

THE AGROECOLOGICAL APPROACH FOR THE SUSTAINABLE MANAGEMENT OF AGRICULTURAL AND FOREST SYSTEMS

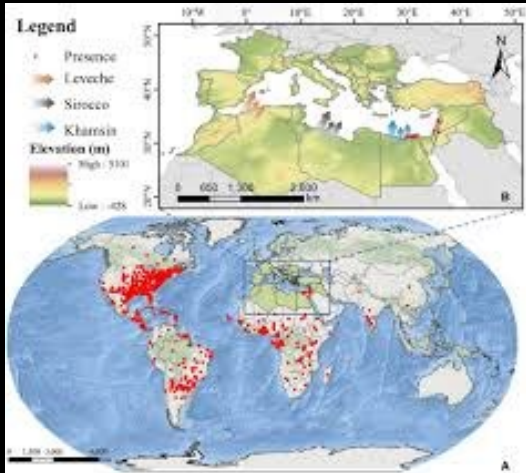
Emilio Guerrieri

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THE CLIMATIC CHANGE AND PLANT STRESSES

ABIOTIC

BIOTIC



water distribution and availability

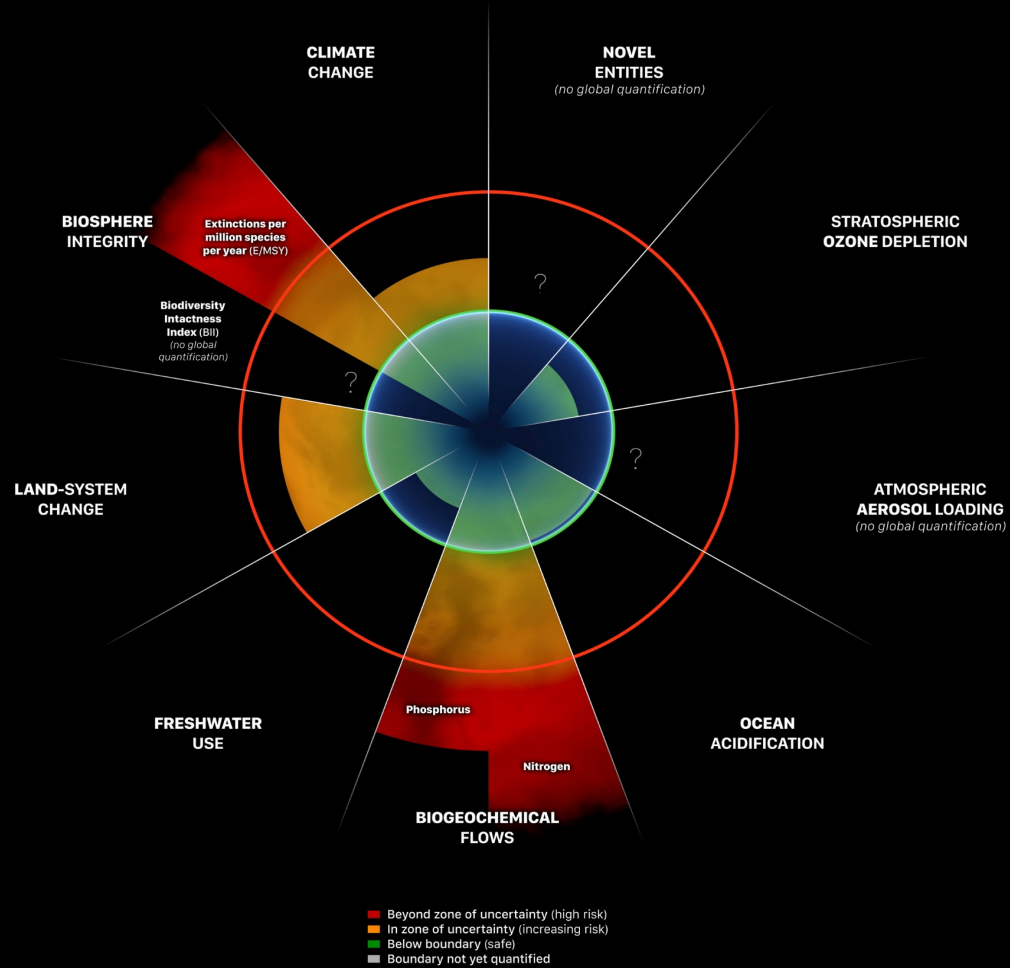
higher invasion of alien pests and higher aggressiveness of native ones

