



Dutch Vision on Cropping Systems 2030

- The role of Biological products

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The Dutch Vision for 2030 (from early 2019)

- Present Cropping Systems are not resilient:
 - Limited biodiversity of crops
 - Limited biological buffering in soils and cropping systems
 - Not resilient to abiotic and biotic stresses
 - Highly dependent on inputs of fertilizers and crop protection products
 - These inputs have negative side-effects
- 2030: Towards resilient plants and cropping systems:
 - Develop more resilient plant varieties
 - Develop new biodiverse cropping systems in balance with surrounding nature
 - Cropping systems with more biodiversity and biological buffering
 - Less sensitive to abiotic and biotic stresses
 - Pests and diseases have less chances
 - Much less dependent on inputs of fertilizers and crop protection products



**Landbouw, natuur
en voedsel: waardevol
en verbonden**

Nederland als koploper in kringlooplandbouw



From Vision to Activity Plan (september 2020)

Support by key-stakeholders: Government, Farmers Organisations (LTO), Breeding Industry (Plantum), Supply Industry (Nefyo, Artemis), Advisors (Agrodis), Water Boards, and NGOs (Natuur en Milieu)



Content of Activity Plan 2030

A 52 pp Activity Plan with 140 actions divided over the Key-stakeholders

1. Technical building blocks:

- Develop more resilient plant varieties against biotic and abiotic stress
- Develop new biodiverse cropping systems in balance with surrounding nature
- Enlarge biodiversity and biological buffering in soils
- Develop early monitoring and precision management tools to limit crop protection measures and side-effects
- Set-up of pilots to test and integrate building blocks on farming levels.

2. Process: transition support for farmers from old to new

- Old cropping systems dependent on CP products are disappearing, but new resilient systems are not in place yet → how to bridge the coming 10 years?

3. Business model: payments based on resilience in stead of yields

- Farmers income not based on products anymore, but also on greening services → How to change CAP funding, taxing and subsidy systems, and obtain financial support from produce chain and society?

Why Activity Plan important for Artemis ?

Motto Artemis: *“Biology as basic mindset in indoor- and outdoor cropping systems”*

and...

Artemis vision: *“Application of Biological Products is essential to obtain the required **biological buffering** in plants and cropping systems”*

What can Artemis contribute to Activity Plan 2030?



Microbials



Macrobials



Semiochemicals



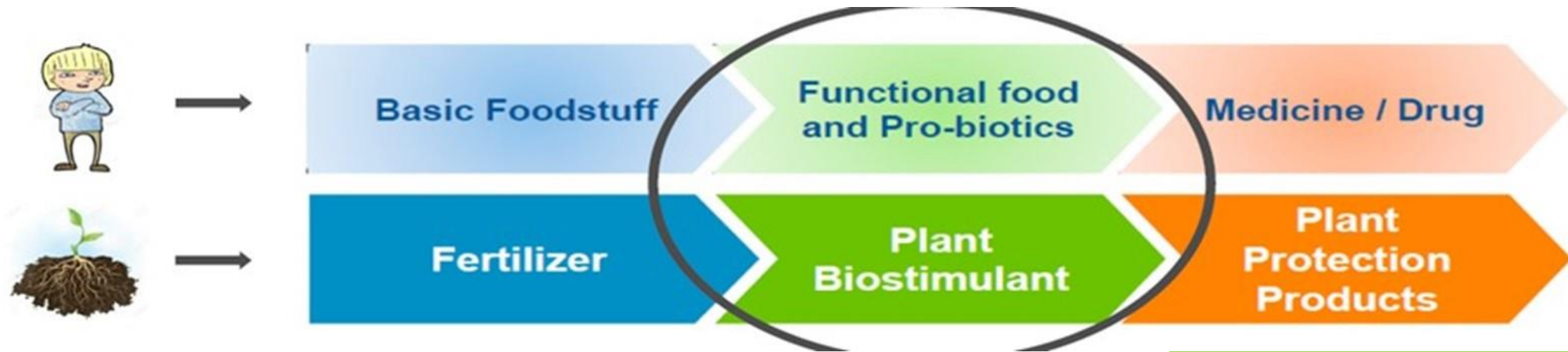
Natural and
Biochemical
Products

1. Natural crop protection products, fit perfectly in resilience model:

- Natural: not disturbing the ecosystem
- Low risk: no emissions in environment and no risky residues on products

