4.2 FARM 2 - UPLAND FARM

Farm 2 is a tenanted upland farm in the Yorkshire Dales and has a suckler herd of 51 breeding cows, producing 48 calves per year and a sheep flock of 445 ewes with a lambing percentage of 143 lambs sold. The land area available to the farm is given in table 11.

Table 11 Farm 2 - Land Area

Land area	Ha	Ac
In-bye	96	237
Rough grazing	34	84
Assessed common grazings	28	69
Total useable area	**158**	**390**

Suckler Herd - Cows are Autumn calving and housed over winter between October and May in straw yards. The first Beef Special Premium and Extensification Premium is claimed on male animals and all calves are sold at 12 - 14 months old as stores. Suckler cow quota is available for 51 cows and Suckler Cow Premium, Extensification Premium and Hill Livestock Compensatory Allowances at the SDA rate are claimed. All replacements are bought in as in-calf heifers to join the herd in September. The annual replacement rate is about 14%. One stock bull is kept on the farm all year round. (The enterprise gross margin is given in Appendix 2, page 39)

Sheep Flock - The ewes are cross-bred to produce Mule ewe lambs for sale, along with store and some finished lambs. All lambs are sold before Christmas. Replacements are bought-in and first tupped as gimmers and the annual replacement rate is approximately 25%. Lambing takes place in April. Ewe quota is available for 445 ewes and Sheep Annual Premium and HLCA at the lower SDA rate are claimed. (The enterprise gross margin is given in Appendix 2, page 40)

Land Use - Cows with calves and with ewes with twins graze the in-bye land during the summer. These ewes also remain on the in-bye during the winter. The remaining ewes graze the rough-grazing and common land year round apart from tupping, lambing etc. when they are on the in-bye. Common grazing provides year round grazing for about 42 ewes with lambs. All the in-bye land can be cut and fertilised and is used to make silage for the cattle using a two-cut system. All hay is bought-in. At present fertiliser is applied at the rate of 130 kg/ha (104 units/acre) nitrogen, 65 kg/ha (52 units/acre) phosphate and 65 kg/ha (52 units/acre) potash averaged across all the in-bye land as a 20:10:10 compound. (Appendix 2, page 41 gives details of forage costs). The average annual stocking rate over the farm is 0.77 livestock units per hectare. (Appendix 2, page 42 gives details of grazing patterns).

Table 12 *Farm 2 - Financial Performance 1995/96*

		£/farm	£/ ha	£/ac
Output				
Cattle	Calves	22176	140	57
	Suckler cow premium	7295	46	19
	HLCA	2423	15	6
	BSP	2670	17	7
Sheep	Finished lamb	4953	31	13
	Store lambs	6912	44	18
	Ewe lambs	14650	93	38
	Draft ewes	2688	17	7
	Wool sales	922	6	2
	Ewe premium	11993	76	31
	HLCA	1335	8	3
Valuation adjustment		-3329	-21	-9
Total farm output		**74687**	**473**	**192**
Variable costs				
Livestock	Concentrates	7816	49	20
	Vet & med	3263	21	8
	Other	3582	23	9
	Bought-in fodder	3000	19	8
Crop	Seed	330	2	1
	Fertiliser	8611	55	22
	Sprays	303	2	1
	Other	473	3	1
Total Variable Costs		**27378**	**173**	**70**
Farm Gross Margin		**47309**	**299**	**121**
Fixed costs				
	Labour - paid	4981	32	13
	Machinery	14174	90	36
	General farm costs	6066	38	16
	Rental equivalent	12313	78	32
Total Fixed Costs		**37534**	**238**	**96**
Net Farm Income		**9775**	**62**	**25**

4.2.1 CASE STUDY 1 - NORTH PENNINE MOORLAND SSSI WES

The operation of the Scheme on the upland farm, Farm 2, is exactly the same as on the hill farm, Farm 1. Because the farm is fairly heavily stocked at the outset there is little flexibility to alter stocking rates or intensify further. The impact of any scheme that restricts stocking will therefore be relatively large. This along with the fact that all hay is already purchased and fertiliser use is relatively high reduces the number of options available to the farmer to cope with the management guidelines. The options available include providing more land and/or reducing stock numbers. Buying in more forage in is generally not feasible as this would require silage to be bought-in.

