



Antworten auf die globale Resistenzsituation



Dr. Anita Küpper
Weed Resistance Research



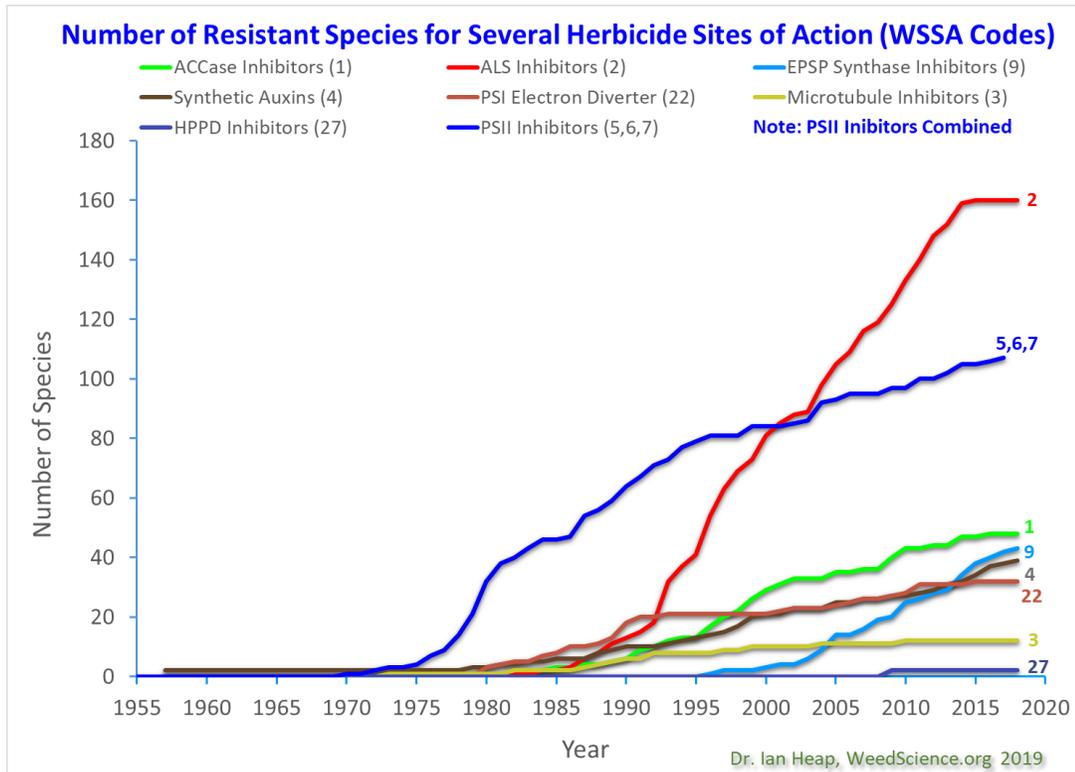
WEED
RESISTANCE
COMPETENCE CENTER

/// Pressegespräch /// August 2020



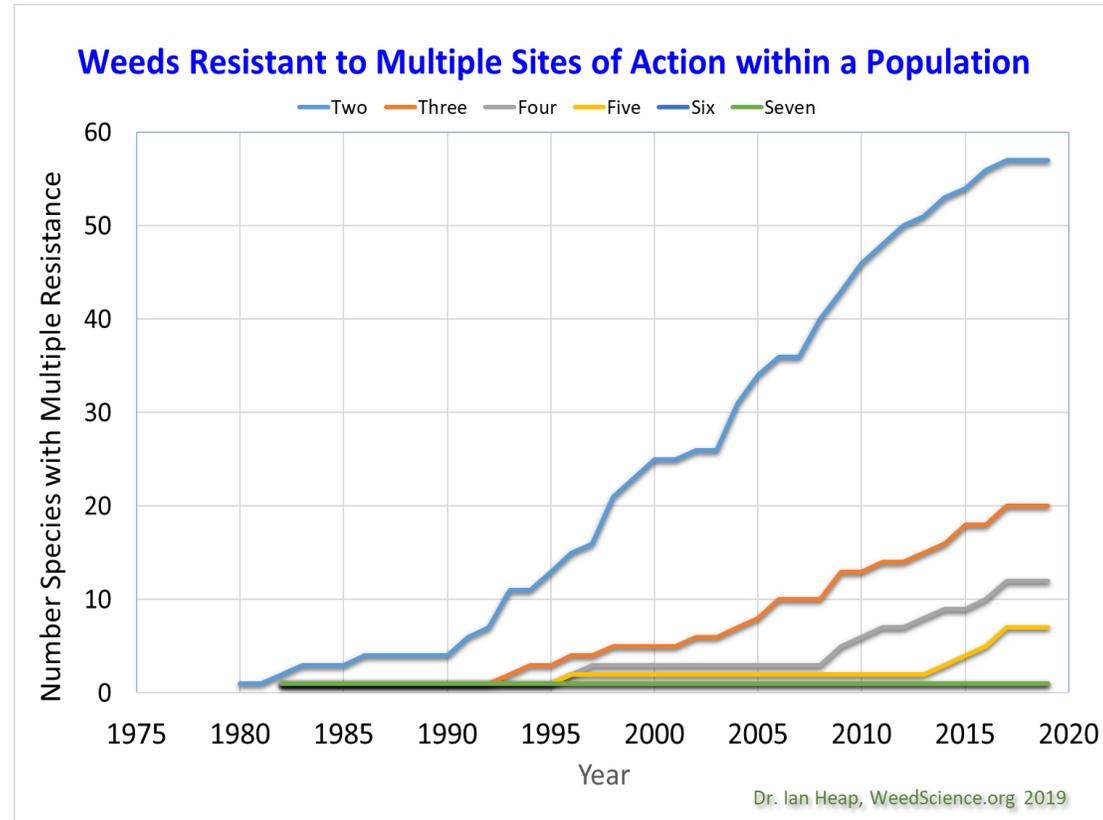


Herbicide resistance cases are steadily increasing





