

## IX. MISCELLANEOUS DATA

### 1. CONSERVATION COSTS

*Note:* Costs vary widely, depending on geographical location and the type and size of the job. Markets for such services can be highly localised, sparse in some areas, competitive in others. Also, refer to contracting charges on page 194.

#### **Hedges**

*Hedge Cutting.* Flailing £39.70/hour to £48.20/hour for sawblade cutting (contract charges). Average of 3-5 miles per day depending on trim quality and obstacles.

*Hedge Laying (Making hedges stock proof and rejuvenated by selective cutting and positioning).* Manual hedge laying approximately 20 to 40m/day depending on hedge thickness (single or double), amount of timber to clear, access to hedge, style of hedge and varieties in hedge. Cost £15.50/metre for dense hedge and less for younger hedges

*Hedge Planting.* Single row = 3-4 plants per metre, double row 6 plants per metre

- Plants average 54p - £1.36 each (mixed species); spiral guards 40p; canes 16p.
- Labour: Planting up to £2.90-£3.90/metre, professional contractor up to £100-150 metres/day. Preferably October/March.
- Overall from £3.40/metre; unfenced, single width, self-planted;  
to £30.00/metre; double width & double rabbit fenced, contract planted.

*Hedge Coppicing.* By hand: 2 men and a chain saw, £6.35-£7.35 per metre including debris. Contractor: tractor mounted saw, driver and 2 men, 12.5 acres per hour, £44.00/hour.

*Devon Hedges.* Maintenance, flailing annually and occasional recasting on eroding banks when eroded. Flailing costs as above and recasting with tractor £27.00/hr.

#### **Fencing**

*Fencing* (labour and materials): stock proof post and 4-barbed wire £14.80/metre (in) £6.10/metre (per side). Post and 3 rails £14.80/metre (in) £6.10/metre (per side).

#### **Dry Stone Walls**

*Dry Stone Walling.* Highly variable cost depending on stone availability, structure, vehicular access and local conditions (stone walls in gardens than fields). As a guide: Cost of building dry stone walls enormously on local stone, type and availability of stone (about 4SFY per tonne). Cost of wall building is from as low as £45 (highlands) to £250 (Cotswolds) per square metre (normally quoted per square metre but grants awarded per linear metre). Most are around £90-110/m<sup>2</sup>. Partial grants might be available in some areas e.g. within National Parks.

## **Trees**

*Amenity tree planting; (half acre block or less)*

- Transplants average £1.12; shelter plus stake and tie £1.38; stake 58p; whip 85p. Rabbit spiral guard 38p; netlon guard 56p; cane 17p.
- Trees per man day: farmer 200, contractor 400; (large-scale, 33 man days/ha). Optimal time November to April.

*Shelter Belts; Per 100 metre length*

- 100 large species (oak, lime, etc.) £57; 66 medium species (cherry, birch, etc.) £49; 100 shrubs, £40;
- 166 tree stakes, shelters and ties, £300; (site preparation, weed control, labour and fencing extra)

*Woodland Establishment.*

- Conifers £235/1,000 (2m spacing), broadleaves £460/1000 (3m spacing).
- To supply and plant transplants; conifer £3.40/tree, oak or beech £4.20-£4.70 each, (2-3ft tall) in tubes dependent on shelter size and species.
- Rabbit fencing £6.08/metre (dug in), deer fencing £8.70/metre, deer and rabbit fencing £10.70/metre
- Contract planting labour: Conifers at 2m £1,660/ha; broadleaves at 3m £1,140/ha; forest transplants £320/1,070/ha.

*Forestry, General.*

- 2-man tree surgery team £570/day
- Contract labour: chain sawing £25/hr,
- Brush cutting £15.60/hr,
- Extracting timber/pulp £5.60-£12.50/tonne,
- Chemical spot weeding 11p-15p/tree, or £3306/hectare
- Rhododendron control range from £750-£2,700/hectare (dependent on stem diameter (largest over 7cm) and accessibility).

*Pollarding and Tree Surgery.*

- Pollard: £105/mature tree; Pollarding: 2 or 3 trees £100-£140
- Tree surgery from £190/tree. Dependant on size and access.

## **Ponds and Ditches**

*Pond Construction.* Butyl lining (0.75mm) £6.25/m<sup>2</sup>; 150 Komatsu £33/hr.; bulldozer Ditcher £15/hr. (excluding haulage), labour £13.00/hr. Flail-mow £11.00/hr. (day). Autumn (dry ground conditions).

*Pond Maintenance.* Hymac £46/hr.; Ditcher £15/hr. (day). Timing: probably winter; time depends on grass and trees which may be disturbed. Every 15 to 50 years.

