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SWOT ANALYSIS TO HIGHLIGHT CRITICALITIES
AND ASSET IN PRECISION FARMING UPTAKE

Italy (Veneto Region)

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1. SWOT analysis - Italy (Veneto Region)¹

1.1. General information

Veneto agricultural sector, despite many difficulties faced each day, is characterized by one of the highest revenues-generator in Europe. This is due principally by the high specialized farming that is of this region. In fact, Veneto region is characterized by the cultivation of about 77.800 ha of vineyards, 22.500 ha of orchards, 17.000 ha of vegetables and 450.000 ha of extensive crops.

Additionally, the quality of the products is appreciated abroad and imitated all over the world, with a constantly increasing turnover over the last years, capable of creating authentic symbols of the region, such as Prosecco or the renowned Veneto cheeses. Moreover, the Veneto agriculture boasts the best practices, real growth paths within the agricultural sector, intended as producers of foodstuffs and as protagonists in the protection of the environment and promotion of the territory (Statistical report of Veneto Region, 2014).

Future steps will consider the improvement of the agricultural process in the region thanks to the promotion of new technologies able to reduce the production costs and the environmental footprint. These technologies will come from different fields, such as genetic or new production techniques thanks to the introduction of precision farming. With this last regard, the following document will provide a Strengths Weaknesses Opportunities Threats (S.W.O.T.) to highlight criticalities and asset in precision farming uptake.

¹ provided from: CREA – Researcher *Davide Boscaro, Diego Tomasi* (2020)



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1.2. SWOT Overview

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ▪ several agricultural equipment manufacturers and dealers are present ▪ latest technologies are available to the farms ▪ high occurrence of stakeholders could generate a good competition in favour to the development and spread of new technologies ▪ largest farmers generally are interested in new technologies due to their high affinity towards innovations to increase their farm’s sustainability and improve its management (e.g. simplifying bureaucracy, lowering pesticide use, etc.) ▪ educational system teaching PF practices ▪ reduction of environmental footprint ▪ rising of start-up companies dealing with PF services ▪ agricultural fairs, exhibitions and workshops on precision farming 	<ul style="list-style-type: none"> ▪ overall size of farms is generally small ▪ high average age of farmers ▪ cost of PF technologies is too high for small-medium enterprises, not favouring the spread of PF ▪ limited availability of PF sensors’ data for the farmers ▪ high GPRS prices ▪ in hilly zones, with high hand labour demand, mechanization is limited ▪ restricted availability and high price of satellite and GIS data, maps for farmers ▪ farmers are linked to their traditional methods ▪ low salaries, weak education level and missing skilled manpower ▪ missing competence in response to EU calls
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ▪ increase of young farmers with higher education level ▪ rising of start-up companies dealing with PF ▪ research projects conducted by universities and research centres ▪ reduction of environmental footprint ▪ mitigation of negative agronomic effects of climate change ▪ lower use of input materials ▪ less work consuming processes ▪ demand from the consumers of more safety food with a certain origin ▪ support of free availability of satellite and GIS data, maps for farmers ▪ marketing advances of higher food safety (inland and abroad) ▪ water saving irrigation technologies ▪ developments and innovation in IT ▪ rising of start-up companies dealing with PF services 	<ul style="list-style-type: none"> ▪ resistance to PF innovation ▪ uncontrolled failure of field sensors ▪ critical security level of field equipment (sensors, data loggers, solar panels, cables, etc.) ▪ low GPRS performance, communication failures ▪ unexpected data losses ▪ internet attacks ▪ enhancement and extremes of climate change ▪ uncertainty of the market ▪ unwanted spread of sensible data linked to the farmers ▪ crucial changes in policy ▪ missing competence in response to EU calls ▪ cutback in EU sources and diminution of project calls



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1.3. Strengths

In Veneto region, several agricultural equipment manufacturers and dealers are present. The network is great, and latest technologies are available to the farms. This high presence of stakeholders could generate a positive competition in favour to the development and spread of new technologies.

Farmers generally are interested in new technologies due to their high inclination towards innovations able to increase the sustainability of their farm and improve its management (e.g. facilitation of the bureaucracy, reduction of pesticides utilisation). This is supported especially for the speciality-crops (e.g. vineyards, orchards), which deal with higher profitable cultivation and where the impact of the production costs is generally higher. Moreover, Precision farming can be useful in this context due to the possibility of increasing the control and the quality of the production process.

The presence of Agricultural University (Padua) and of well-known research centres in the region is another important factor that favour the educational system towards the teaching of PF practises. In surplus, agricultural fairs, exhibitions and workshops on precision farming are generally performed in several events from these institutions, trying to make more familiar these new practices.

Another important factor is also the current trends about the food production, which sees the demand from the consumers of more safety food with a certain origin. This scenario can favour the adoption of PF thanks to the recent development of traceability solutions (e.g. blockchain), able to track the “cycle-life of the product”.

1.4. Weaknesses

Despite Veneto region is a high-tech farming region, the overall size of the farms is generally small, with a high network of small farms. This aspect is effectively not favourable for the spread of PF, because generally the costs of these technologies is too high respect the return of a small-medium enterprise. In addition, some farming areas are in hilly zones, where most of the labour can be performed only by hand, limiting, de facto, the possibility to mechanize the process.

Consider the EIP measures adopted in the region for the CAP 2014-2020, we state that no direct measures were proposed to the farmers for the utilisation of PF practises. The scenario is also unfavoured



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by the high average age of farmers, which influence negatively their willingness to learn new production techniques.

1.5. Opportunities

Future scenarios for the Veneto farming see several opportunities in case of a higher adaptation of PF. As matter of fact, there are an increase of young farmers which start a new company in this business with the potential inclination towards the use of PF. This is due also because of new farming entrepreneur generally has a background in agricultural sciences. In addition, today there is a new trend in the rising of start-ups companies that deal with PF, highly interested to test their solutions with these “new farmers”.

Considering also the manufacturing sector, the inclusion of PF solution in the production of implements can increase the content of technology of the products with the possibility to open new markets creating new opportunities for the manufacturing enterprises. This possibility is also favoured by the several research projects that have been conducted by Universities and research centres with the aim of increasing the technological contents of the farming sector, which have tested the application of PF practices.

In addition, climate changes are affecting negatively the production of the region, PF is proved as a tool to mitigate the negative agronomic effects caused by adverse weather conditions.

1.6. Threats

Threats in PF uptake considers the possibility that farmers are linked to their traditional methods, which make difficult to ask them for a change in innovation. This aspect is strengthened by the size of the farms, generally not conducted as main activity by the owner, which “favor” a traditional method with a low input of technology, because it is the simplex and the faster adoptable.

All this scenario makes also difficult for the manufactures to invest in the development of new machineries able to comply with the requirement of PF due to the uncertainty of the market. In fact, this



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aspect has generally unfavored the development of “local technologies” by local manufactures promoting the importing of technologies from abroad, especially from outside EU countries.

With the PF data about farms can be more accessible: this technological revolution has to be controlled because of the possibility of spread of sensible data linked to the farmers.