Weeds stack herbicide resistance mechanisms

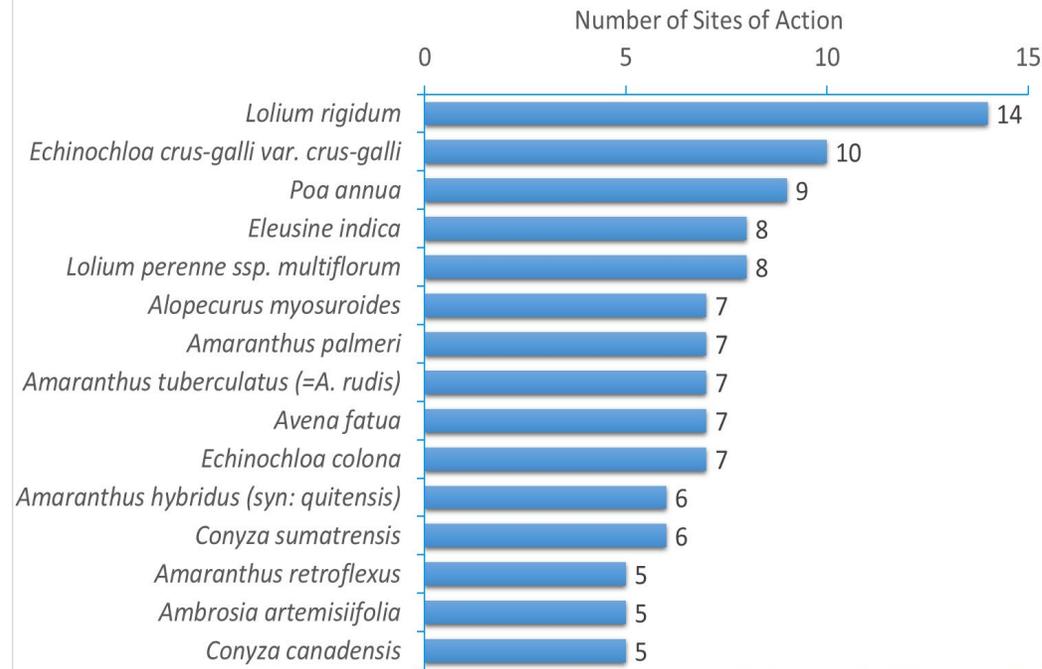




Top 15 of the words weeds

There are currently **262** different weeds that evolved herbicide resistance.
Weeds evolved resistance to **23 out of 26 known modes of action** and **167 different herbicides**.