HOW AGRICULTURE DEALS WITH PLANT STRESSES LINKED TO CLIMATIC CHANGE



larger quantities of synthetic inputs and water

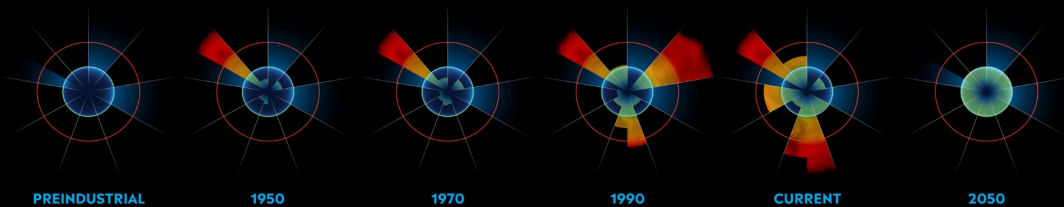
9 PLANETARY BOUNDARIES



THE NEED FOR A CHANGE



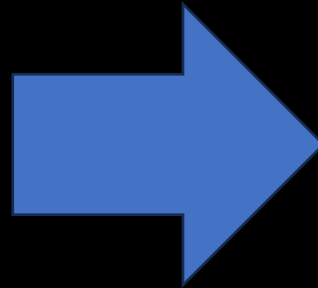
BIODIVERSITY LOSS



S U S T A I N A B I L I T Y

WHAT TO DO

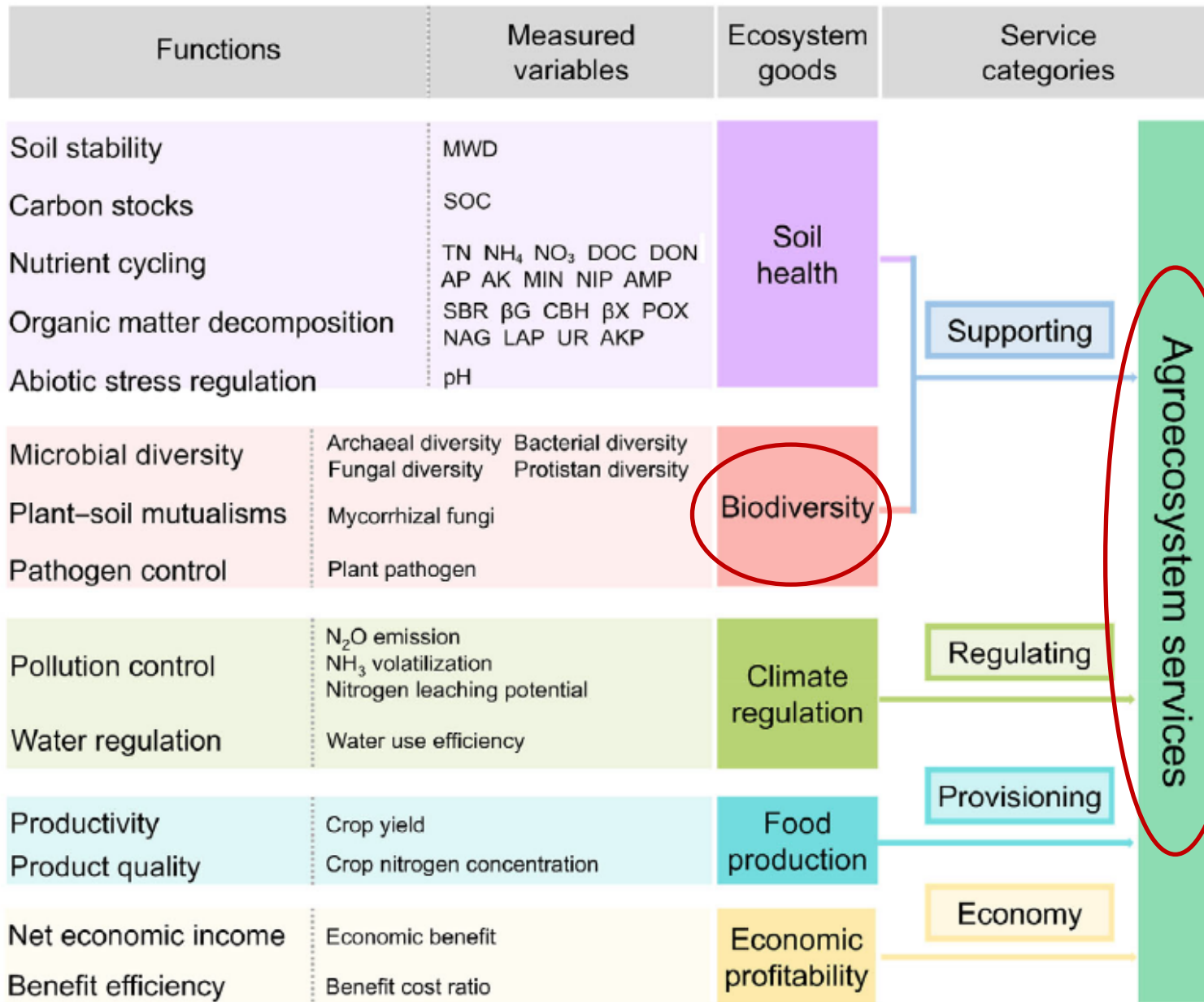
