

SMP project

Pesticide-free & biocontrol-based chrysanthemum production along the international value chain

Presentation 14-12-2023

Marjolein Kruidhof
(Wageningen UR Greenhouse
Horticulture)

Harold van Gennip
(Dümmen Orange)

Marrah Pfister
(Glastuinbouw Nederland)



SMP project objectives, activities & stakeholders

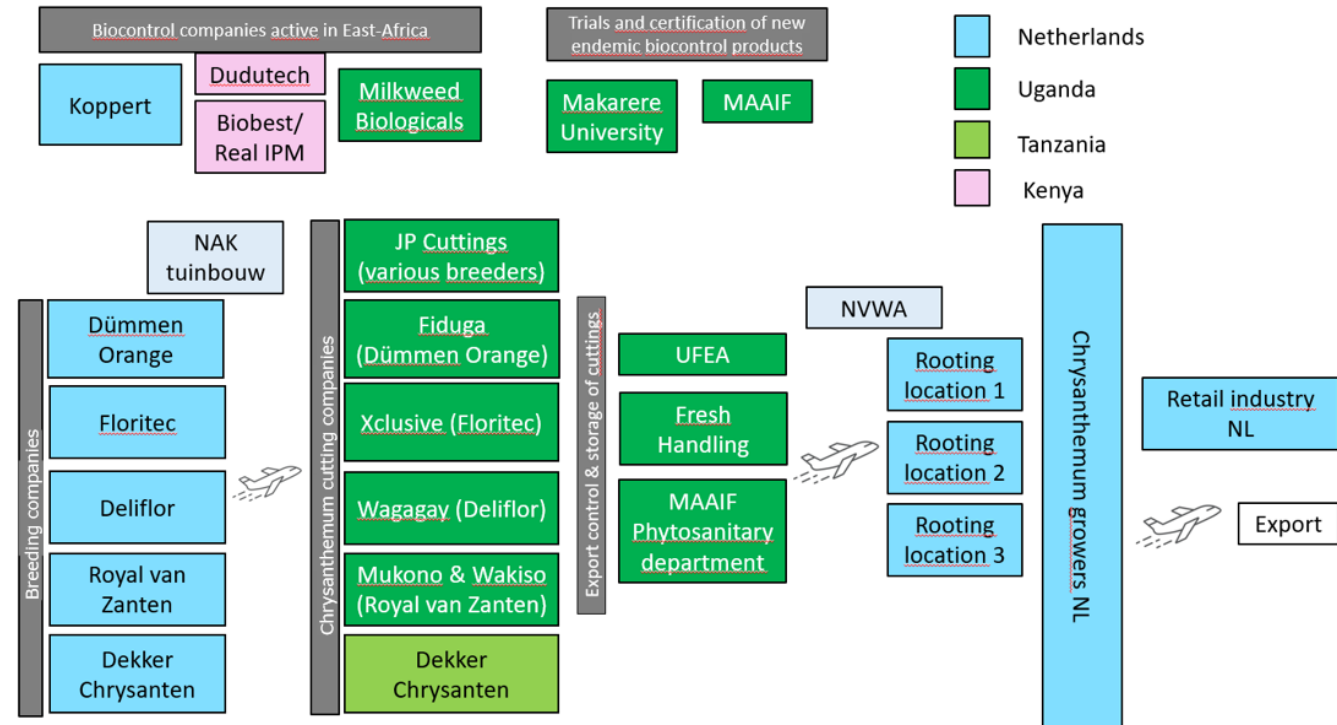
Objectives

- To develop a vision & action plan for a future-proof & resilient cut chrysanthemum value chain based on biological pest (& disease) control in collaboration with all relevant stakeholders in both the Netherlands and Uganda/ Tanzania
- To form a consortium and develop a joint PPP project proposal

Main activities

- WUR interdisciplinary brainstorm (May 2023)
- SMP workshop NL (May 2023)
- Working group PPP proposal (June 2023)
- Stakeholder visits Uganda (July 2023)
- Workshop in Uganda (July 2023)
- PPP proposal writing (July/ August 2023)

