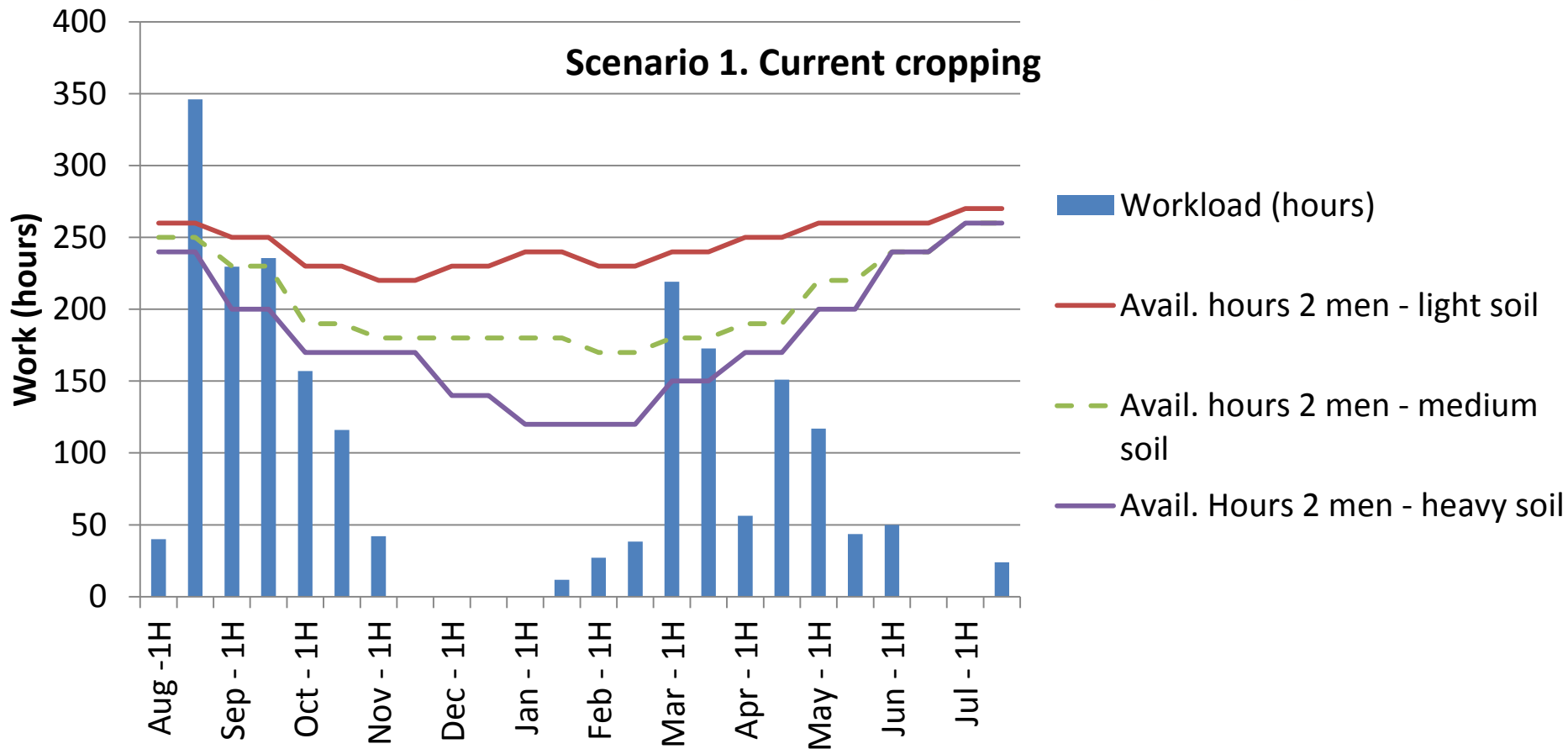
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Source: Scottish Govt. 2017

# Efficiency – work profile of arable farm



# Brexit – AHDB Scenarios

## The scenarios

### Evolution

- Free Trade Agreement made with EU
- Agriculture support, labour costs and regulation unchanged