Weed Species Resistance to Multiple Herbicide Sites of Action



Dr. Ian Heap, WeedScience.org 2019

EXAMPLE OF TROUBLESOME WEED: PALMER AMARANTH



CAN GROW UP TO **4 METERS** IN **1 SEASON**

UP TO **5 CM** GROWTH PER DAY

EACH PLANT CAN PRODUCE UP TO **1.8 MILLION SEEDS** IN ONE SEASON



IN THE PAST **15 YEARS**, GLOBAL WEED RESISTANCE HAS INCREASED BY **60%**

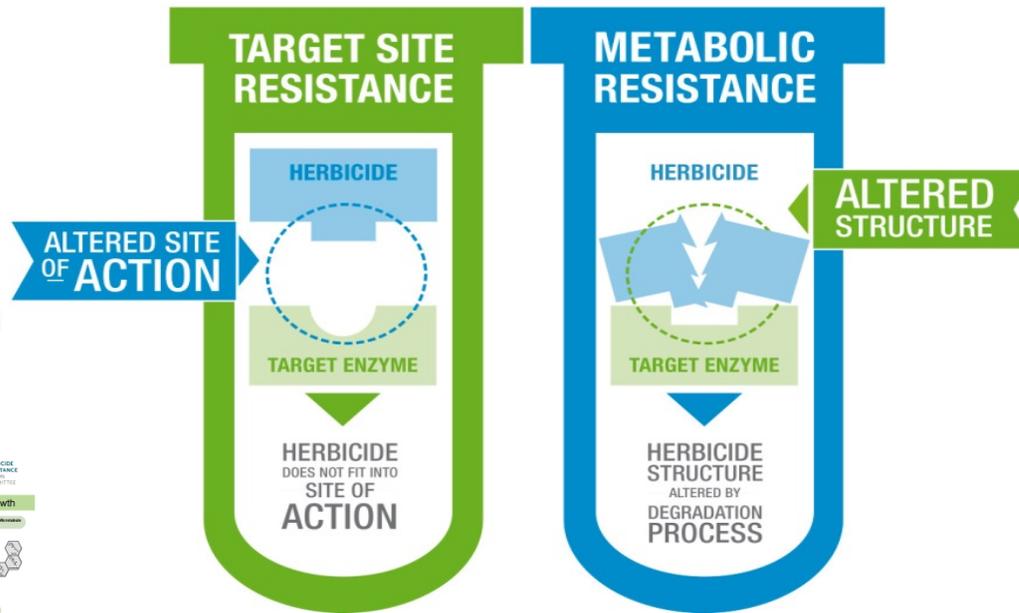
Source: Heap, I., The International Survey of Herbicide Resistant Weeds



There are two major types of resistance

Site of action specific

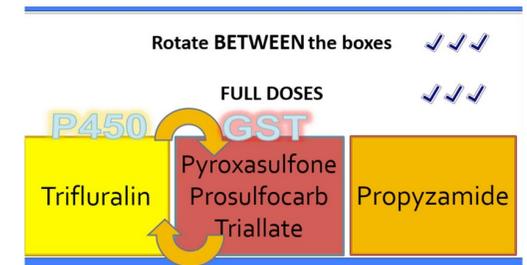
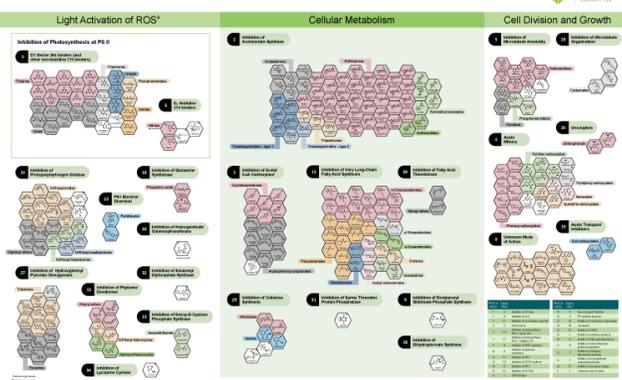
-> change mode of action