Stakeholders Chrysanthemum Value Chain

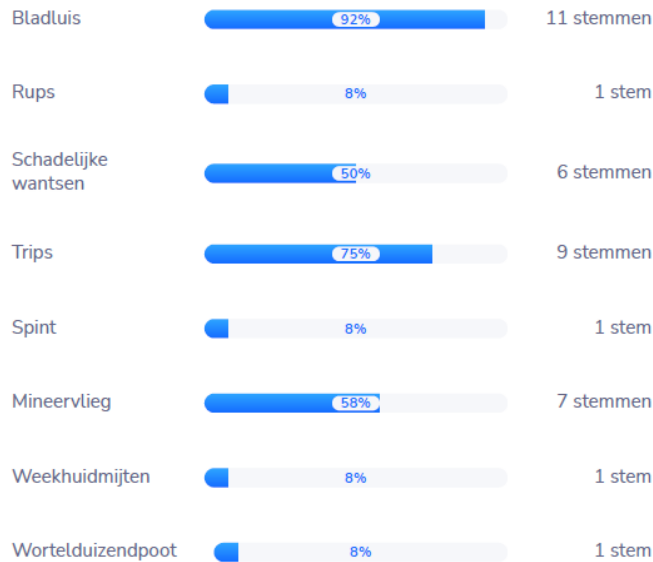


Impression workshop NL

Which words come to mind when you think about a future-proof chrysanthemum chain?

RESIDUVERMINDERING STANDAARDISERING MEET METHODEN
TEELTSYSTEEM AUTOMATISERING REDUCTION RESOURCES GESLOTEN SYSTEEM PREVENTIEF WERKEN
STANDING ARMY BIOLOGISCH TELEN HYGIENISCH RESIDUE VRIJ MET INSECTEN BEHEERSING VERSTERKEN
KWALITEIT STEK BIOLOGIE VOLLEDIG BIOLOGISCH DUURZAAM MEER MINDER MILIEU-INDICATOR TRANSPARANT KNELPUNTEN
SCHONE STEK 1 VOOR TWAALF WEERBAAR BIOLOGISCH DUURZAAMHEID GROEN VEREDELING SAMENWERKEN
GESLOTEN SAMENWERKING INSECTENGAAS CO2 FOOTPRINT RESIDU VRIJ BETAALBAAR SYSTEEMAANPAK RESISTENT
KETEL AANPAK KENNIS DELEN WEERBAARHEID CO2 FOTOPRINT BIO CHEMIE DIGITALISERING
WATERTEELT CORRIGEREN BIOLOGISCHE WEERBAAR TELEN STORY TELLING AFGEGAASD
100% BIOLOGISCH ACCEPTATIE VAN DE KOPER KLANT TEVREDENHEID RESIDU-VRIJE STEK VERTROUWEN
GEWASBESCHERMING CO2 FOTOPRINT UIT DE GROND WEERBAAR TEELTSYSTEEM
ZONDER CHEMISCHE MIDDELEN STEK ZONDER CHEMIE

Which pests do you expect to cause the highest pest pressure in the NL in 5-10 years?



Which possibilities do you see for the reinforcement of a resilient chrysanthemum chain?

Weerbaar teeltsysteem teeltfase

plantweerbaarheid

jonge weerbare planten
aangepaste voeding
minder residu op stek
veredeling → resistentie
endofyten
bladluis-resistentie

weerbaarheid verhoging
totale strategie methoden
+ biostrategieën
groene middelen op
plantweerbaarheid
resistente rassen
middelen die de plant
echt nodig heeft

biologie

banker planten
Orinus rootwantsen in kisten
recycleren duurzame biologische bestrijders
roest mijten
logische prijs premies
eerdere stekten + bio
standaard op mij bladluisbestrijders
jonge planten + Orinus uitgebracht