Scenario 1 - **Half of the rough grazing land (17 ha) and all of the common land (28 ha) falls within the SSSI** - The current grazing pattern (Appendix 2, page 42) and stocking rate restrictions mean that the farm is overstocked for a large part of the year. Between June and September the rough grazing land is over stocked by about 81 ewes with lambs and during the winter by about 78 ewes (assuming that the stocking rate on other areas remains the same). The stocking rates on the common land already fall within the limits of the Scheme, therefore the utilisation of the rough grazing land needs consideration. As part of the Scheme the farm will be eligible to receive compensation as given in table 13 below. To enable the farm to meet the stocking rate criteria there are a number of options the farmer may consider, e.g.:

Option 1a - Rent additional land in summer and away-winter ewes
Option 1b - Reduce stock numbers by selling off-farm

It is assumed that everything else on the farm remains the same i.e. rent, machinery costs, labour costs etc., and that the farm is able to carry out all the suggested adjustments.

Table 13 ***Payments to Farm 2 under scenario 1 for the North Pennine Moorland SSSI WES***

Category	Payment
Area in Scheme	48 hectares
First 100 hectares	£675
Total payment	**£675**

Option 1a - Rent additional land in summer and away-winter ewes
The in-bye land is already stocked to capacity, therefore additional land would need to be rented to accommodate 81 ewes with lambs over the summer months. In addition the number of animals grazing the rough grazing during the winter must be reduced by about 78 ewes. A cost for away-wintering these animals is included.

Original profit = £9,775
Rent* 20 ac @ £120 /ac = £2,400
Agistment 81 ewes @ £8/head = £624
WES payment = £675
Revised profit = £7,426

Option 1b - Reduce stock numbers by selling off-farm

To meet the stocking rate restrictions the flock must be reduced by about 81 ewes. This will also eliminate the need to away-winter animals. Stock numbers on the in-bye land do not change. Reducing the stock numbers will not only have an effect on the long-term profitability of the business, but will also release capital that may be better used elsewhere. LFA sheep quota can be sold within the England LFA ring fence and average prices for 1995/96 were about £35/unit. 81 units would therefore be worth about £2,835. As well the quota there will also be capital released from the sale of the ewes. This is estimated at about £3,240 (81 ewes @ £40/ewe). A reduction in stock numbers of this nature therefore releases total capital of about £6,075.

Original profit = £9,775
Income lost from sheep - 81 ewes @ £59 /head = £4,779
Saving in hay purchase 7 t @ £75/t = £525
WES payment = £675
Revised profit = £6,196

Scenario 2 **- All of the rough grazing and common land (62 ha) falls within the SSSI -**

The current grazing pattern (Appendix 2, page 38) and stocking rate restrictions mean that the farm is overstocked for a large part of the year. Between June and September the rough grazing land is over stocked by about 161 ewes with lambs and during the winter by about 155 ewes (assuming that the stocking rate on other areas remains the same). The stocking rates on the common land already fall within the limits of the Scheme, therefore the utilisation of the rough grazing land needs consideration. As part of the Scheme the farm will be eligible to receive compensation as given in table 14 below. To enable the farm to meet the criteria there are a number of options the farmer may consider, e.g.:

Option 2a - Rent additional land in summer and away-winter ewes
Option 2b - Reduce stock numbers by selling off-farm

Table 14 ***Payments to Farm 2 under the North Pennine Moorland SSSI WES - scenario 1***

Category	Payment
Area in Scheme	62 hectares
First 100 hectares	£930
Total payment	**£930**

Option 2a - Rent additional land in summer and away-winter ewes

The in-bye land is already stocked to capacity, therefore additional land would need to be rented to accommodate 161 ewes with lambs over the summer months. In addition the number of animals grazing the rough grazing during the winter must be reduced by about 155 ewes. A cost for away-wintering these animals is included.