Site of action un-specific

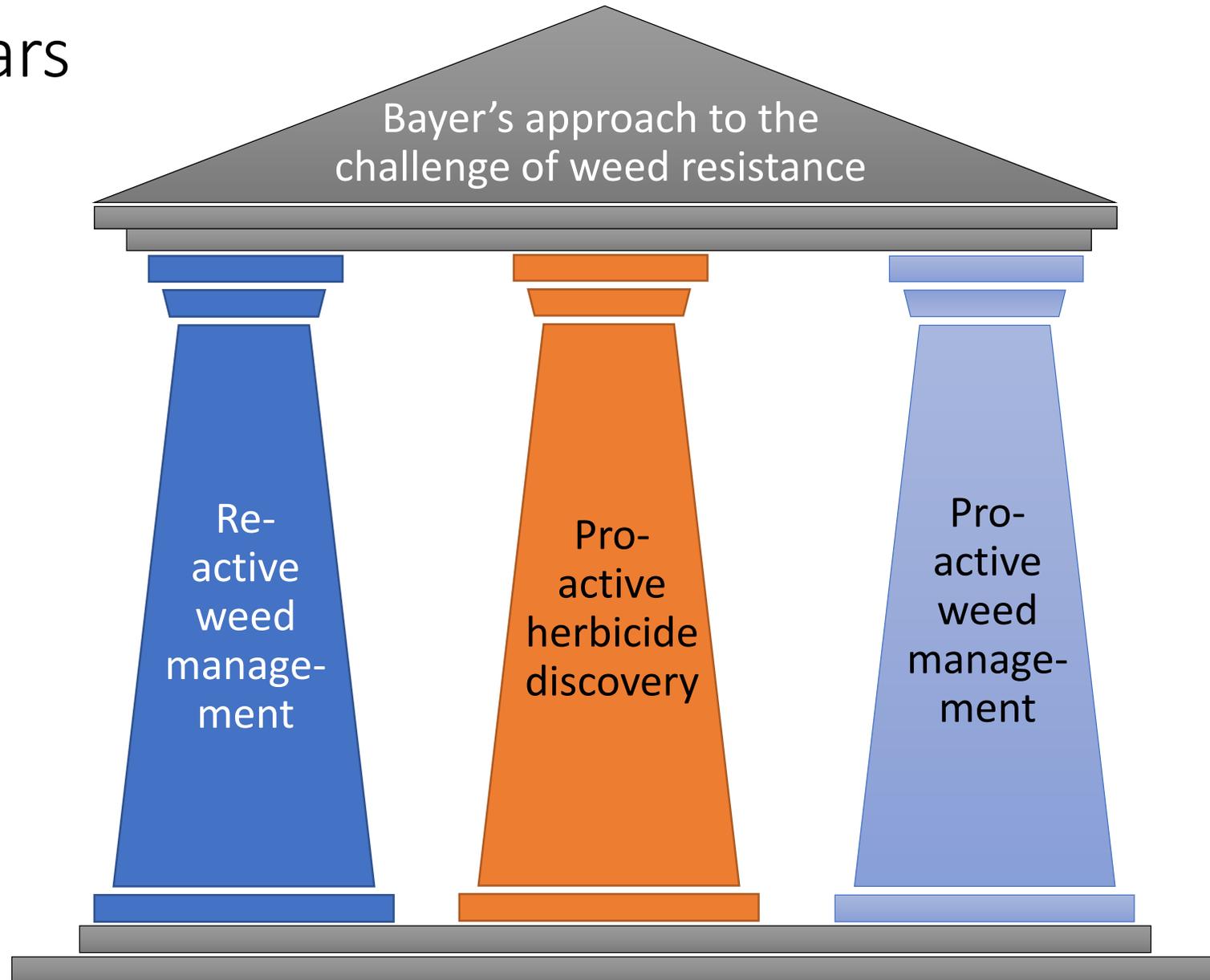
-> change to different chemical structure (can be within the same mode of action)