### Unilateral liberalisation

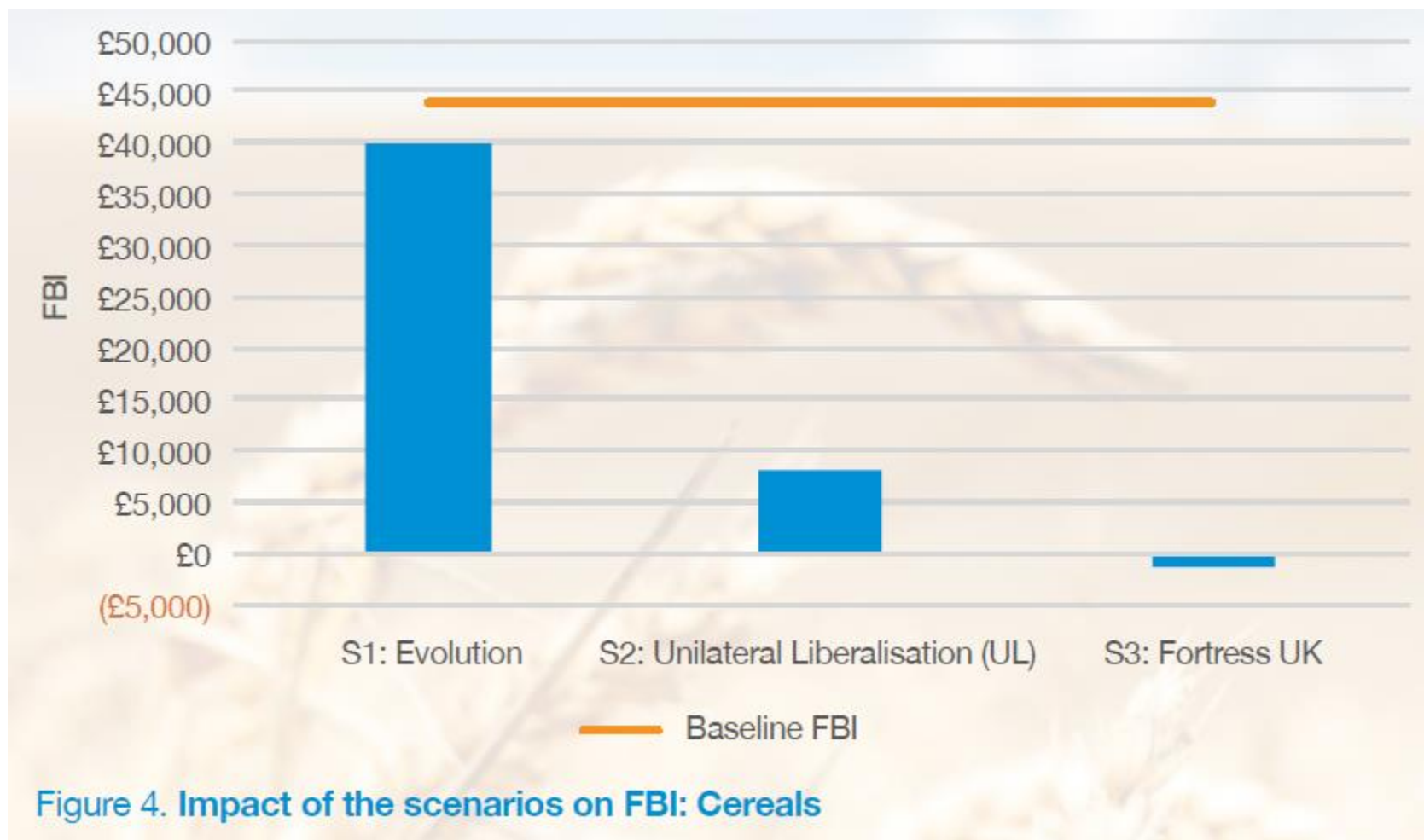
- No trade deal with EU, but UK unilaterally lowers all tariffs to zero
- 50% reduction in agricultural support
- Permanent labour costs rise

### Fortress UK

- No deal with EU
- WTO tariffs apply
- 75% reduction in agriculture support
- Labour (permanent and seasonal) costs rise