*Ditch Maintenance.* Backhoe excavator £25.00/hr.; 13t 360° excavator £45/hr (excluding haulage), labour £13.00/hr. preferably in winter. Every 3 to 7 years on rotation.

## Grassland

*Permanent Grass Margins at Field Edges.* To provide wildlife benefits and help control pernicious weeds, reducing herbicides at the field edge. (A sterile strip provides virtually no wildlife benefit and the initial establishment costs may be offset by savings in maintenance costs in future years.)

Seed costs per 100 metres of seeds as follows.

- 2m grass margins, £3.00-£3.10; (4-6 year ley £150.50/ha)
- 6m grass margins, £9.00-£9.30;
- beetle banks, £7.50 (6m wide) (£5.00/kg, 25kg/ha).

*Establishment of Wildlife Grassland Meadow.* £200-300/ha for ground preparation, depending on cultivations, weed burden and total area, more for heavy land or exceptional weed burden. Seed costs very variable, but as a guide:

- Native Perennial wild flowers and grasses, £16/kg, 20kg/ha = £320/ha
- Pollen and Nectar mix for bumble bees and butterflies £5.80/kg, 20kg/ha = £116/ha
- Bird Seed sward £4.40/kg, 12kg/ha = £53/ha for single year crop, £4.00/kg, 50kg/ha = £200 for longer sward.
- Single species native grass seeds vary from £3.55/kg (e.g. Creeping Red Top) to £60/kg (Sweet Vernal).
- Single species native perennial wild flower seeds vary from £10/kg (Cockle) to £695/kg (Cowslip)
- Buffer strip grass margin mix for cross compliance and other features, £4.00/kg drilled at 25kg/ha = £100/ha. Costs of grass seed drilling are usually higher than the seed.

*Acknowledgement:* Thanks to Cotswold Seeds and the Forestry Commission

## 2. GRASS, FORAGE AND ENVIRONMENTAL SEEDS

### SEED PRICES AND SEED RATES

(for 2018)

Crop	Price £/kg	Seed Rate kg/ha	Cost £/ha
<b>Grass Leys</b>			
1 year Westerwolds	£2.50	35	87.5
2 year leys	£2.56	35	89.6
3-4 year leys	£3.80	35	133
4-6 year leys	£4.30	35	150.5
Long-term ley	£4.24	30	127.2
Permanent Grass	£4.86	32.5	157.95
Drought Resistant	£6.35	32.5	106.38
<b>Mixed and Clover Leys</b>			
White Clover ley	£5.00	30	150
Red Clover ley	£4.15	30	124.5
Timothy/M. Fescue ley	£4.60	32.5	149.5
<b>Fodder Crops</b>			
Fodder Kale	£9.80-13.50	5	49-68
Swedes	£42.80	0.7 precision drill	28.96
		4.0 seed drill	172
Stubble Turnips	£3.80	3.75 kg drilled,	14.03
		5.0 kg broadcast	19.00
Maincrop Turnips	£11.40	3.75 kg drilled,	43.50
		5.0 kg broadcast	57.00
Rape	£3.10	10	31.00
Rape/Kale hybrid	£8.00	7.50	60.00
Mustard	£1.80	15	27.00
Rape and Turnip mix	£3.62	0.5 kg rape	1.81
		1.50kg turnip	5.43
Kale, Swede & Turnips	£14.50	0.6 kg rape	8.70
		0.2 kg swede	2.90
		0.7 kg turnip	10.15
<b>Cover Mixes, Environmental and Equine</b>			
Game Cover mixture	£3.96		
Game Maize	£4.18		
Forage Maize: Silage			
Vetch	£1.48		
Quinoa & Kale mix	£9.90		
Field Corner mixture	£11.45		
Horse grazing	£5.60	35	196
Gallop mixture	£3.98	125	497.5

Crop	Price £/kg	Seed Rate kg/ha	Cost £/ha
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***Individual Varieties***

Westerwold Ryegrass	£2.50	35	87.5
Italian Ryegrass	£2.56	35	89.6
Perennial Ryegrass	£4.30	25 to 40	107.5 - 172
Hybrid Ryegrass	£3.70	35	129.5
Cocksfoot	£5.20	20 to 25	104 - 130
Red Clover Ley	£8.90	15	133.5
White Clover Ley	£9.30	7	65.1
Timothy	£5.00		
Meadow Fescue	£4.70		
Sweet Vernal	£60.00		
Reed Canary Grass	£18.00	7.5	135
Lucerne	£7.40 (inoculated)	20	148
Sainfoin	£2.65	87	230.55
Millet	£2.40	25	60
Sunflower	£4.40	25	110
Sorghum	£3.70	20	74

***Countryside Stewardship***

Beetle Bank	£4.98	25	124.5
Buffer Strip	£5.32	25	133
Autumn Sown			
Bumblebird Mixture	£8.14	30	244
Autumn Sown 2-year			
Legume Fallow	£6.37	33	
Flower Rich Margin	£12.68	25	

## COVER AND CATCH CROPS

A 'catch' crop is grown between two 'cash' crops to catch nutrients which might otherwise be lost from weather erosion. A cover crop is grown over winter to protect and enrich soil. Catch and cover crops can be used to help meet Ecological Focus Area (EFA) obligations as part of the Basic Payment scheme's Greening requirements in England and Scotland.

