

Precision ag systems: worth the money?

Dermot Forristal
Teagasc Crops, Environment and Land Use Programme, Oak Park

There is likely to be a lot of interest in buying guidance and auto-steer systems once the TAMS grants are announced. Like any other input, there are costs and benefits and while these may not be simple to calculate, estimates must be made before a decision is made.

Costs

- Depreciation of the equipment.
- Interest paid.
- Maintenance including down-time costs and back-up systems.
- Other costs such as training, annual licence for correction signals, time input.

Benefits

- Input savings (herbicides, fungicides and fertilisers).
- Machinery cost savings – due to fewer overlaps.
- Time saving (on marking out bout widths on ploughed fields, for example).
- Reduced operator fatigue and mistakes.
- Management knowledge gained and yield optimised through more accurately applied inputs.

Simple cost estimates

Four guidance systems for use on tillage farms are costed in Table 1.

Annual costs over a five- to eight-year period were calculated and presented as “annual costs per hectare” over four different grower areas with and without a 40% grant (TAMS) assumption.



Table 1: Cost estimates

	Simple Guidance	Autosteer (6cm)	Sprayer Section control	Autosteer RTK (2cm)
Cap. cost (€)	2,000	9,000	3,000	25,000
Area (ha)	Annual cost €/ha (grant)			
50	11 (8)	45 (34)	10 (6)	116 (65)
100	6 (4)	23 (17)	5 (3)	58 (33)
200	3 (2)	11 (9)	3 (2)	29 (16)
500	1 (0.8)	5 (3)	1 (1)	12 (7)

These are only examples; the costs can be machine specific. Adding section control to a sprayer, for example, could cost from less than €1,000 to €8,000 depending on the sprayer controls and the GPS guidance system being used.

Whether the use of these units will add to profit, depends on what benefit they can bring and those potential benefits will vary depending on factors such as:

- Equipment being used: e.g. a trailed wide boom sprayer will benefit more from section control than a mounted 12m.

• Skill and practices of the operator: a good operator with good work practices may benefit less from using these technologies than a less careful driver.

• Field shapes and size, etc: irregular smaller fields in combination with large equipment and a less skilled operator may benefit more than where fields are regular and machine runs are long.

• Setting up guidance equipment: while the operator's task can be eased, guidance systems and particularly section controls, need to be set up properly.

CASE STUDY Basic autosteer with sprayer section control

Benefits

Depend on field size; assume 300m runs (4ha to 10ha field):

- Correcting 3m error at headland: 2% chemical saving.
- Reducing losses on four short runs: 0.5% chemical saving.
- Accurate tramline placement 24 v 23m: 4% chemical saving.
- Total: 6.5% chemical saving.

- Value: winter wheat: €16/ha; spring barley: €8.75/ha.

Breakeven area

Based on fungicide and herbicide savings only:

- WW: 128ha with grant; 172ha without grant.
- SB: 230ha with grant; 315ha without grant.

Cost example

Autosteer and section control

