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PYTHON STATISTICAL DECISION-MAKING ASSISTANT PLUG-IN FOR QGIS USING
COPERNICUS DATA TO MINIMIZE AGRICULTURAL OVERPRODUCTION.**Abstract**

Agricultural surplus, when not exported, can be a source of billionaire losses. Despite the fact that certain products can be stored, excessive production may lower the market prices, making it difficult for farmers to make a profit out of their work. Furthermore, overproduction policies are devastating for soils and contribute to already existing major problems, such as the greenhouse effect.

In order to minimize surplus disposal, an algorithm was developed, using EU data from COPERNICUS, Python and QGIS, an open-source geospatial analysis software, thus proposing an optimized CAP quota system in order to reach a target production. This target production can, in turn, be predicted periodically, after taking into account economical and climatological indicators.

To develop the algorithm and establish the optimal quota, the production of EU main crops was analyzed during the last years for main european producer countries. The remnant commodities were calculated after subtracting local consumption and export, so as to observe the tendencies for main countries and products. That allowed to establish the modifications that ought to be made in the CAP quota policies in order to reduce overproduction. Afterwards, several climatic indicators, obtained via COPERNICUS data store, were analyzed, such as maximum, mean and minimum temperature, pressure, soil moisture, land surface elevation, heat waves, cold spells, atmospheric variables on surface, near-surface, height levels, agroclimatic and agrometeorological indicators, to statistically predict the amount of crops to be planted in order to produce a target amount of commodities, by product and country. The employment of this algorithm as a decision-making tool would improve market stability and contribute to a cleaner production. In the particular case of using COPERNICUS data, it can be used to improve the PAC Quota policies in the EU. Given its versatility, it could be used in many geographical locations and climates, just by changing certain conditions and parameters.