	<i>Establishment Deadline</i>	<i>Minimum Retention Date</i>
Catch Crops	31 August of scheme year	1 October of scheme year
Cover Crops	31 October of scheme year	15 January of following year

For Greening, cover and catch crops must consist of both a cereal and a non-cereal species separately from rye, barley, oats, vetch, lucerne, mustard, phacelia and oilseed radish. Undersown grass is also eligible. For more detail on EFAs, refer to page 142. Cover and Catch Crops clearly have a cost of establishment and destruction (although some graze it) and can act as a green bridge, resulting in a build-up of pests. But they also have several benefits:

- Correcting soil C:N ratio (see below)
- Fixing soil nitrogen
- Increasing soil organic matter which helps to retain soil nutrients and moisture facilitating crop establishment and higher yields for following crops
- Improving soil structure, which reduces cultivation requirements
- Providing a canopy to reduce soil erosion and slow nutrient loss
- slowing leaching of nutrients (eutrophication) and volatilisation of nitrogen compounds

A C:N ratio compares the ratio of carbon to nitrogen in organic matter. The optimum for soil is 24:1. The ratio for wheat straw and microorganisms is 80:1 and 8:1 respectively. Thus, land farmed for cereals crops often has a C:N above optimum, and it is necessary to reduce it. Fertiliser does the same but at a cost.

Crop	Seed Cost £/kg	Seed Rate kg/ha	Cost £/ha
Black Oats*	1.60	25	40.00
Forage Rye*	0.95	40	38.00
White Mustard*	1.84	12	22.08
Lucerne*	6.40	25	160.00
Phacelia*	3.50	10	35.00
Vetch*	1.48	25	37.00
Clover	5.00	10.00	50.00
Radish	2.45		
Oilseed Radish*	8.40		

\*EFA Cover and Catch Crop Compliant

### 3. FIELD DRAINAGE

Field drainage has been over-looked in recent years. Most agricultural land has been drained at some point, although some will have been over 100 years ago (clay pipes). Much was re-drained in the 1960's and 1970's when generous grants assisted with the capital cost. Despite the age of some of these systems, many still function, although require regular maintenance. This may include clearing out-falls, ditches, or field drains (jetting).

The costs of installing drains per metre shown below include the cost of operating a trenching machine, supplying and laying perforated plastic pipe to an average depth of 800mm by trencher with 40/20mm cleaned washed porous fill (drainage stone) laid over the pipe to within 375mm of the surface:

60 mm diameter	£4.50 - £5.00/metre
80 mm diameter	£5.50 - £6.00/metre
100 mm diameter	£7.50 - £7.75/metre
160 mm diameter	£9.50 - £11.50/metre

In some soil types (very rare), soil can be used as backfill. This could save £2.50-£3.50 per metre in cost depending upon the depth of the trench required to get the falls correct and the type of drainage stone selected. However, porous backfill improves the effectiveness of drains by keeping the openings in the pipe clear and enabling fast penetration of water into the drain. The choice to use permeable backfill should depend on soil type not cost. The above rates apply to comprehensive schemes of 4 hectares or more. Smaller areas and patching up work can cost up to 50% more due to the cost of transporting and tracking trenching equipment across fields for small areas of work. Patching up / repairing old drainage systems is common practise as a cheaper alternative to new comprehensive systems. 100mm diameter drainage pipe costs approximately £1 per metre.

Digging new open ditches (1.8m top width, 1.25m depth) costs £2.20-£3.00 per metre compared with improving existing ditches at £1.20 to £1.80 per metre depending on amount of material that needs to be removed. However, most contractors charge on an hourly basis for this work with a 360 digger at approximately £37/hour.

Mole draining costs in the region of £65-£100 per hectare (see contract rates). Mole draining is effectively a secondary drainage method which is used where a drainage system already exists. The mole plough creates a cavity for the water to travel through. This practise is best suited to heavy land / clay based soils, where mole can be used for some time.