# AHDB Brexit Scenarios – CEREALS

## lower income expected



# AHDB Brexit Scenarios – LFA

## livestock lower income expected

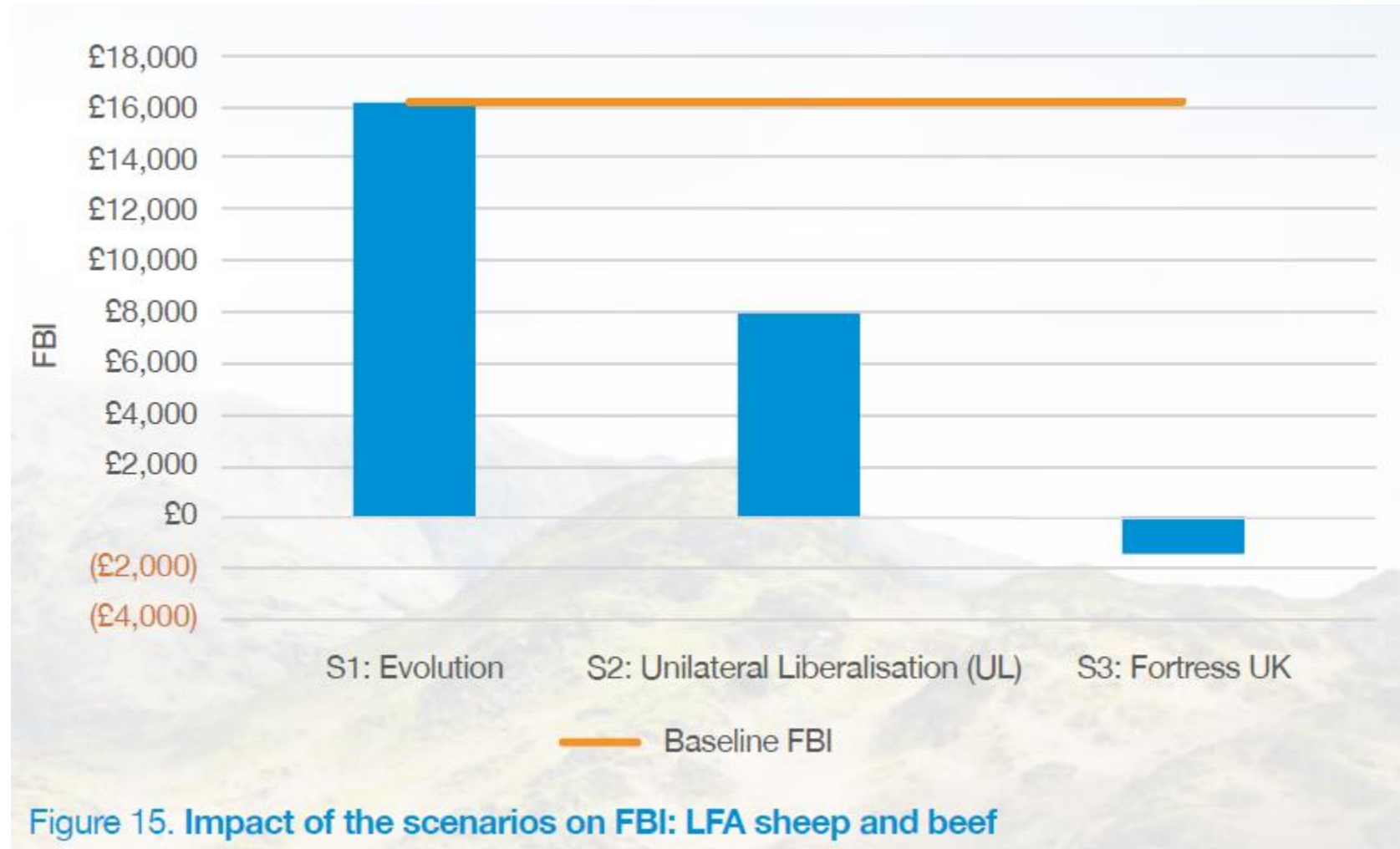


Figure 15. Impact of the scenarios on FBI: LFA sheep and beef

# Financial impact on agricultural business of planting trees – Agricultural income foregone



- The decision to plant agricultural land with trees has financial impacts on the farm business including;
- Negative
- loss of agricultural income
- loss of “coupled” agricultural subsidies – LFASS, SUSS, SSBSS
- Retention of other fixed costs which result in a higher burden for the remaining land in agricultural production
- Positive
- reduction in variable costs
- reduction in some fixed costs – mainly labour & machinery

