Less is more: precision farming technologies

Precision farming concepts and techniques are applied during the four stages of the crop growth cycle: soil preparation, seeding, crop management, and harvesting.

Soil preparation

Soil preparation is the first step before growing a crop and requires significant inputs of fuel and time. Thanks to precision farming equipment, farmers can use considerably less fuel and time in soil preparation by improving the accuracy, efficiency, and sustainability of the process.

Seeding

Seeding is a critical step whose main aim is achieving a higher yield with less seed.
A successful seeding process implies:

- correct depth: if sown too deep into the soil, roots will not be able to breath; if sown on the surface, birds may damage the seeds;
- proper distance: if plants are overcrowded, they will not get enough water, nutrients, and sunlight; if they are planted too far from each other, valuable land is left unused. Modern precision seeding equipment manages to place the seeds uniformly at proper distances and depths for optimal access to moisture and sunlight. The system can be combined with geo-mapping (a map showing soil density, quality etc.); this ensures that more seeds are planted in soil with favourable growing conditions.

Crop management

Crop management requires the right amount of nutrients, an adequate protection from pests and diseases and the right amounts of water. Key precision applications include:

- crop sensors, automatic wind control, and optimised spreading for precision fertilising;
- satellite steering systems for precision spraying (GPS);
- Subsurface Drip Irrigation (SDI) for precision irrigation.



Harvesting

Until recently, **harvesting** was the most laborious activity of the entire growing season. Today, the task has been taken over by some of the most sophisticated farm machines such as:

- combine harvesters ('combines'), which combine reaping, threshing, and winnowing into one single process. Combines are used to harvest crops such as wheat, oats, rye, barley, corn, soybeans, and linseed;
- forage harvesters ('foragers'), used to chop grass, corn or other plants into small pieces which are then compacted together in a storage silo for fermentation to feed livestock;
- specialist harvesters, tailor-made machines for the automated perfect harvesting of fruits and crops such as potatoes, carrots, sugar beet, grapes, cotton or apples while maintaining the physical integrity of the crop.

overcrowded: *ammassato*
tailor-made: *su misura*

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1 Answer the questions.

1. What can farmers rely on to save fuel and time in soil preparation?
2. What is the risk of sowing seeds too deep into the soil?
3. What is the advantage of sowing seeds uniformly at proper distances and depths?
4. What may GPS be used for?
5. What is a combine harvester?
6. What do specialist harvesters guarantee?

2 Read the text and find the words corresponding to these descriptions.

1. A wide range or expanse of something. .....
2. Blowing away impurities from grain. .....
3. Condensed or diffused liquid. .....
4. Containing too many things. .....
5. Developed to a high degree of complexity. .....
6. Fashioned to a particular taste, purpose or demand. .....
7. The ability to be maintained at a certain rate or level. .....
8. The act of using or spending resources. .....
9. The quality of being whole and complete. .....
10. The quantity produced. .....



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