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LIFE Environment and Resource Efficiency

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Report: Economic impact

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Document control sheet

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1. Project economic impact evaluation

The use of the Variable Rate Technology (VRT) in the farm management can provide benefits in comparison to the Uniform Rate Technology* (URT), but several factors and variables should be analyzed to assess the real advantage (Surjandari et al, 2003).

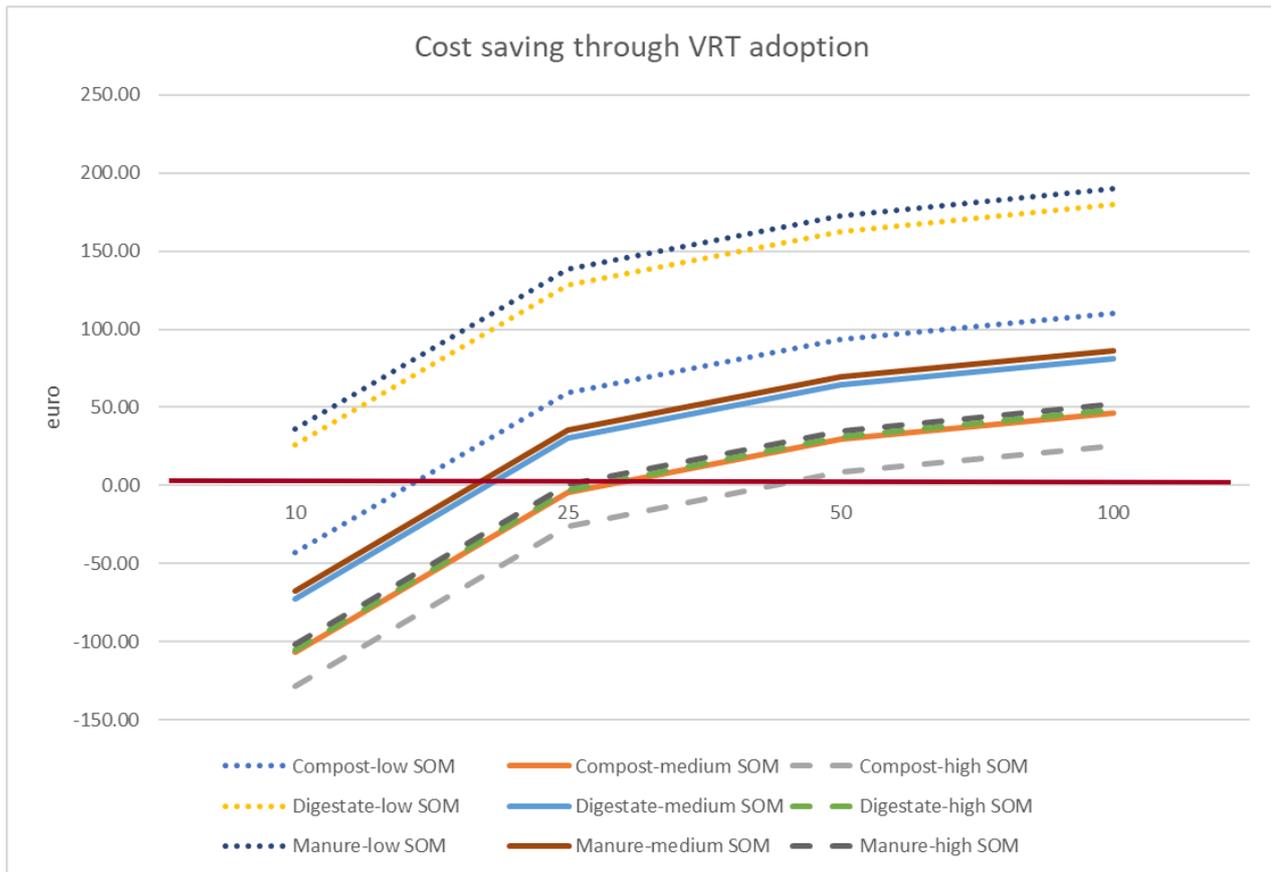
In case of lack of knowledge of the organic matter variability in the vineyard the farmer has to distribute the highest dosage of fertilizers in line with the lowest level. This is the assumption we used to calculate the economic convenience to adopt the VRT, based on operational evidence and exchange with the wineries involved in the project.

Starting from data collected in the farms (see Annex - Testing sites preliminary data), we have calculated the average costs of the VRT in comparison with URT for the different matrixes (compost, solid digestate and manure) and we have assessed that VRT can contribute to reduce the costs due to the lower consumption of fertilizers, transport and oil consumption costs. But the adoption of VRT implies higher investment costs due to the purchase of the innovative machinery. We have compared the operational costs with the VRT machinery mortgage costs. It is important to underline that the calculation is based assuming that the cost for the technology of VRT for the organic fertilisation is equal to 40.000 € (28.000 for the spreader and 12.000 for the MECS WOOD sensor). The cost for a URT spreader is assumed equal to 15.000 €.

Furthermore, we have identified different farm case, according with the average content in organic matter, as described in the table:

Average soil organic matter content	Use of VRT machine
<1%	Every year
1%<SOM<2%	Once every two years
>2%	Once every Three years
Farm size	
10 hectares	
25 hectares	
50 hectares	
100 hectares	

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The red line shows the limit above which the farm can benefit from the use of VRT. The different lines refer to the different matrixes at diverse SOM levels.

According with our results, the adoption of the VRT, linked to the purchase of the VRT machine, is suitable for farms above 40 ha. Below this threshold the advantage is variable depending on the matrix used and the average SOM content.

2. Economic impact calculator

Moreover, a simple calculator (see Annex – Vitisom Economic Impact Calculator) which can evaluate the economic benefit for the specific farm has been developed with the aim to support viticultural sector in the evaluation of possible advantages deriving from VRT adoption for the organic fertilisation of vineyard. Indicating the total farm surface (in hectares), the type of matrix and the amount of organic matter, the user can calculate the economic benefit (or loss).

This calculator is also available in the LIFE VITISOM web site <https://www.lifevitisom.com/documenti>.

An example of calculation is shown below:

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SURFACE (ha)	MATRIX	SOM
20	manure ▼	low ▼
		Run
Economic benefit (€)		119.00
<p>Instructions: 1) insert le farm surface in the blue cell (A2), 2) select the matrix, 3) select the amount of organic matter , 4) click Run button. In the lower left cell the economic benefit (in green) or loss (in red) will be shown.</p>		
<p>For details about the input data of this software, refer to the "Economic impact" document or write to ighiglieno.vitisom@gmail.com</p>		

Surjandari I., Batte M.T., Miranda M.J. (2003). An economic analysis of variable rate technology. MAKARA, TEKNOLOGI, VOL. 7, NO. 3, PP. 125-131.