18th European Weed Research Society Symposium

EWRS 2018

17-21 June 2018
Ljubljana, Slovenia

New approaches for smarter weed management

Book of Abstracts

www.ewrs2018.org

18th European Weed Research Society Symposium

EWRS 2018

17-21 June 2018
Ljubljana, Slovenia

New approaches for smarter weed management

Book of Abstracts

www.ewrs2018.org

–

Organiser
Kmetijski inštitut Slovenije (KIS) – Agricultural Institute of Slovenia, Hacquetova ulica 17, 1000 Ljubljana, Slovenija

Editor
Andrej Simončič

Published by
Kmetijski inštitut Slovenije, 2018

The publication is published e-only – http://www.ewrs.org

Kataložni zapis o publikaciji (CIP) pripravili v Narodni in univerzitetni knjižnici v Ljubljani
COBISS.SI-ID=295336960
ISBN 978-961-6998-21-5 (pdf)

The response of weed and crop species to shading: measurement and prediction from traits

Nathalie Colbach[1], François Dugué[1], Antoine Gardarin[2], Florence Strbik[1], Nicolas Munier-Jolain[1], Delphine Moreau[1]
[1]INRA, DIJON, France
[2]INRA, Agronomie, THIVERVAL-GRIGNON, France

Crops often compete with weeds for light, and choosing competitive crop species is a major lever for managing weeds. The present study aimed to (1) measure the range of species parameters that drive light competition in contrasting crop and weed species of temperate European arable crops, (2) relate the parameter values which are difficult to measure to species traits that are easier to access, by establishing trait-parameter relationships, (3) integrate the measured parameter values into FlorSys which simulates weed dynamics and crop canopy growth in virtual fields over the years with a daily time step, and (4) run simulations to investigate which crop and weed parameters are linked to weed harmfulness for crop production. 33 weed species and 25 crop species were investigated. Parameters driving initial growth were measured in optimal light and nutrient conditions in a greenhouse with automatic non-destructive measurements. Parameters describing potential morphology in unshaded conditions were measured on plants grown in optimal light and nutrient conditions in garden plots and harvested at 4-5 stages during plant cycle. Shading response was measured by comparing potential morphology to that of plants grown under shading nets in these same gardens. All parameters could be predicted from seed (weight, lipid content...), plant (epigeal vs hypogeal growth, form...) and general traits (clade, base temperature, plant lifespan, legume vs non-legume...). Crop species that decreased weed impact the most grew fast after emergence (high relative growth rate RGR), had thinner larger leaves (high specific leaf area SLA), were wide rather than tall, and allocated biomass preferentially to stems vs leaves. Harmful weed species presented a large leaf area at emergence and strongly responded to shade, by increasing their height, leaf biomass and area per plant biomass unit.

Funding: INRA, CoSAC project (ANR-15-CE18-0007), ReMIX (EU-H2020-727217)

18th European Weed Research Society Symposium

EWRS 2018

June 17-21, 2018
Ljubljana, Slovenia