Original profit = £9,775
Rent* 40 ac @ £120 /ac = £4,800
Agistment 155 ewes @ £8/head = £1,240
WES payment = £930
Revised profit = £4,665

Option 2b - Reduce stock numbers by selling off-farm

To meet the stocking rate restrictions the flock must be reduced by about 161 ewes. This will also eliminate the need to away-winter animals. Stock numbers on the in-bye land do not change. Reducing the stock numbers will not only have an effect on the long-term profitability of the business, but will also release capital that may be better used elsewhere. LFA sheep quota can be sold within the England LFA ring fence and average prices for 1995/96 were about £35/unit. 161 units would therefore be worth about £5,635. As well the quota there will also be capital released from the sale of the ewes. This is estimated at about £6,440 (161 ewes @ £40/ewe). A reduction in stock numbers of this nature therefore releases total capital of about £12,075.

Original profit = £9,775
Income lost from sheep - 161 ewes @ £59 /head = £9,499
Saving in hay purchase 15 t @ £75/t = £1125
WES payment = £930
Revised profit = £2,331

DISCUSSION

Table 15 below gives a summary of the options considered and the resulting profit figures in each case.

Table 15 ***Summary of the effect on profit for each option considered under the North Pennine Moorland SSSI WES for Farm 2***

	Original profit £	Resulting profit £	Difference £	Capital released £
Scenario 1 - Half the rough grazing and all the common land (45 ha)				
1a Rent additional land in summer and away-winter ewes	9,775	7,426	-2,349	
1b Reduce stock numbers by selling off-farm	9,775	6,196	-3,579	6,075
Scenario 2 - All the rough grazing and common land (62 ha)				
2a Rent additional land in summer and away-winter ewes	9,775	4,665	-5,110	
2b Reduce stock numbers by selling off-farm	9,775	2,331	-7,444	12,075

The implications for the farm are somewhat different depending on the proportion of land affected by the Scheme. In general the greater the proportion affected the greater the impact on the farm. Obtaining extra land relies on the availability and cost of land to rent for summer grazing. This is normally extremely scarce and expensive within the area and would therefore not be a valid option to many farms. The management of the farm would also be complicated by having animals and land some distance from the main holding. Although the effect on profit is not as great as reducing stock numbers it does expose the business to risk.

Reducing stock numbers has a large effect on farm profit in both cases. In scenario 1 the reduction in profit is £3,579 and the capital released is £6,075. In scenario 2 the reduction in profit is £7,444 and the capital released is £12,075. Despite the fact that the capital released could be put to other uses and the requirement for winter fodder is reduced along with the workload, it is unlikely that the prospect of a reduction in profit of this level would be attractive to the farmer, especially considering that the existing level of profit is relatively low. Therefore it would seem that the most likely option would be to rent additional land and away-winter ewes if possible.

The level of payment in this case therefore appears to be too low if the farm is to survive the imposition of such a scheme in the long-term. This will however depend on individual farm circumstances and the level of profit required for the farm to remain viable.

4.2.2 CASE STUDY 2 - CRAVEN LIMESTONE SSSI WES

The operation of the Scheme on the upland farm, Farm 2, is exactly the same as on the hill farm, Farm 1. The aspect that has the greatest impact is the stocking rate restriction of 1 ewe/ha for an 8 week period between 1 May and 31 August. Because the farm is fairly heavily stocked at the outset there is little flexibility to alter stocking rates or intensify further. The impact of any scheme that restricts stocking will therefore be relatively large. This along with the fact that all hay is already purchased and fertiliser use is relatively high reduces the number of options available to the farmer to cope with the management guidelines. The options available include providing more land and/or reducing stock numbers. Buying in more forage in is generally not feasible as this would require silage to be bought-in

