Documenting Dutch *in situ* CWR populations in EURISCO

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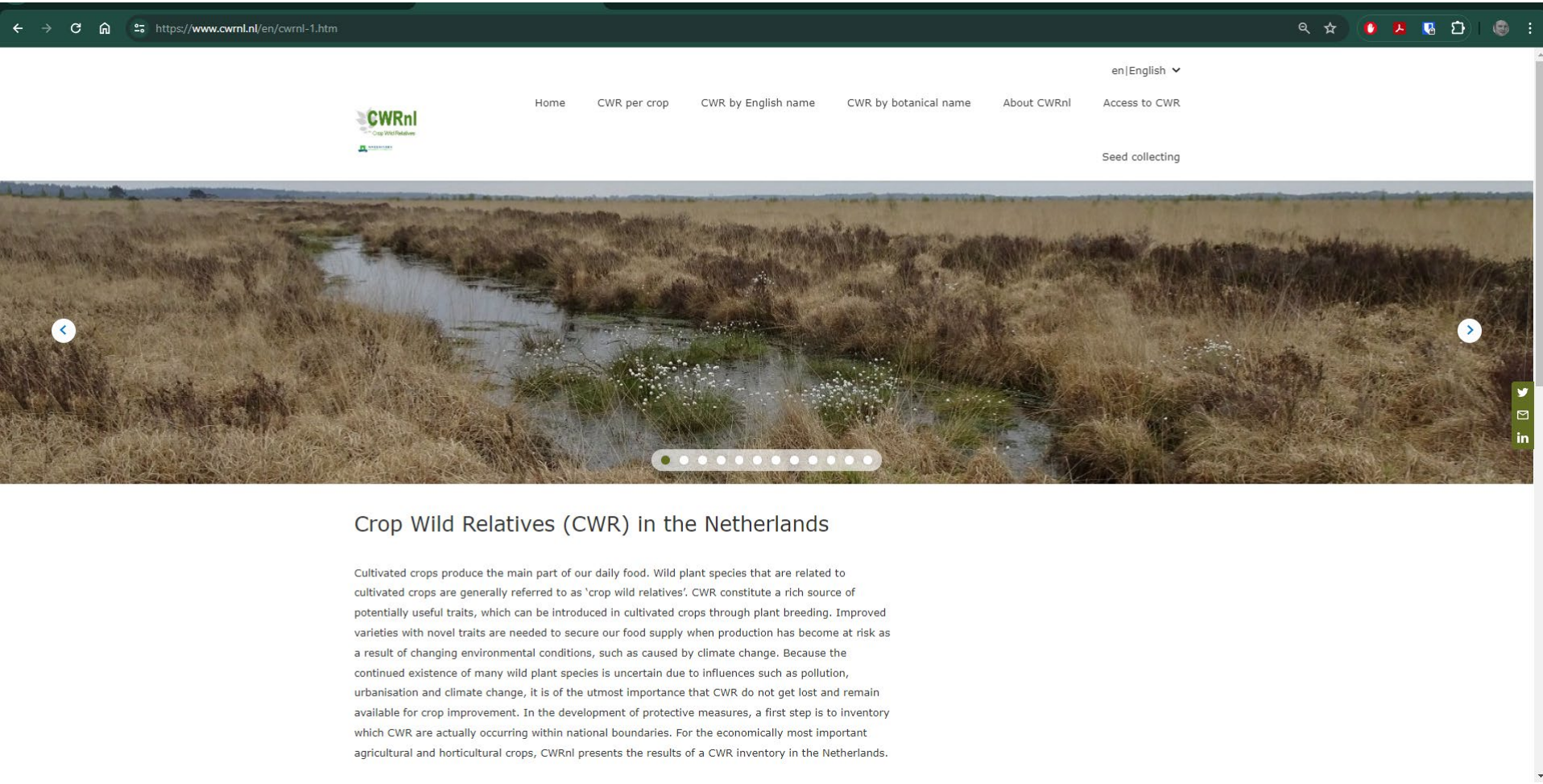
ECPGR Project Meeting, Sadovo (on-line participation)
June 18th, 2024

Dutch *in situ* CWR populations in EURISCO

- summary
  - CWR-NI for The Netherlands was compiled and uploaded to EURISCO
    - CWR-NI: 1912 records including 298 populations of threatened populations and 1614 occurrences of common species in flora districts
    - file created in Excel, complying to specifications of the EURISCO upload format, made available to EURISCO
  - potential users can find out about occurrence of CWR in NL and find out about availability

Dutch *in situ* CWR populations in EURISCO



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Dutch *in situ* CWR populations in EURISCO

https://www.cwrnl.nl/en/CWRnl-1/CWRpercrop/Brassica-rapa-L.-1.htm

en|English

CWRnl

Home | CWR per crop | CWR by English name | CWR by botanical name | About CWRnl | Access to CWR | Seed collecting

Article

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ARTICLE

Brassica rapa L.

