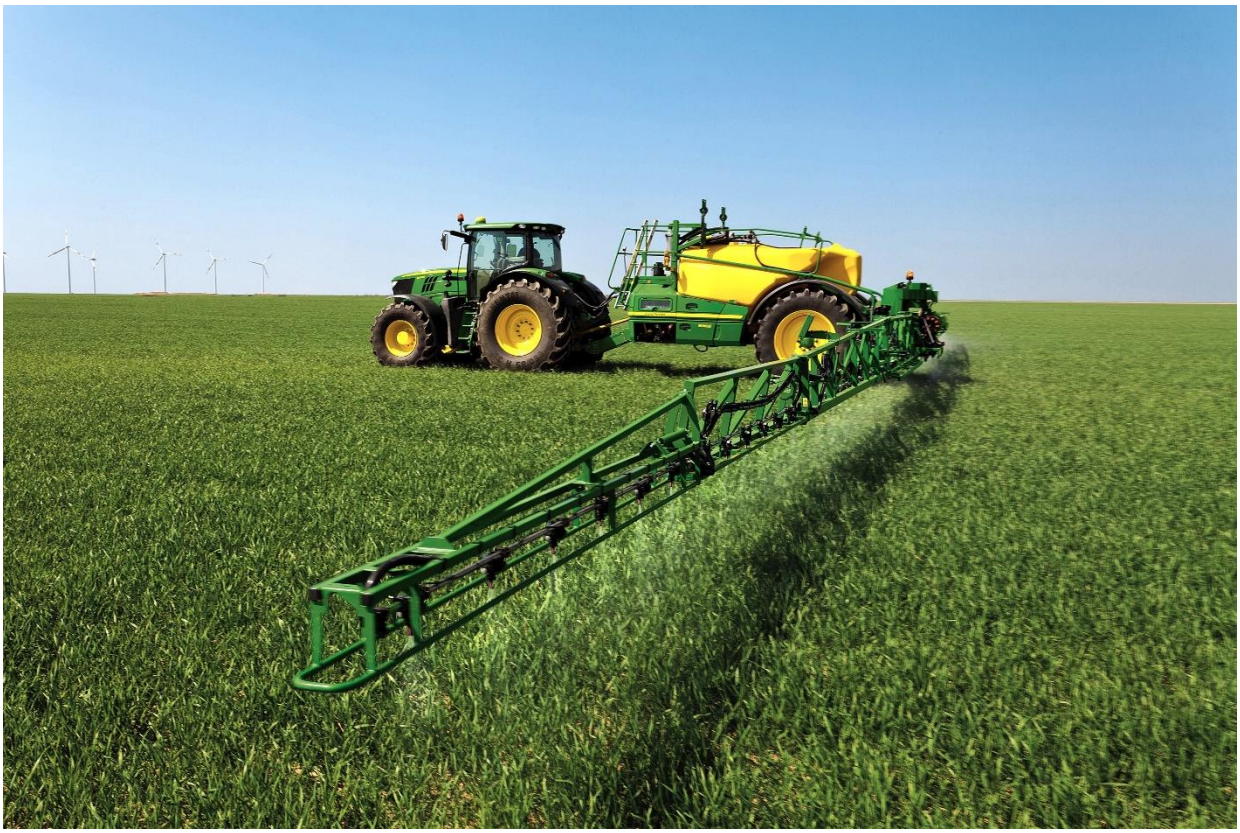
AHDB Machinery costing calculator



This booklet is designed to give a quick cost of a tractor, an implement giving a total cost of the combination. Combine harvesters and self-propelled sprayers can also be costed.

Simply fill in these boxes. As you go, take note of the 'A' & 'b' figures and take them forward to the next calculation as you go. Note figures appearing in these boxes are yearly totals. Harry Henderson Technical Manager AHDB.