Free up labour



# General assumptions – woodland establishment - INCOME



## OVERVIEW

100ha productive conifer, 80% conifer, high growth rate, fell at 43yrs

## INCOME

- SRDP II – Woodland Creation
- Maintenance
- Retention of BPS

## Not included in model - requires separate consideration

- Carbon
- other benefits (e.g. shelter etc)



# General assumptions – woodland establishment – TIMBER INCOME



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Year	THIN				FELL		Total
	20	25	30	35	43		
Timber area ( ha)	80	80	80	80		80	80
Timber volume (t/ ha)	60	60	60	60		450	690
Timber volume (t)	4,800	4,800	4,800	4,800		36,000	55,200
Timber price (£/t)	10.25	11.00	13.90	20.60	0.00	31.38	
Timber income (£/ha)	615	660	834	1,236		14,121	17,466
Timber income (£)	49,200	52,800	66,720	98,880		1,129,680	1,397,280

# General assumptions – woodland establishment - COSTS



## COSTS

- Use of SAC Consulting costs
- Design:
- Fencing:
- Mounding:
- Planting
- Losses
- Open ground:
- Professional Fees / Supervision fees:

# Time value of money

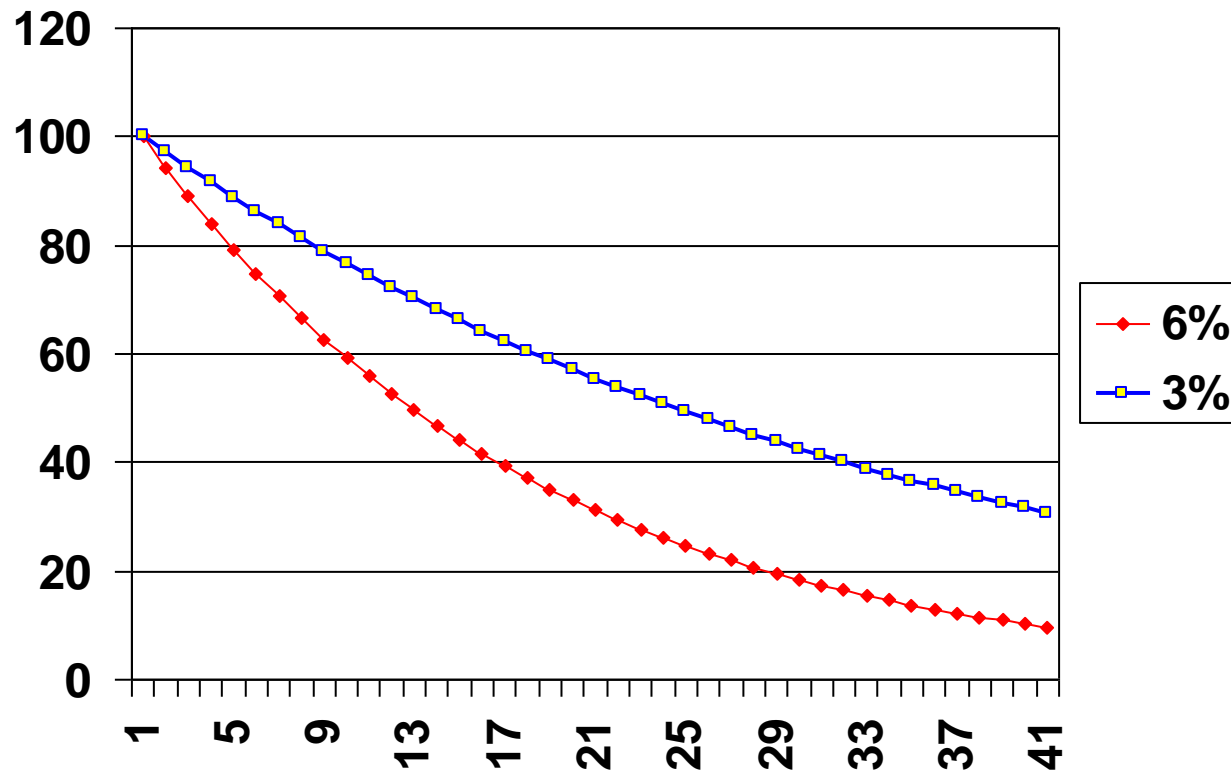
- 1) Discounting
- 2) Net Present Value
- 3) Choice of interest rate
- 4) Cash flows and annual margin  
(Equal Annual Equivalents)

