

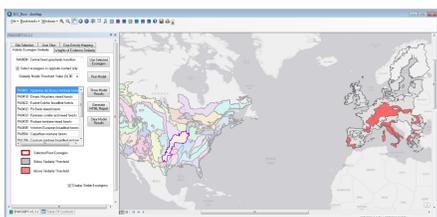
Introduction

OECD's ENASGIPS tool is a module in the new harmonized terrestrial field dissipation guidelines (as of January 2016). It is a GIS based application that enables users to quickly determine if test sites located in a particular ecoregion have similar ecoregions existing in Europe or North America. By demonstrating similarity, it may not be required to conduct additional studies to achieve registration. ENASGIPS uses long-term annual total rainfall, average precipitation, soil texture, soil pH and soil organic matter to calculate a similarity index. Since not all previously listed parameters may influence chemical behaviors, it has been successfully argued for the inclusion of a weight-of-evidence approach in which the user selects just the parameters that affect their chemical. The selection of just a few variables has a significant impact on the results defining the conceptual model of the pesticide's behavior. Therefore, variable selection is critical. ENASGIPS can also be used by non-GIS experts to quickly select locations based on given selection criteria. The site selection module in ENASGIPS will do this. Executing the tool is easy, however, selecting the ranges to determine which areas are applicable. The input ranges change based on the question asked and how strict a user wants to be.

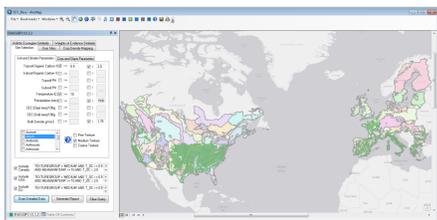
OECD ENASGIPS Model

The Ecoregion Crosswalk consists of a GIS-based model, ENASGIPS (Europe-North America Soil Geographic Information for Pesticide Studies) with the following components:

A tool for identifying ecoregions with similar soil and climate using a ecoregion similarity model

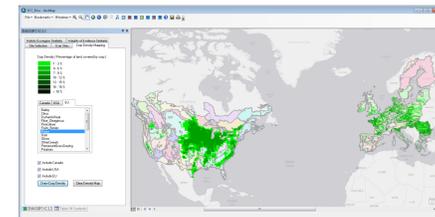


A tool for site selection based on user defined soil, climate and crop criteria

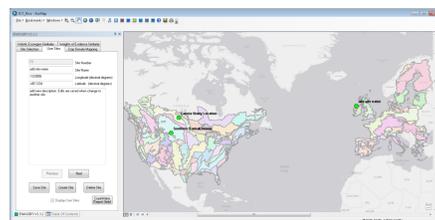


A geographic database of soil, climate and crop information

A tool for displaying crop density (percentage of land covered by crop) for Canada, United States and the European Union



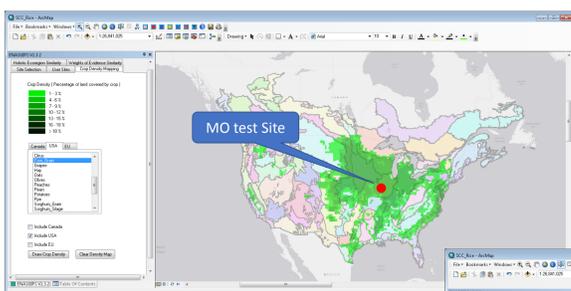
A tool for identifying field site locations based on coordinates



ENASGIPS Model Use

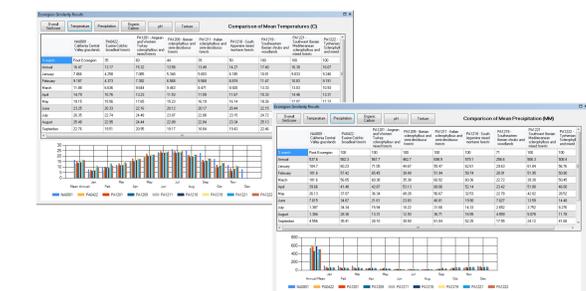
ENASGIPS can help risk managers determine which ecoregions in Europe have similar conditions as test sites in North America and potentially limiting the number of field trials to be conducted in Europe. An example is shown for maize.