TRADITIONAL MANAGEMENT



AGROECOLOGICAL MANAGEMENT



PILLARS OF AGROECOLOGY



POLLINATION

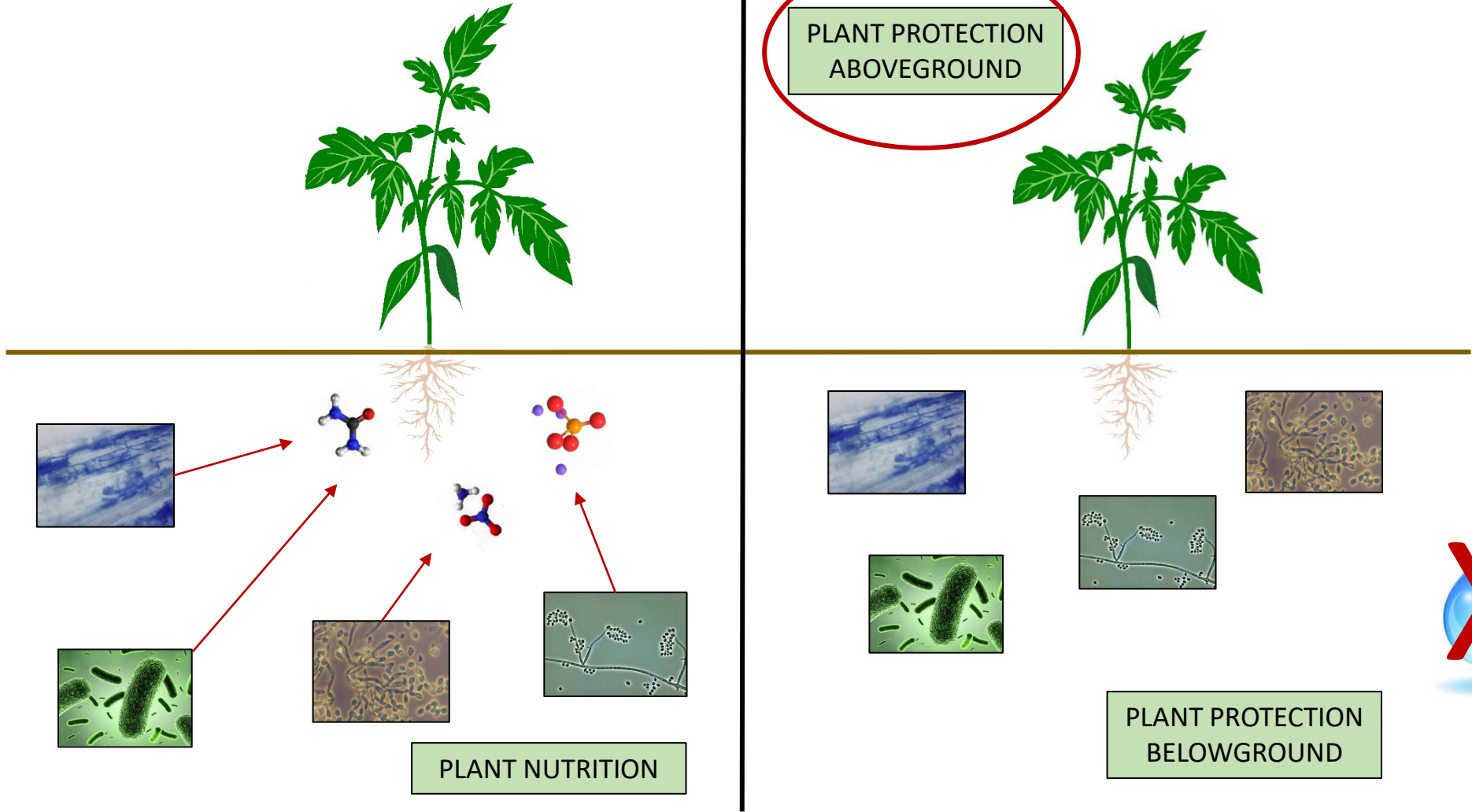
FUNCTIONAL BIODIVERSITY

FUNCTIONAL BIODIVERSITY IN THE SOIL

SOIL CONSORTIA FOR NUTRITION

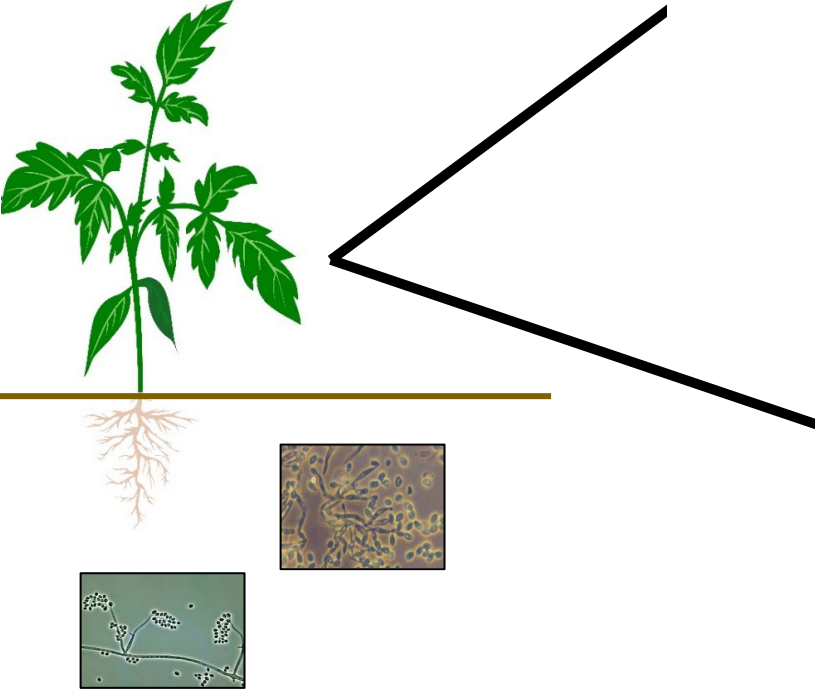
SOIL CONSORTIA FOR PROTECTION

PLANT PROTECTION ABOVEGROUND



PLANT NUTRITION

PLANT PROTECTION BELOWGROUND



Trichoderma atroviride P1 Colonization of Tomato Plants Enhances Both Direct and Indirect Defense Barriers Against Insects

Mariangela Coppola¹, Pasquale Cascone², Ilaria Di Lelio¹, Sheridan Lois Woo^{2,3,4},
Matteo Lorito^{1,2,4}, Rosa Rao^{1,4}, Francesco Pennacchio^{1,4}, Emilio Guerrieri² and
Maria Cristina Digilio^{1,4*}