HRAC Mode of Action Classification 2020





Three pillars





1st pillar: Manage existing resistance cases



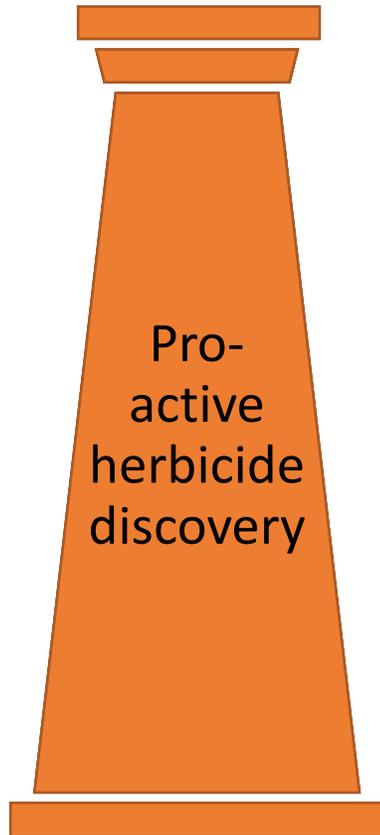
- Weed resistance diagnostics
 - Complaint management
 - Characterize resistant lines (WRCC is the only testing center which covers both target site and metabolic resistance routinely)
 - Mapping resistance distribution
 - Understanding newly evolved resistance mechanisms to develop diagnostic markers and countermeasures
- Development of models to manage and reduced the risk of resistance evolution based on
 - the resistance situation in the field
 - the field history



Tailored recommendations for the farmer to manage resistance



2nd pillar: Preventing resistance evolution to new molecules



- Screen new chemistry on resistant lines
- Understanding resistance mechanisms and how they are being regulated to
 - choose better targets to avoid target site resistance
 - optimize molecules less prone to metabolic resistance evolution

Bring new resistance-breaking molecules to the market

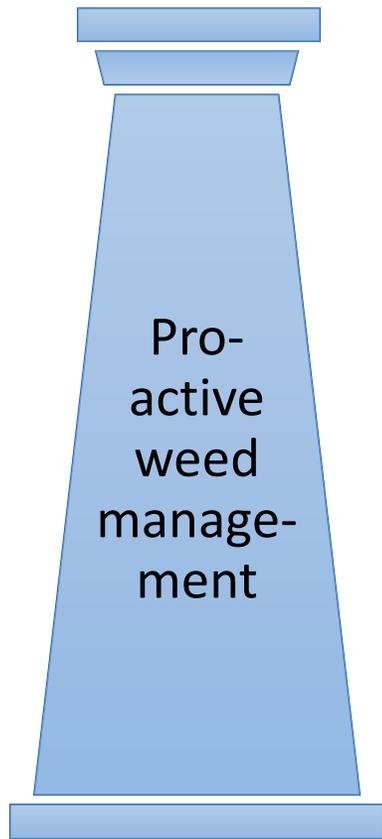


targenomix
the target identification company





3rd pillar: Delaying resistance evolution in the field



- Promotion of sustainable agriculture practices in weed management
 - IWM platforms
 - “It pays off” campaign
 - Stewardship programs

- Modelling scenarios for most successful resistance evolution prevention

Prevention methods encompassing chemical, biological and cultural methods





Summary

Bayer accepted the weed resistance challenge!

- Bayer listened and learned from leading global weed experts about the emerging situation to be informed and prepared early on
- Bayer founded the unique Weed Resistance Competence Center to build and contribute to the scientific understanding of resistance mechanisms and their evolution to stay a step ahead
- Bayer provides high-throughput diagnostic services for farmers to understand their situation in the field and recommend the best solution for their specific situation
- Bayer recommends integrated weed management practices for an agricultural system that is sustainable



*Vielen Dank für Ihre
Aufmerksamkeit!*