Scenario 1 - **Half of the rough grazing land (17 ha) falls within the SSSI** - The current grazing pattern means that the farm is overstocked on this area from June to September by up to 89 ewes with lambs during the 8 week restricted stocking period (assuming that the stocking rate on other areas remains the same) (Appendix 2, page 42). The timing of the 8 week restricted stocking period could be critical to the farm. In this case it is assumed to be July and August. The farm is also overstocked during the winter by about 49 ewes. To enable the farm to meet these criteria there are a number of options the farmer may consider, e.g.:

Option 1a - Rent additional land in summer and away-winter ewes
Option 1b - Reduce stock numbers by selling off-farm

It is assumed that everything else on the farm remains the same i.e. rent, machinery costs and labour costs etc., and that the farm is able to carry out all the suggested adjustments.

Option 1a - Rent additional land in summer and away-winter ewes
There is insufficient rough grazing land to accommodate all the cattle, therefore if cattle were to be grazed in preference to sheep the herd would have to be split. This would generally result in management problems and may lead to an increase in the workload. Therefore sheep will continue to graze the rough grazing land. Land would need to be rented to accommodate the equivalent of 89 ewes with lambs. In addition the number of animals grazing the rough grazing during the winter must be reduced by about 49 ewes. A cost for away-wintering these animals is included.

Original profit = £9,775
Rent* 22 ac @ £120 /ac = £2,640
Agistment 49 ewes @ £8/head = £392
WES payment = £1,105
Revised profit = £7,848

Option 1b - Reduce stock numbers by selling off-farm
To meet the stocking rate restrictions the flock must be reduced by about 89 ewes. This will also eliminate the need to away-winter animals. Stock numbers on the in-bye land do not change. Reducing the stock numbers will not only have an effect on the long-term profitability of the business, but will also release capital that may be better used elsewhere. LFA sheep quota can be sold within the England LFA ring fence and average prices for 1995/96 were

about £35/unit. 89 units would therefore be worth about £3,115. As well the quota there will also be capital released from the sale of the ewes. This is estimated at about £3,560 (89 ewes @ £40/ewe). A reduction in stock numbers of this nature therefore releases total capital of about £6,675.

Original profit = £9,775
Income lost from sheep - 89 ewes @ £59 /head = £5,251
Saving in hay purchase 8 t @ £75/t = £600
WES payment = £1,105
Revised profit = £6,229

DISCUSSION

Table 16 below gives a summary of the options considered and the resulting profit figures in each case.

Table 16 ***Summary of the effect on profit for each option considered under the Craven Limestone SSSI WES for Farm 2***

	Original profit £	Resulting profit £	Difference £	Capital released £
Scenario 1 - Half the rough grazing and all the common land (45 ha)				
1a Rent additional land in summer and away-winter ewes	9,775	7,848	-1,927	
1b Reduce stock numbers by selling off-farm	9,775	6,229	-3,546	6,675

Obtaining extra land relies on the availability and cost of land to rent for summer grazing. This is normally extremely scarce and expensive within the area and would therefore not be a valid option to many farms. The management of the farm would also be complicated by having animals and land some distance from the main holding. Although the effect on profit is not as great as reducing stock numbers it does expose the business to risk.

Reducing stock numbers results in a large reduction in farm profit of £3,546 but releases £6,675 of capital. Despite the fact that the capital released could be put to other uses and the requirement for winter fodder is reduced along with the workload, it is unlikely that the prospect of a reduction in profit of this level would be attractive to the farmer, especially considering that the level of profit in the first place is relatively low.

The level of payment in this case therefore appears to be too low if the farm is to survive the imposition of such a scheme in the long-term. If the farm is to remain It would therefore seem that the most likely option is to rent additional land and away-winter ewes, assuming that this is practically possible. It would really only be worth reducing stock numbers if the compensation available to the more intensive farms was higher to offset a greater reduction in performance. This will however depend on individual farm circumstances and the level of profit required for the farm to remain viable.