bodemweerbaarheid

biologische runderontmetting
stromen resistentie houden sterk vs bloem
EC verlagen
goedaardige bewerking
organische meststoffen
trichoderma
teeltwissel
inert substraten
weerbare gewasplant
weerbaarheid verhogen
met bodembiologische middelen
brachiolanten

teeltomgeving

geen grote klimaatdrukken
inert + substraten
ontsmetten gietwater
ontsmiden verpakkings
hygiëne rondom bedrijf
niet te veel beperken + ventilator/overdruk
communicatie + vereenvoudigen
planten in de kist
extra stekken

hygiëne

Beworteling

- insectengaas bij beworteling
- minder uitval/beter balans voeding
- toepassingen onder het folie
- Orinus rubrivenen / Bio inzet
- pluggen ipv een
- Trichoderma in opwekk
- geen middelen met lange verblijft

Opslag & transport

- Behandeling met stikstof
- soorten scheiden (op gewasbehoefte)
- ruime behandeling met (bio) pesticiden

Stekproductie

- Bodem weerbaarheid
- Bodem resetten
- Afgazen → eigen huach protocol
- Bio-inzet moet prioriteren op kwaliteit
- Residu vermindering → Schimmels
- Bio stimulanten
- Beschikbaarheid biologische middelen
- Betrouwbaarheid/standaardiseren Scouten
- Informatie/Communicatie systeem
- Voeding Minder N&P → Niet te laag!
- Hygiëne Protocollen (GSPP)
- Scout systeem
- field scouting
- Lab testen
- Spoelen
- Vang kanalen

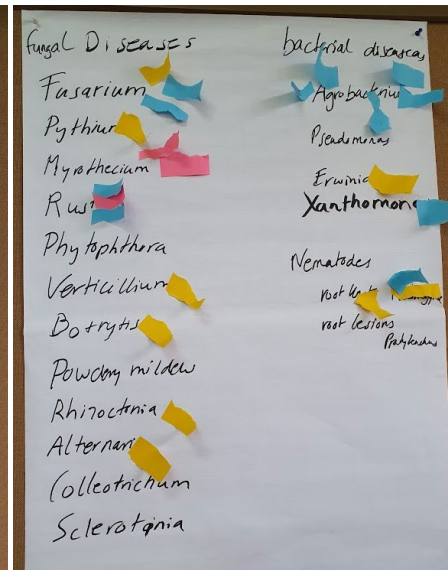
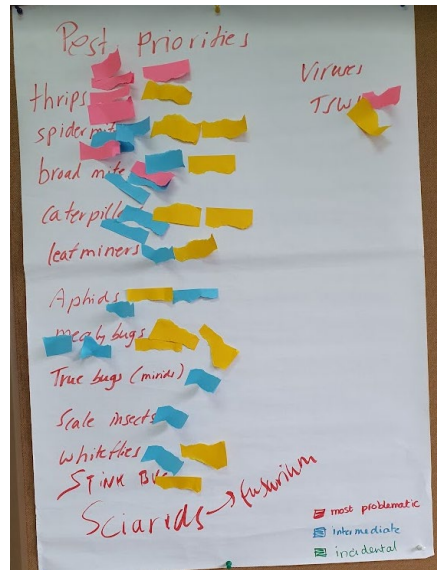
Veredeling / uitgangsmateriaal

- Resistentie (industrie Prijs)
- Groei regulatoren → Denk aan remstof
→ Marktwerving

Impression workshop & stakeholder visits Uganda



Workshop



Workshop



NARO



Workshop



Makerere University



Xclusive cuttings



Wagagai

Main conclusions

In the cultivation phase in the Netherlands

- Most pest problems are expected with aphids and thrips
- Early establishment of generalist natural enemies is key to control these pests
- Value chain approach: a) pesticide-free cuttings (mandatory); b) pest-free cuttings (strongly preferred); c) (rooted) cuttings with natural enemies (preferred)

In production of chrysanthemum cuttings

- Thrips is the main problem
- Not clear which thrips species (besides Western flower thrips) occur in/around the cutting production sites & what are main immigration routes
- Imported predatory species do not establish in the crop; frequent introductions necessary, but expensive & not sufficiently effective
- Main challenges for 'standing army approach': a) greenhouse climate, b) frequent spraying with fungicides, c) constant removal of cuttings from mother plants

