



Marginal lands for Growing Industrial Crops

D1.7. – Update of MAGIC-CROPS by including the information gathered in WPs 3-5

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Type

R Document, report

DEM Demonstrator, pilot, prototype

DEC Websites, patent fillings, videos, etc.

OTHER

Dissemination Level

PU Public

CO Confidential, only for members of the consortium (including the Commission Services)



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Executive summary

The MAGIC-CROPS database is an easy-to-use tool describing 37 promising species suited to marginal land as defined in the JRC's report (EUR 23412 EN - 2008 and later modifications). The present deliverable is an updated version of D1.4 in which only 12 crops were included (switchgrass, camelina, sugar beet, willow, lupin, wild sugarcane, giant reed, Siberian elm, Spanish broom, tall wheatgrass, cardoon, lavender), otherwise in the present version additional 21 crops (sorghum, castor bean, miscanthus, crambe, amaranth, sunflower, Ethiopian mustard, flax, reed canary grass, safflower, nettle, pennycress, poplar, black locust, eucalyptus, wild tobacco, saltbush, Jerusalem artichoke, kenaf, sunn hemp, and cape spurge/euphorbia) are included for a total of 33. Furthermore, for crop scores, data derived, mainly from WP4 trials, have been used to update the values. The complete final version of the MAGIC-CROPS database will be included in D1.9 (M48) and contemporaneously uploaded on the MAGIC project website.

1 Introduction

This updated version of the MAGIC-CROPS database (2nd version) includes additional 21 crops to the ones reported in the preliminary version of D1.4 (1st version). Thus, in the 2nd version of MAGIC-DB a total number of 33 industrial crops are being included (<https://iiasa.shinyapps.io/magic/>); 9 of them have not all the data and scores reported yet.

Furthermore, a thorough revision of already included data/information have been carried out by the MAGIC partners, together with an update of the given scores for crop suitability with respect to marginality factors. Data generated within WP4 have been also integrated in the present update.

In particular, since contaminated land is not included in the JRC's report (EUR 23412 EN - 2008 and later modifications), but it has been included as a marginality factor in the MAGIC project, in D1.7 preliminary values for some selected crops, in response to specific heavy metal contamination (namely, copper Cd, lead Pb, nickel Ni, and zinc Zn), are included, as four new columns, keeping the column "contaminated land" as the one reporting data available on the literature.

The new data/score were generated in WP4, task 4.3.2. Since in the above mentioned pot trials (task 4.3.2) on heavy metal contaminated soils, two different levels of contamination have been tested, the scores in D1.7 for the selected crops are referring to the highest contamination level, which correspond to double the EU limit for the tested heavy metals.

In the annex attached all the data included in the MAGIC-DB is presented. The additional industrial crops included in the current version of the database are: sorghum, castor bean, miscanthus, crambe, amaranth, sunflower, Ethiopian mustard, flax, reed canary grass, safflower, nettle, pennycress, poplar, black locust, eucalyptus, wild tobacco, saltbush, Jerusalem artichoke, kenaf, sunn hemp, and cape spurge/euphorbia. In the 1st version the industrial crops that had been included were: switchgrass, camelina, sugar beet, willow, lupin, wild sugarcane, giant reed, Siberian elm, Spanish broom, tall wheatgrass, cardoon, and lavender.

For the above mentioned crops the data included in **MAGIC DB** is listed below (see annex):

- ▶ **short description of the crop** (Latin name, common day and family are included),
- ▶ **the performance of the crops on biophysical constraints** included in the JRC report (low temperature, dryness, soil moisture, soil texture, soil drainage, shallow rooting depth, sodicity, salinity, acidity and steep slope)
- ▶ **cultivation data** [propagation method, availability of genetic material, cardinal temp, cycle (annual/perennial), plant density (pt/m²), fertilization (kg/ha NPK), harvesting period, harvesting method, potential production and main product]

Last but not least, the data of **MAGIC DB** have been included in the project website (www.magic-h2020.eu) under MAGIC DB (<https://iiasa.shinyapps.io/magic/>).

Deliverable 1.7

Title: Update of MAGIC-CROPS by including the information gathered in WPs 3-5



2 Updated version of MAGIC-CROPS Database

Please see project website <https://iiasa.shinyapps.io/magic>