Trichoderma atroviride P1 Colonization of Tomato Plants Enhances Both Direct and Indirect Defense Barriers Against Insects

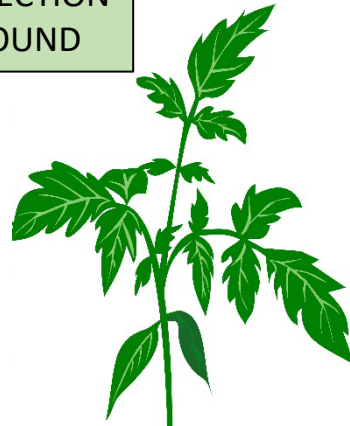
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FUNCTIONAL BIODIVERSITY ON THE SOIL

COMPANION PLANTS

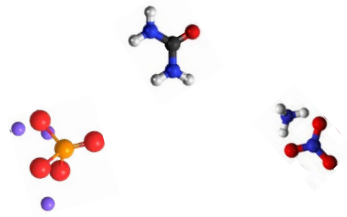
PLANT PROTECTION ABOVEGROUND

POLLINATION



PLANT PROTECTION BELOWGROUND

PLANT NUTRITION



NATURAL ANTAGONISTS

PLANT PROTECTION ABOVEGROUND



FUNCTIONAL BIODIVERSITY ON THE SOIL

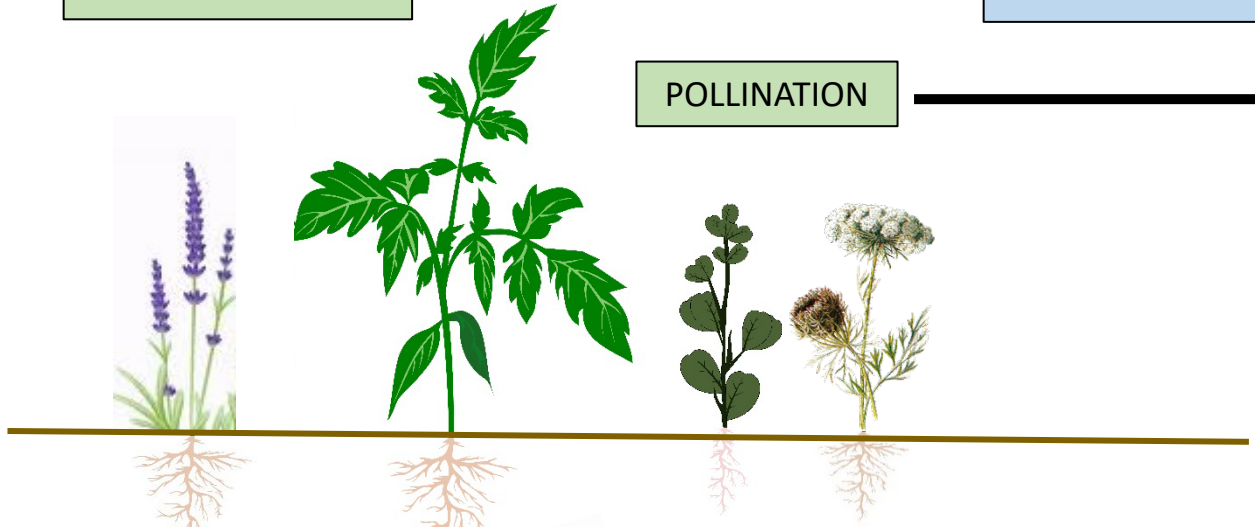


COMPANION PLANTS

PLANT PROTECTION ABOVEGROUND

NECTARIFEROUS PLANTS: alternative food for natural enemies

POLLINATION



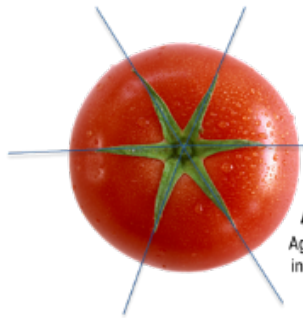
PLANT PROTECTION BELOWGROUND

ASTERACEAE: nematocidal

PLANT NUTRITION

FABACEAE: nitrogen fixing bacteria





ASTER

Agroecology-inspired Strategies and tools
in Tomato crop to Enhance Resilience and
ecosystem services