Next step: PPP project

A 4-year PPP project proposal – with a broad consortium (see next slide) has been written & approved

This project will yield new possibilities for the production of residue-free and clean cuttings in East-Africa through

- Identification and screening of native predatory bug and predatory mite species that are effective against thrips and tolerant to high (fluctuations in) temperature and RH
- New strategies that stimulate the establishment of (new endemic) predator species in the mother plants
- A joint IPM learning and optimization platform
- Integration and evaluation of the newly developed biocontrol strategies in the broader context of crop cultivation and IPM practices
- Identification of thrips species that occur within and around the cutting production sites, as well as assessing their potential entry pathways into the greenhouse and risk for transmission of plant viruses (e.g. TSWV)
- Knowledge on the potential of new endemic predators for surviving Dutch winters (= *risk of establishment of (stowaway) predators that travel to the Netherlands on the cuttings*).
- Knowledge on the population developmental rate of predators and thrips under the in UG/TZ prevailing greenhouse climatic conditions, as well as on the thrips pupation sites (plant vs soil/substrate) under these conditions
- Higher knowledge level about biocontrol and IPM in Uganda (and Tanzania) through trainings of the personal of the chrysanthemum cutting companies, MAAIF and Makerere University in Uganda

This project will yield new biocontrol possibilities against thrips and aphids in the production of chrysanthemum flowers in the Netherlands through

- New strategies to reduce the competition for high-quality food between Orius predatory bugs (that control both aphids and thrips) and predatory mites (that only control thrips larvae)
- Identification and screening of new diapause-free predators that offer potential for use in a standing army approach against aphids
- New strategies for the establishment the new generalist aphid predators
- New strategies for stimulating synergistic effects of 'existing' and 'new' predator species for effective control of aphids and thrips
- Integration of the new standing army strategies in the broader context of crop cultivation and IPM strategies.

For the entire chrysanthemum value chain this project will yield

- Environmental footprint analyses of various future-proof scenarios for a biocontrol-based sustainable cut chrysanthemum chain
- Alignment of the use of biological control agents in the successive links of the Uganda-Dutch value chains of floriculture crops with (inter)national legislation and regulations

For the producers of cuttings and flowers of other floriculture crops this project will yield

- New possibilities for preventative biocontrol of thrips and aphids
- A description of the expected possibilities and bottlenecks for the integration of the newly developed biocontrol strategies in the cultivation and IPM practices of 2 other – yet to be selected – floriculture crops

Consortium partners PPP project

Breeding companies

- Dekker Chrysanten
- Deliflor
- Dümmer Orange
- Floritec
- Royal van Zanten

Chrysanthemum cutting companies

- UFEA (UG)
- Fiduga (Dummen Orange) (UG)
- Dekker Chrysanten (Tanzania)
- Wagagai (Deliflor) (Tanzania)
- Xclusive (Floritec) (UG)
- Mukono & Wakiso (Royal van Zanten) (UG)
- JP Cuttings (UG)

Project implementation

Wageningen UR Greenhouse
Horticulture



Public partners

- Ministerie LNV/ Topsector T&U
- Stowa*

Other private partners

- Glastuinbouw Nederland
- Stichting Chrysant NL
- Stichting KIIK*
- Royal Flora Holland
- MPS
- Hagelunie Fonds*
- Milkweed Biologicals (UG)
- Scarab Innovations (UK, UG)

Collaboration partners

- Makerere University (UG)
- NARO (UG)
- MAAIF (UG)
- Dutch Embassy (UG)
- WEcR
- NVWA
- Delphy

Contribution of the SMP project to the project goals

- Bringing stakeholders together and creating joint commitment in both the Netherlands and Uganda
- Facilitating discussions on the content between private stakeholders & researchers
- Visit to Uganda of WUR researchers and exploring possibilities for collaboration with local knowledge institutions and a local biocontrol company