# Discounting – the value of future costs and returns in today's money



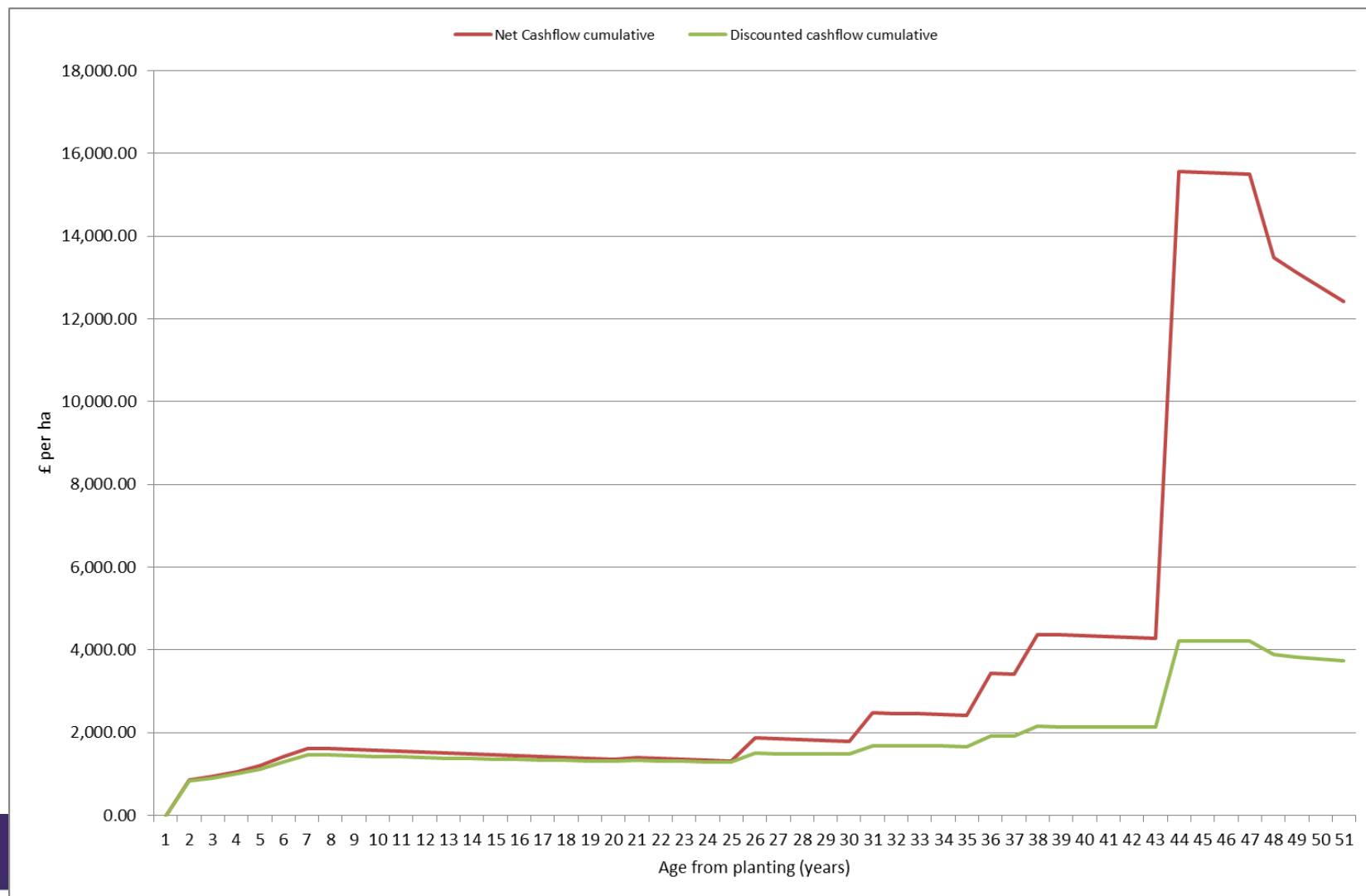
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Value of £100 in today's money at interest rate of 3% and 6%



