

Can the precision agriculture improve the farmers income ?.

Interview given to the Magazine Gazeta das Aldeias in 1999

1 - Which is the more precise definition of Precision Agriculture?

The Precision Agriculture is a kind of agriculture that satisfies the following purposes:

- improvement of farmers' incomes, namely the increase of the efficiency in production factors use;
- improvement of the competitiveness, namely for the increase of the quality of the products, he/she wants in hygiene terms wants to feed;
- decrease of environmental hazards.

2 - Which are the necessary elements to do this type of agriculture?

The necessary components for this agriculture type depend on the level that we intend to reach, so we can do a real time precision agriculture or one that use factors and production maps.

The first type, less developed, use income sensors to measure the depth soil, organic matter, level, etc., and modulation equipments that apply the sprays, fertilizers, weeds, etc, according that data, without any operator intervention.

The second type, more developed, has as main component a GPS – Global Position System, different types of sensors to characterize the atmosphere, the plants (including its production), the soil, etc., and a GIS - Geographical Information System.

The picture enclosed gives us an idea of the purposes, equipments evolution and investigation works that allow us to reach the precision agriculture of.

3 - The precision agriculture brings some advantages and disadvantages for the farmers. Which are the main ones?

The mains advantages are related with the possibility of using the right amount of the production factors in the right places. The map factors, including the maps production, will be used to apply the income factors according that data.

In the traditional agriculture the previous aspects are considered in an empiric way what makes the application factors few precise, reducing its production effectiveness and increasing the environmental pollution.

The only precision agriculture disadvantage is its high cost why only with big agriculture areas can be justified.

4 - Which are the main consequences of the traditional agriculture transition to the precision one?

The agriculture precision advantages are concerned, fundamentally, with the decrease of production factors used, namely pesticides and fertilizers, which reduce the environmental impact of the agricultural activity. In terms of costs the explorations with large intensity of use of these equipments get a reduction of that ones.

It can be affirmed that in the traditional agriculture the plots are considered as homogeneous units, therefore treated in an uniform way and, in the precision agriculture the plots are considered as having spatial variation, why needs factors modulation applications.

5 – How many farmers exist in Portugal doing precision agriculture?

I don't know and I think that there isn't any statistics regarding these numbers. It would be interesting that the readers of this magazine, that practice this agriculture type, inform me about it.

6 - Are the portuguese farmers prepared for a more scientific agriculture type?

The use of equipments that use the application modulation in real time doesn't offer any difficulty. For example a sprayer electronic regulation, after the system be established, is quite simple to use, and allows a very good accuracy

Relatively at the highest level of agriculture of precision I think that just a very reduced number of farmers will be prepared to use it; maybe here the service enterprises are the main users of this technology.

7 - To guarantee the success of the precision agriculture it is necessary to go through the advanced technology. Is this type of instruments accessible to the farmers?

If we consider the general level of our farmers' education I would say that the vulgarization of this technology won't be easy, although there is some farmers, especially the more youths, that would not have great difficulty adaptation.

8 - Do the farmers have some type of information concerning this agriculture type?

I think that the majority haven't. Even in the Agricultural Institutions (Ministry of the Agriculture, Universities, etc.) this kind of information is reduced. In a research done in the Internet with the main Portuguese "browsers", I didn't find any "site" with useful information for the farmers.

9 - There are some support program and incentive to the agriculture of precision?

That I know no. This agriculture type, especially in the more developed level, it is still relatively recent why is very little divulged.

10 - When the precision agriculture appeared in Portugal?

The use of equipments with different sensors types and even electronic systems for assembly in it, already has some years. The purchase of the equipment that we have mounted in a sprayer, in 1991, was the first one that were sold in the North of Portugal; in that time I remember that we had some difficulty to put it working because the enterprise that sold it hadn't enough information about it. I remember that the cost of this equipment was higher that the sprayer cost.

11 - Does have the precision agriculture conditions to adapt to the national context and the specific characteristics of the Portuguese agricultural explorations?

In the South of the Country, in that plots with large areas and consequently spatial heterogeneity, there will be a lot of situations where the precision agriculture would be a important tool, because it would allow an appreciable economy of some production factors.

The use of these technologies for dealers would be, in short term, easier to implement, being made the transition for the farmers in a progressive way.

12 - As it is Portugal in relation to the remaining countries of the EC in what concerns to the precision agriculture.

In the EC some Countries have been coming to bet in the agriculture of precision. The most relevant cases are England, Germany, Denmark and Sweden where this type of technologies has been transferring gradually for the farmers. In France, Belgium, Netherlands and Spain the precision agriculture it isn't so developed and there is great differences among them.

In Portugal the Évora University has done some investigation about this subject, like the project (PAMAF 8140) entitled "Contribution for the system dynamic tractor - mobilization equipment optimization" that is an important contribution for the improvement of the performance of the mobilization works, being able to, therefore, be considered with a contribution for the agriculture of precision. UTAD and ESAPL have done some work in sprayer investigation.

13 - Will be the precision agriculture the right way to make Portugal more competitive in EC, which is preparing to enlarge its space to other countries like Polonia.

In the situations where the production costs and environmental pollution are reduced I am sure. The use of more rational production techniques improve the image of our agriculture with all the advantages that result from this.

14 - It is correct to affirm that a new form of doing agriculture will be settle next century?

The evolution in all society activities has been amazing, so the agriculture won't be exception. The agriculture and the industry will be more rationalized to improve the people's life quality.

The Portuguese original version can be consulted in:

[http://home.utad.pt/~fsantos/pub-pdf/GDA99-3077\(18-20\).pdf](http://home.utad.pt/~fsantos/pub-pdf/GDA99-3077(18-20).pdf)