4.2.3 CASE STUDY 3 - YORKSHIRE DALES MEADOWS AND PASTURES WES

The current farm system would tend to exclude an SSSI involving meadow land as only silage is made on the farm and there would be no traditional hay meadows. The land used for silage making is intensively managed on a two cut system with relatively high levels of fertiliser. It is therefore unlikely that species of interest would be present at the outset.

The grazing land is also intensively managed with relatively high fertiliser use and stocking rates. There may, however, be some benefit to bird populations of a change in cutting dates and grazing practices. Restrictions of this nature are likely to have a large impact on the farm due to the lack of flexibility available to move animals onto other areas and the present high reliance on bought-in forage.

Pasture Land

With no fertiliser being applied the productivity of the grass is reduced. In this case the current level of fertiliser use is fairly high at 130 kg/ha N. Therefore a yield reduction of about 60% would be expected. This, along with the 8 week exclusion period, means that stock numbers will have to be reduced, either permanently or removed and accommodated on existing areas by increasing stocking rates or off the farm.

Scenario 1 - **2 ha of the in-bye land falls within the SSSI** - The reduction in productivity results in a reduction in stocking capacity of the area affected by about 25 ewes with lambs. During the 8 week exclusion period a further 6 ewes with lambs would be excluded. Because the area affected is relatively small these ewes could be accommodated through an increase in stocking rate on the rest of the in-bye land.

Option 1a - Increase stocking rate on other in-bye grazing areas
An increase to 14 ewes/ha would be required throughout the season with a further increase to 15 ewes/ha during the 8 week exclusion period. To achieve this level of stocking fertiliser would have to be increased to 150 kg/ha N on other areas.

Original profit = £9,775
Increased fertiliser cost on 69 ha = £952
Saving in fertiliser and spray on 2 ha = £86
WES payment 2 ha @ £150/ha = £300
Revised profit = £9,209

Scenario 2 - **10 ha of the in-bye land falls within the SSSI** - The reduction in productivity results in a reduction in stocking capacity of the area affected by about 100 ewes with lambs. During the 8 week exclusion period a further 30 ewes with lambs would be excluded. The farm would have to intensify greatly to accommodate this number, therefore ewe numbers would need to be reduced to cope with this decrease in productivity.

Option 2a - Reduce stock numbers and increase stocking rate on other in-bye grazing areas

To cope with the reduced stock carrying capacity on the SSSI area the flock needs to be reduced by about 100 ewes. In addition there would also need to be an increase in fertiliser use and stocking rate on other in-bye grazing areas to enable the stock removed from the SSSI area during the 8 week exclusion period to be grazed on the farm. Reducing the stock numbers will not only have an effect on the long-term profitability of the business, but will also release capital that may be better used elsewhere. LFA sheep quota can be sold within the England LFA ring fence and average prices for 1995/96 were about £35/unit. 100 units would therefore be worth about £3,500. As well the quota there will also be capital released from the sale of the ewes. This is estimated at about £4,000 (100 ewes @ £40/ewe). A reduction in stock numbers of this nature therefore releases total capital of about £7,500.

Original profit = £9,775
Increased fertiliser cost on 61 ha = £842
Income lost from sheep - 100 ewes @ £59 /head = £5,900
Saving in fertiliser and spray on 10 ha = £430
Saving in hay purchase 9t @ £75/t = £675
WES payment 10 ha @ £150/ha = £1,500
Revised profit = £5,638

DISCUSSION

Table 17 below gives a summary of the options considered and the resulting profit figures in each case.