Tractor costing calculator

Tractor _____

Purchase price _____A

Hours per year _____B

Intended years of ownership _____C

Estimated value at sale _____D

Price of fuel (£/Lt) _____E

Avg fuel cost (£/hr) [Lt/hr] X [E] = _____F

Fuel cost per year [B] X [F] = _____

Depreciation/yr [A] - [D] ÷ [C] = _____

Repairs (£/yr) _____

Maintenance (£/yr) _____

Insurance (estimated) _____

Total tractor costs per year add up numbers in box _____G

Tractor cost per hour [G] ÷ [B] = _____a

Implement costing calculation

Item _____

Equipment purchase price _____A

Hectares worked per year _____B

Intended years of ownership _____C

Estimated value at sale _____D

Work rate (ha/hr) _____f

Depreciation/yr [A] - [D] ÷ [C] = _____

Repairs (£/yr) _____

Maintenance (£/yr) _____

Total equipment cost per year add up numbers in box = _____G

Cost per hectare [G] ÷ [B] = _____i

Operation cost

Tractor cost per hour (from page 1) _____a

Work rate (from page 2) _____f

Tractor cost per hectare [a] ÷ [f] = _____b

Equipment cost per hectare (from page 2) _____i

Operation cost per hectare [b] + [i] = _____c

Labour cost

Labour cost per hour _____d

Work rate _____f

Labour cost per hectare [d] ÷ [f] = _____g

Total operation cost [g] + [c] = £/ha_____

Combine harvester or self-propelled sprayer costing calculator

Machine _____

Purchase price _____A

Hectares covered per year _____B

Intended years of ownership _____C

Estimated value at sale _____D

Fuel cost (£/Lt) _____E

Avg fuel consumption (Lt/ha)= X E =£/ha_____F

Fuel cost (£/yr)	B	X	F	=				_____
Depreciation/yr	A	-	D	÷	C			_____
Repairs (£/yr)								_____
Maintenance (£/yr)								_____
Insurance (£/yr) (optional)								_____

Total vehicle costs per year add up numbers in box _____G

Operation cost per hectare [G] ÷ [B] = _____

Labour cost per hour _____d

Work rate (average) _____f

Labour cost per hectare [d] ÷ [f] = _____g

Total operation cost [g] + [c] =£/ha_____

Summary

Tractor cost per hectare £_____

Implement cost per hectare £_____

Combine cost per hectare £_____

Self-propelled sprayer cost £_____

Calculate the width of implement, or implements, required for your farm

1. How much hectarage do you have to cover in the given time?
2. What time frame or window do you have to complete the task? Use hours, i.e. 20 days = 200 hours.
3. What's the speed of operation? Use KPH and be realistic.
4. What is the Field Efficiency*? I.e. out of 100% of time spent in field, what percentage of time is spend turning around and re-filling?

$$\frac{\text{Ha/hr} \times 10}{\text{Kph} \times \text{field efficiency}} = \text{required machine width}$$

Example; Crop sprayer

430ha to spray in 36 operating hours. Avg. speed 12kph & 70% field efficiency

Required coverage: $\frac{430\text{ha}}{36\text{hrs}}$ = **12ha/hr** spraying time

Width needed $\frac{12 \times 10}{12 \times 0.7} = \frac{120}{8.4}$ = 14 (18 meter sprayer)

*Typical Field Efficiency of arable operations

- Ploughing 65% field efficiency; add 3–5% if average field size is greater than 10 ha
- Min till cultivation 65%; add 3–5% if average field size is greater than 10 ha, reduce by 5% if no GPS guidance
- Drilling 55%; add 3–5% if average field size is greater than 10 ha, reduce by 5% if no GPS guidance
- Spraying 50%; add 3–5% if average field size is greater than 10 ha, reduce by 3% if no GPS guidance, increase if bowser used. NB a farm efficiency can be below 50% if travel time is taken into account, consider a bowser.
- Fertiliser spreading 60%; add 3–5% if average field size greater than 10 ha, reduce by 3% if no GPS guidance
- Combining 80%; add 3–5% if average field size is greater than 10 ha, reduce by 10% if no GPS guidance, reduce if not unloading on the move

What size of drill do you need?

Expected work rate per 10 hour day

Average speed 10kph @ 70% field efficiency, Grain only
@ 60% field efficiency, Grain & fertiliser

Drill size	Average output per day (ha/d)	
	Grain only	Grain & fertiliser
3 meter	21	18
4 meter	28	24
6 meter	42	35
9 meter	63	54

Operation costs for 2018/19 £/ha	Monitor Farm Average Cost	Central Association of Agricultural Valuers Cost	National Association of Agricultural Contractors
Drilling	£32	£37	£49
Ploughing	£57	£62	£63
Pressing	£20	£27	£36
Cultivating. Discs, tines, packer etc.	£29	£41	£65
Subsoiling	£41	£50	£59
Rolling	£9	£15	£20
Spraying	£6	£7	£12
Fertilising (solid)	£5	£9	£12
Combining	£66	£79	£87
Grain Carting	£31	£24	£34