# Cash flow – farm woodland establishment and harvesting

## 100ha, 80% conifer, 43 yr felling



# Farm woodland establishment – 100 ha, 80% conifer, fell yr 43 Financial returns



**SAC Consulting**



## Results

	Total	Per ha
Net Present Value	£205,056	£2,051
Annuity factor	4.9%	
EAE (margin) total annual	£10,066	£100.66

## NET PRESENT VALUE ESTIMATES

Area (ha)

100

# Rental equivalents from forestry

- becoming competitive with other leases in some situations



Land use or lease type	£/ha/yr
All tenancies - cereals	133
All tenancies - cattle & sheep	123
Short Ltd Duration Tenancy - all	114
All tenancies - LFA cattle & sheep	44
<b>Forestry - conifers - hill</b>	<b>35</b>
<b>Forestry - conifers - upland</b>	<b>100</b>

Source: SAC Consulting





# Case study 1 – arable farm

## Farming for a Better Climate



### Kinstair - woodland planting



#### Kinstair carbon changes

(t CO <sub>2</sub> e)	Pre-planting	Post-planting
Energy use	27.2	26.2
Fertiliser & manure	198.8	136.2
Livestock methane	151	-
<b>Total emissions</b>	<b>377.3</b>	<b>152.2</b>
Woodland sequestration	-57.6	-175
<b>Net emissions</b>	<b>319.7</b>	<b>-22.6</b>

Source SAC AgRE Calc©



- John French, Kinstair
- Mixed /arable farm Aberdeenshire
- 12ha conifers on outlying farm
- Cost and time savings - £5,800
- Only small reduction in output
- Grant and carbon payments
- Turned farm into a net carbon sink

# Case study 2 – hill farm

## Farming for a Better Climate

### Craigengillan - new woodland



### Craigengillan carbon changes

(t CO <sub>2</sub> e)	Pre-planting	Post-planting
Energy use	50	40
Fertiliser & manure	127	90
Livestock methane	405	281
<b>Total emissions</b>	<b>582</b>	<b>411</b>
Woodland sequestration	-3,431	-4,462
<b>Net emissions</b>	<b>-2,848</b>	<b>-4,051</b>

Source SAC AgRE Calc©



- Mark Gibson, Craigengillan
- Diversified hill farm, Ayrshire
- 95ha native broadleaves
- Cost and time savings
- Fewer but more productive sheep
- Benefits to farm cottage and tourism business
- Grant and carbon payments
- Increased farm as a carbon sink

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# Farm woodlands – questions for the audience



**1) Reasons why you have planted farm woodlands?**

**2) What has prevented or limited you from planting in the past / now?**

- Barriers to planting

**3) What further information would help you decide on future planting plans?**



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# Questions



# END



# Conclusions



- Hill sheep profitability has been declining due to lower sheep income and falling subsidy
- CAP reform will result in further subsidy payment decline in southern Scotland
- Net Income foregone estimates indicate forestry planting on farm will generate a positive return on poorer performing land and farms
- Unless fixed costs can be substantially reduced forestry remains less attractive on more productive farms
- Further actual data on fixed cost and output effects of farm forestry planting is needed to refine estimates
- SAC Consulting are conducting farm forestry carbon case studies as part of Farming For a Better Climate which will provide further real world figures