Table 17 ***Summary of the effect on profit for each option considered under the Yorkshire Dales Meadows and Pastures SSSI WES for Farm 2***

	Original profit £	Resulting profit £	Difference £	Capital released £
Scenario 1 - 2 ha of pasture				
1a Increase stocking rate on other in-bye grazing areas	9,775	9,209	-566	
Scenario 2 - 10 ha of pasture				
2a Reduce stock numbers and increase stocking rate on other in-bye grazing areas	9,775	5,638	-4,137	7,500

WES payments appear to be at an appropriate level for this farm where only 2 ha are affected and the farm is able to cope with relatively small increases in fertiliser use. However, when 10 ha are affected a large reduction in profitability is seen due to the need to reduce stock numbers. The ability of the farm to cope in such circumstances depends greatly on land quality and it is unlikely that the large increases in forage production that would be required to maintain stock numbers could be achieved on this type of farm due to soil type, climate etc.

There will also be little scope to increase the grazing pressure on other parts of the farm as they are already fairly heavily stocked. If the farm is to cope with such a decrease in forage production it therefore appears that stock numbers will have to be reduced resulting in a relatively large decrease in profitability. This would have the knock-on effects of releasing capital that could be put to other uses and easing the workload.

The level of payment in scenario 2 therefore appears to be too low if the farm is to survive the imposition of such a scheme in the long-term. This will however depend on individual farm circumstances and the level of profit required for the farm to remain viable.

CONCLUSION

In the case of Farm 1, the hill farm, the original level of profit is reasonable and the 1995/96 figures were better than the 1994/95 figures. The impact on farm profitability of the various Wildlife Enhancement Schemes (WES) available in the Yorkshire Dales varies greatly depending on which Scheme the farm enters and the eligible proportion of the holding. Generally the greater the proportion of land affected the greater the impact on farm performance. The scenarios investigated indicate that, at current levels of payment a much greater reduction in the level of profit is seen with the Pennine Moorland WES than with the Craven Limestone WES. This suggests that the level of payment offered for the Moorland WES is insufficient to compensate farmers for the changes that would be necessary to achieve the management guidelines. In the Craven Limestone WES, it is only when a large proportion of the land is affected and the only option available is to reduce stock numbers that a relatively large reduction in the level of profitability is seen. In this case the level of payment is much closer to the reduction in performance. If intensification is a valid option for the farm concerned profit is actually increased under this scheme. Again in the case of the Meadows and Pastures WES the level of payment seems to be well matched to the effect of the changes required. This appears to be because the farm is already fairly extensive with relatively low levels of fertiliser used and low stocking rates.

In the case of Farm 2, the upland farm, the level of profit achieved for the 1995/96 year is higher than the previous year, but is much lower than for Farm 1. This is a reflection of farm size and subsidy levels received. The impacts of the Wildlife Enhancement Scheme (WES) on profitability are much more severe for Farm 2. The greater use of fertiliser and higher stocking rate means that the farm is much less flexible and there are fewer options available. Again the greater the proportion of land affected, the greater the impact on farm performance. The fact that the farm is also starting from a much lower level of profit accentuates the impact of the various schemes. The Moorland WES results in lower levels of profit than the Craven WES, even when payments are received for the common land which already falls within the management guidelines. In all three of the case studies for Farm 2, entry into a scheme has a negative impact on profit and where larger proportions of land are affected the reductions seen could bring the viability of the holding into question. This suggests that where farms are more intensive to begin with, the compensation levels offered are too low to reflect the decrease in farm performance seen.

It must be noted that the examples considered in this report and conclusions drawn can only be applied to the model farms used. There is a great deal of variation between farms, even within the same locality and overall performance is affected by a number of factors, including: farm size, area of different land types available, location, land quality, types enterprises on the farm, size of enterprises, levels of inputs, systems of production followed, utilisation of resources, land tenure, level of borrowing, type of labour employed, quantity of labour employed and eligibility for subsidies. It is therefore essential that each farm is considered individually and that a degree of flexibility is adopted. It also essential that the farmers concerned have a clear understanding of the effect such schemes will have on the farm system and management.

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* Area required and rental value is based on the equivalent of lowland permanent pasture stocked at 10 ewes/ha due to the varying quality and cost of any summer grazing that may be available within the Dales.