Field mustard

source: Teun Spaans (2004), Wikimedia Commons (GFDL license)

Nomenclature

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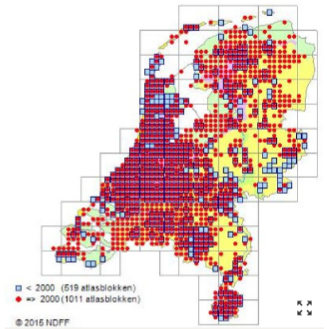
www.cwrnl.nl

Crop relationship

Turnip	primary genepool
Cabbage	secondary genepool
Ethiopian cabbage	secondary genepool
Rapeseed	secondary genepool
Perennial wall rocket	secondary genepool
Black mustard	tertiary genepool
Ethiopian kale	tertiary genepool
Mustard	tertiary genepool
Radish	tertiary genepool
Salad rocket	tertiary genepool
White mustard	tertiary genepool



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Legend distribution maps

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Dutch *in situ* CWR populations in EURISCO

- identify priority taxa and populations
  - priority taxa
    - species selected on well defined criteria
    - priorities determined based on niche modelling and climate change scenarios
  - distribution based on existing flora and databases
  - common CWR species were added based on their occurrence in 'flora districts'
    - NL is divided in 15 flora districts with similar eco-geography and associated floras

Dutch *in situ* CWR populations in EURISCO

Biological Conservation 216 (2017) 123–139

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/bioc

Inventory and prioritization for the conservation of crop wi The Netherlands under climate change

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ARTICLE INFO

Keywords:
Climate change
Crop wild relatives
Genetic resources conservation
Nature reserves
Red list species

ABSTRACT

Crop-related wild plant species are a rich source of genetic d for the development of varieties with novel traits. However, gene banks, while their continued survival *in situ* is by no me inventory relevant taxa and to assess their threat levels for effects of climate change, and applied it to crop wild relative wild relatives of economically important agricultural and h included in the Dutch red list of plant species. The group o prioritize species for conservation. Based on recent distributic of at least 50 individuals varied strongly among the red list were found to be located in protected areas. Furthermore, nic of climate change on the future distribution of the red list tribution area for the majority of species, although also po several species. Similar patterns of change were observed wh the study were used to prioritize the conservation of crop w

1. Introduction

Crop wild relatives (CWR) are wild plant taxa related to cultivated species, and hence form a potential source of genetic diversity for in gene banks (Castañed This under-representatio while their survival solel Union, a system of cons

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Global Ecology and Conservation 23 (2020) e01054

Contents lists available at ScienceDirect

Global Ecology and Conservation

journal homepage: http://www.elsevier.com/locate/gecco

Original Research Article

Effects of climate change on the distribution of crop wild relatives in the Netherlands in relation to conservation status and ecotope variation

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ARTICLE INFO

Article history:
Received 30 September 2019
Received in revised form 9 April 2020
Accepted 9 April 2020

Keywords:
Climate change
Conservation
Crop wild relatives
Ecological variation
Species distribution

ABSTRACT

Crop wild relatives (CWR) are wild plant taxa that are genetically related to a cultivated species and are considered rich sources of useful traits for crop improvement. CWR are generally underrepresented in genebanks, while their survival in nature is not guaranteed. Inventories and risk analyses are needed to prioritize CWR for conservation in order to ensure that they remain available for utilization. Here the effects of climate change on the distribution of 214 CWR in the Netherlands are predicted by ecological niche modelling and related to data on IUCN conservation status and variation in key ecological habitat factors. It is shown that climate change is expected to affect red list species as well as species that currently are of least concern. Particularly worrisome is the finding that already critically endangered CWR show the largest expected loss of distribution area. In general, reduced distribution areas show a geographical shift to more northern locations in the Netherlands. No clear relationship is found between changes in distribution and the habitat characteristics vegetation structure, nutrient level, moisture condition, salinity and acidity. A moderate positive correlation is observed between ecological amplitude and tolerance level to climatic change. Study results are used in developing strategies to ensure that Dutch CWR remain available for utilization.