2. Bioprotectant Products, also against Biotic Stress and supporting Biological Buffering → less chances for pests and diseases

What can Artemis contribute to Activity Plan 2030?



From Jolanda Wijsmuller, Bayer-Netherlands

Biostimulants: in between fertilizers en crop protection, regulated by FPR 2019/1009 (2022)

3. Biostimulant products against Abiotic stress and supporting Biological Buffering → less chances for pests and diseases

Biological products **ESSENTIAL** for Resilience Activity Plan 2030

Building blocks 2030:

- Resilient varieties:
- Resilient seeds:
- Resilient plants:
- Resilient soils:
- Resilient cropping systems:



Contribution by Artemis:

Induction of **resilience genes** with BS/BP

Seed coating with BS/BP

Supporting **Microbiome** by BS/BP

Improving **Biol. Buffering capacity** by BS/BP

Improving **Biol. Buffering** around crop by BS/BP,
supporting **Standing-Army** in/around fields

All needs to be developed; hard work till 2030 by all stakeholders!

Key-actions for collaboration of Artemis with the other partners on the building blocks

1. New R&D of the Dutch government and PPP projects will focus on the building blocks the next 10 years (with all partners)
2. Design and validation of innovative resilient system concepts, (from soils to cropping environments) including Microbiome, BS and BP (with WUR and other knowledge organisations)
3. Development of seed- and seedling coatings with consortia of BS and BP (with Plantum)
4. Development of new monitoring and application techniques to support BS and BP for resilience (with LTO and Fedecom)
5. Education of advisors on integrated measures including BS and BP to support resilience (with Agrodis)
6. Execute experimental pilots to connect farming with nature, including the role of BS and BP (with LTO)

But, Resilient systems need also another vision on regulations for biological products

- Develop plants resilient against biotic and abiotic stress – new BP and BS are needed → fast-track registration
- Develop new biodiverse cropping systems – consortia of BP and BS are needed for support → new type of integrated regulation
- Enlarge biodiversity and biological buffering in soils - consortia of BP and BS needed for support → new type of integrated regulation
- Develop early monitoring and precision management tools to support effective use of BP and BS → new regulation on drones, data, patchy-wise treatments needed.
- Set-up of pilots to test and integrate building blocks on farming level → practical experiments with consortia of BP and BS need to be regulated

Some regulatory actions in Activity plan

1. Action to include other microbial groups than the present 4 in the new BS legislation (in EU-FBR 2019/1009, or otherwise in a NL-regulation)
2. Action to simplify and harmonize procedures for LR a.s. and products of BP
3. Actions how consortia of BS and BP can be used in experimental practical pilots
4. Action to make only risk based evaluations leading for a.s. and products of BP
5. Action to review (organisational and financial) stimulations in EU-MS for faster registration and use of BP
6. Action to use parts of dossiers outside of EU for registration in EU

Are these actions sufficient?

Or do we need more?

The Activity Plan is not focusing YET on a change in EU regulations on BP, BS and Biocides.

But, it is the mission of Artemis that **IF** present regulations turn out to frustrate:

- the use of consortia of biological products...
- and therefore is blocking a change to resilience...
- a new and integrated regulation is needed:

All biological products in one regulation with focus on safety, and not on individual mode of action, but on combined support of resilience.

Food for Thought for the Dutch , but also for EU F2F...

...Hopefully with support from IBMA, EBIC, etc.