Total Costs per hectare for complete schemes vary on the drainage design, soil type, area to be drained, region of the country and the time of year when the work is undertaken. The cost of a scheme with 20m spacing between laterals using permeable backfill will typically be in the range of £2,200 - £2,800 per hectare (or £1,300 per acre). Comprehensive schemes using little / no backfill will be in the range of £1,300 - £1,800 per hectare. Backfilling with soil, rather than drainage stone (washed gravel), may reduce the cost by almost half. However, this is not possible on all soil types. Certain soil types which are particularly suited to mole drainage may allow spacing between laterals to be increased to 40m or more. If this is possible costs will be reduced proportionally.

*Acknowledgement: thanks to Rob Burtonshaw*

# 4. FERTILISER

## FERTILISER PRICES

<i>Compounds</i>	<i>Analysis</i>			<i>Price Per Tonne</i>
	<b>N</b>	<b>P<sub>2</sub>O<sub>5</sub></b>	<b>K<sub>2</sub>O</b>	<b>£</b>
	0	26	26	272
	0	24	24	252
	0	18	36	267
	0	20	30	253
	0	30	15	250
	0	30	20	271
	5	24	24	280
	8	24	24	296
	10	26	26	327
	11	15	20	243
	13	13	20	242
	15	15	20	265
	16	16	16	260
	22	4	14	214
	20	10	10	222
	25	5	5	199
	26	0	15	217
<i>Straights</i>				<i>Price per tonne</i>
				<b>£</b>
Ammonium Nitrate: UK (34.5% N)				190
Ammonium Nitrate: Imported (34.5% N)				182
NS grade: UK (27% N, 30% SO <sub>3</sub> )				178
Sulphate of Ammonia (21% N, 60% SO <sub>3</sub> )				173
Urea (46% N): granular/prills				222
Liquid Nitrogen (26% N, 5% SO <sub>3</sub> )				222
Triple Superphosphate (TSP) (46% P <sub>2</sub> O <sub>5</sub> )				222
DAP (18/46/0)				222
Muriate of Potash (MOP) (60% K <sub>2</sub> O)				222
Average price (p) per kg:	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	

The prices above are for fertilisers delivered to the farm. Prices for 10-15 tonne loads, £7.00/tonne less; collection of bags, £1.00/tonne less. Prices are for 10-15 tonne loads, £7.00/tonne less; collection of bags, £1.00/tonne less. Prices in October 2017 and spring 2018. They assume delivery in 25-27 tonne loads. Prices for 10-15 tonne loads, £7.00/tonne less; collection of bags, £1.00/tonne less. Prices in October 2017 and spring 2018. They assume delivery in 25-27 tonne loads. Prices for 10-15 tonne loads, £7.00/tonne less; collection of bags, £1.00/tonne less.



## FERTILISER VALUE OF SLURRY & MANURE

### Nutrient Values of Common Farm Yard Manure Types

	Dry Matter %	(kg N/t)	(kg P <sub>2</sub> O <sub>5</sub> /t)		(kg K <sub>2</sub> O/t)	
		Total N*	Total P	Available P	Total K	Available K
Cattle FYM	25	6.0	3.2	1.9	9.4	8.5
Pig FYM	25	7.0	6.0	3.6	8.0	7.2
Sheep FYM	25	7.0	3.2	1.9	8.0	7.2
Duck FYM	25	6.5	5.5	3.3	7.5	6.8
Horse FYM	25	5.0	5.0	3.0	6.0	5.4
Goat FYM	40	9.5	4.5	2.7	12.0	10.8

FYM = Farmyard Manure

\* Crop-available nitrogen depends on application timing, and time taken to incorporate, but RB209-2017 quotes 10% of total N in most conditions, 10-50% for poultry.

\*\* Refer to RB209 for different dry matter FYMs.

*Note:* these nutrient contents are for guidance only and will vary between different livestock systems and storage methods. Analysis should be performed to understand the specific values of manure.

Source: RB209-2017

### Manure Output per Head during the Housing Period

	Undiluted Excreta t or m <sup>3</sup>	Total Kg	
		N	P <sub>2</sub> O <sub>5</sub>
1 dairy cow ~ 6,000 to 9,000 litres milk yield	11.6	60	25
1 beef cow ~ >500 kg	8.2	41	17
1 finishing pig ~ per place ~ 86% occupancy	1.6	10.6	4.3
1,000 broiler hens ~ per hen place ~ 85% occupancy	19	95	39

*Note:* These figures should not be used for calculating N and P allowances, but allow for the time spent in the buildings and therefore are not applicable during grazing. Refer to the DEFRA NVZ guidance for the methodology and annual manure output tables.

## LIME

Prices average around £23.50 delivered and applied to 200 tonnes per hectare per application, typically 100 tonnes per hectare of arable land per year.

Lime price varies according to type of lime (e.g. agricultural or industrial consistency), location and ease of access to a quarry to £26 ex-quarry. A short distance from a quarry adds about £4.75 per tonne, adding about £10 to the ex-quarry cost.