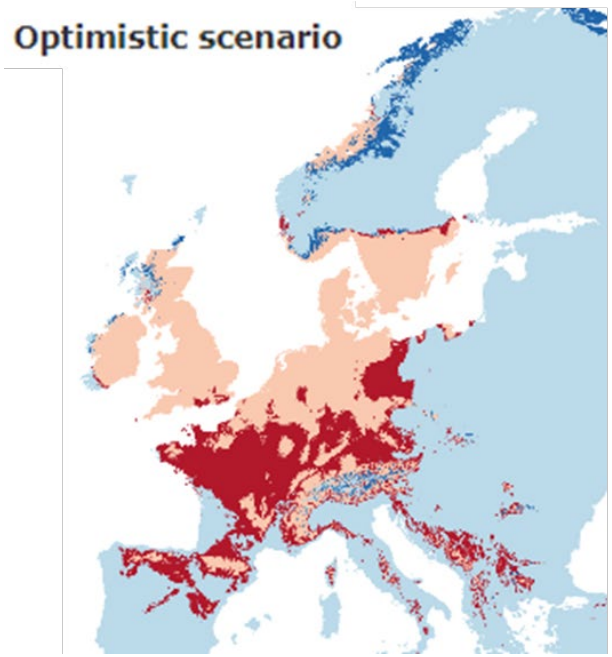
1. Introduction

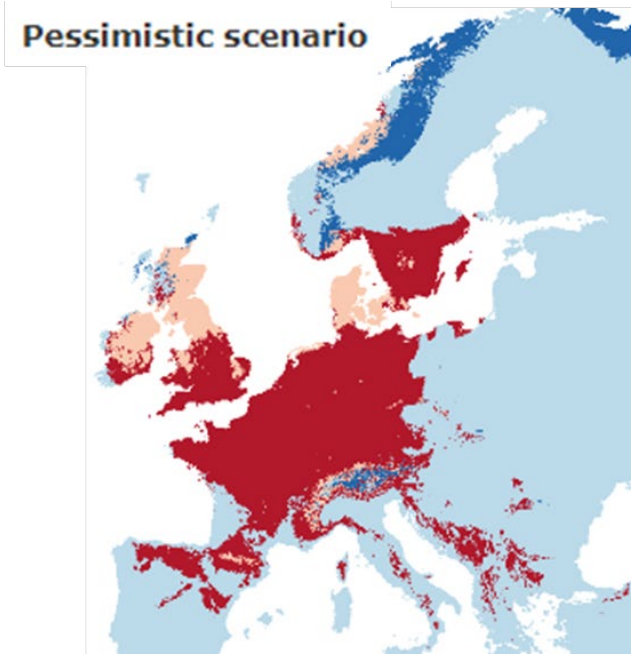
The gene pools of many cultivated crops harbour wild species that to a greater or lesser extent can be crossed with the crop

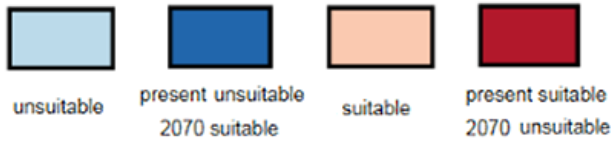
Dutch *in situ* CWR populations in EURISCO

results niche modelling *Blitum* (syn. *Chenopodium*) *bonus-henricus* under two climate change scenario's

Good King Henry







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Dutch *in situ* CWR populations in EURISCO

- prepare national inventory structure
  - based on the 'Principles for the Inclusion of CWR Data in EURISCO'
    - 26 descriptors were selected for the NI-CWR
      - POPID, TAXONID, FAMILY, GENUS, SPECIES, SPAUTHOR, SUBTAXA, SUBTAUTH, USE_VALUE, RELATEDCROP, GENEPOOL, NATIONAL_CAT, LEGSTATUS, OBSDATE, SAMPSTAT, MNGINSTCODE, MNGINSTNAME, LIAISONCODE, LIAISONNAME, OTHERNUMB, ORIGCTY, FLORADISTRICT, OCCURSITE, DECLATITUDE, DECLONGITUDE and COORDUNCERT