1. Crop density map for maize in the US with corn TFD test site.

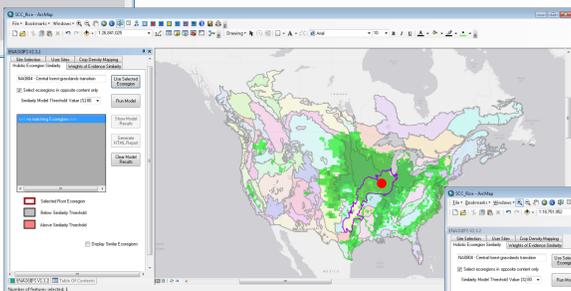


Selecting TFD test locations

- The test location has significant impact in the results from the ENASGIPS model.
- Some ecoregions (e.g. California Central Valley), provide a broad coverage for many different crops and ecoregion, whereas test sites in the southeastern US, typically have no matching EU ecoregions.



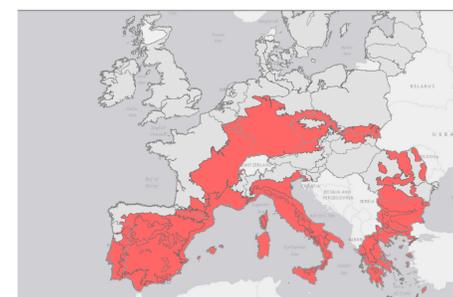
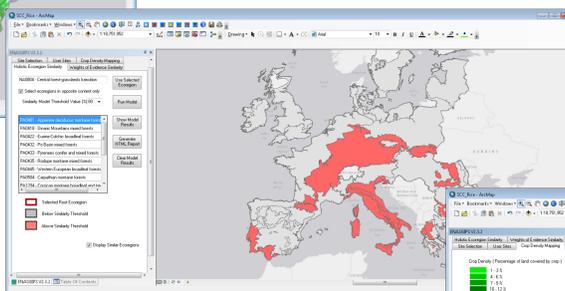
2. Select the ecoregion overlapping the test site and set the model assessment mode: holistic or weights-of-evidence.



Using different assessment modes

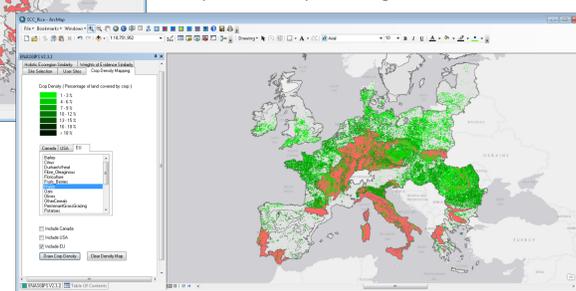
- The ecoregion similarity model can be executed in a holistic mode or a weights-of-evidence mode. Using the WOE mode, only variables that affect the fate of the plant protection product are considered.
- Variables that users can select include temperature, precipitation, pH, organic carbon and soil texture
- This may result in additional or even fewer matches depending on the PPP.

3a. The ecoregion similarity model determines which ecoregion in Europe matches the US ecoregion. Below the results are shown for a holistic assessment.



3b. Using the weight-of evidence mode, additional ecoregions match the US test site. Precipitation was not considered.

4. The similar ecoregions cover a part of European maize producing areas.



Model Results

- In addition to maps, several charts and reports are generated that provide additional insight in the results
- At times, the results are driven by just a few of the variables

Conclusions

- ENASGIPS is an easy to use application that can quickly provide insight if TFD test sites have matching ecoregions in North America or Europe
 - Crosswalk results (matching ecoregions) are frequently driven by a few of the variables used in the ecoregion similarity model
- Weights-of-evidence methodology provides additional flexibility to determine if a matching ecoregion exists based on the factors that affect a products e-fate.
 - The ENASGIPS application is flexible, specifically if the user is familiar with the additional ArcGIS functionality.
 - Some of the underlying soils data and crop data is incomplete and standardization will improve usability of the tool