Dutch *in situ* CWR populations in EURISCO

- organize network of data providers
  - not necessary for this project
  - in other CGN-project
    - awareness raising amongst nature conservation organization regarding CWR and how to deal with them
    - drafting MoU for collecting
    - prepare for requests from users

Dutch *in situ* CWR populations in EURISCO

- collect and organize data according to the agreed principles and data exchange format
  - based on the already collected data
    - 298 records about 'threatened' CWR populations
    - occurrence of other 170 CWR species in 15 flora districts was checked, resulting in 1614 records
  - population IDs were given
    - 'NLDCWR' followed by a four-digit sequential number
  - simple Excel functions to create EURISCO upload
    - not sharing exact locations of threatened species
    - provide centre of flora districts with corresponding uncertainties covering entire district

Dutch *in situ* CWR populations in EURISCO

the 15 Dutch 'flora districts'

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Dutch *in situ* CWR populations in EURISCO

part of the Dutch CWR EURISCO upload file showing recorords with common species (in yellow) and 'threatened' CWR populations (in green)

NICO	P	INS	INSTNAM	ACCNUMB	LIAISONCODI	LIAISONNAI	GENUS	SPECIES	SPAUTI	SU	SL	ACQDATE	ORIGCT	COLLSITE	ECLATITUD	CLONGITU	RUNCERT	ELEVA
NLD			DUMMY	NLDCWR0144	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict drents	52.923	6.560	40000	
NLD			DUMMY	NLDCWR0145	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict estuariën	51.561	3.863	30000	
NLD			DUMMY	NLDCWR0146	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict fluviatiel	51.902	5.605	70000	
NLD			DUMMY	NLDCWR0147	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict gelders	52.195	6.109	60000	
NLD			DUMMY	NLDCWR0148	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict ijselmeerpolders	52.509	5.556	50000	
NLD			DUMMY	NLDCWR0149	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict kempens	51.538	5.263	60000	
NLD			DUMMY	NLDCWR0150	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict laagveen	52.480	5.095	90000	
NLD			DUMMY	NLDCWR0151	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict noordelijk klei	52.321	5.758	70000	
NLD			DUMMY	NLDCWR0152	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict renodunaal	52.230	4.420	40000	
NLD			DUMMY	NLDCWR0153	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict subcentreuroop	51.900	6.220	70000	
NLD			DUMMY	NLDCWR0154	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict urbaan	52.100	5.100	160000	
NLD			DUMMY	NLDCWR0155	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict vlaams	52.221	3.862	30000	
NLD			DUMMY	NLDCWR0156	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict wadden	53.418	5.385	60000	
NLD			DUMMY	NLDCWR0157	NLD037	CGN, Wage	Anthriscus	sylvestris	(L.) Hof				NLD	floradistrict zuid-limburg	50.877	5.857	17000	
NLD			DUMMY	NLDCWR0158	NLD037	CGN, Wage	Apium	graveolens	L.			20210515	NLD	floradistrict estuariën, location: Braakman Noord				
NLD			DUMMY	NLDCWR0159	NLD037	CGN, Wage	Apium	graveolens	L.			20190729	NLD	floradistrict estuariën, location: Sint Maartensdijk, Pluimpot				
NLD			DUMMY	NLDCWR0160	NLD037	CGN, Wage	Apium	graveolens	L.			20160609	NLD	floradistrict estuariën, location: Terneuzen, Kanaal van Gent naar Ter				
NLD			DUMMY	NLDCWR0161	NLD037	CGN, Wage	Apium	graveolens	L.			20160408	NLD	floradistrict noordelijk klei, location: Makkumer Zuidwaard				

Readme | EURISCO Upload | EURISCO Descriptors

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Dutch *in situ* CWR populations in EURISCO

- provide the data to EURISCO
  - CGN offered the data to EURISCO to test the new functionalities
  - now: 1912 records are part of EURISCO

Dutch *in situ* CWR populations in EURISCO

- observations / recommendations
  - conservation and access are separate issues
    - NI-CWR is made listing CWR populations and details
      - for internal use crating overview of *status quo*
    - upload to EURISCO
      - possibly a selection of the NI-CWR
      - for potential access
  - local CWR approach will determine details of creating an overview of (potentially) accessible CWR population
    - no standardization is needed
  - EURISCO can give the exposure

Thank you for your attention !