ABOVEGROUND BIODIVERSITY

natural antagonists

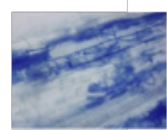
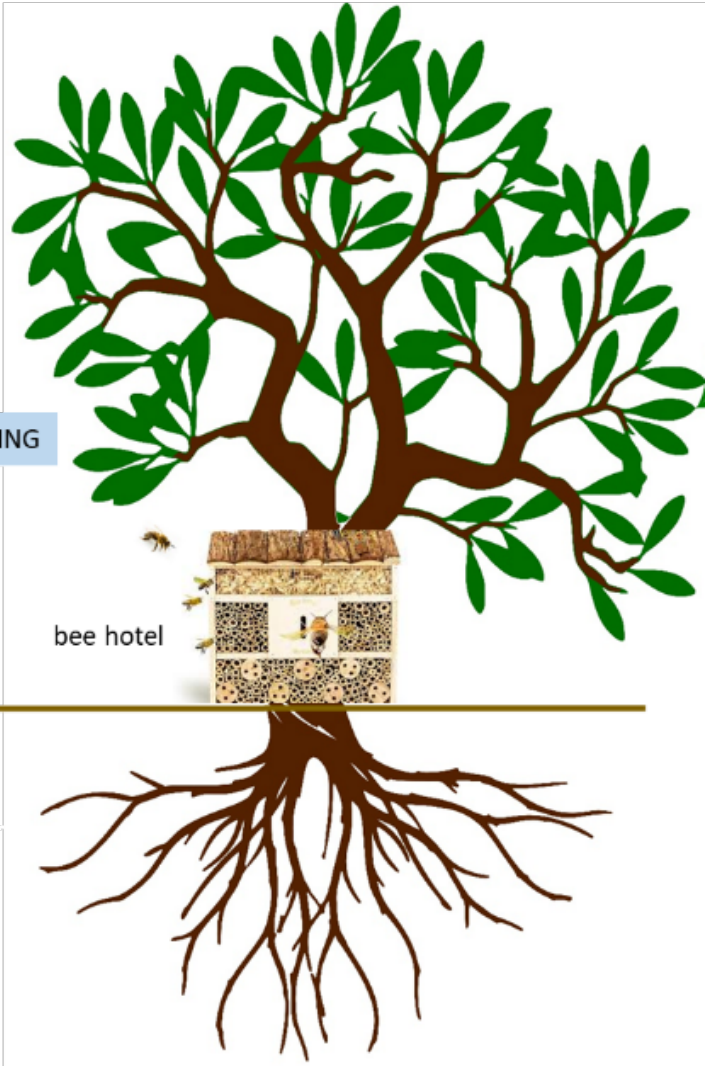
pollinators

INTERCROPPING

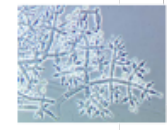
BORDERCROPPING

natural
derived
compounds

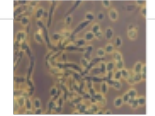
bee hotel



mycorrhizae



Trichoderma



Metarrhizium



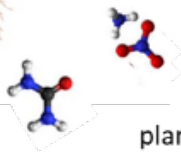
Beauveria



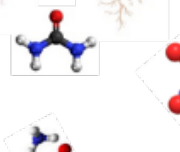
PGPR



crop
residues



plant
nutrients



BELOWGROUND BIODIVERSITY



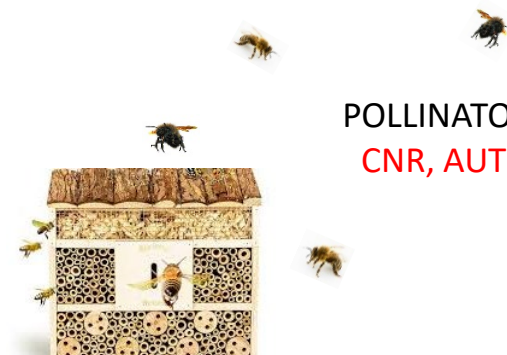
BIOLOGICAL CONTROL OF PESTS
CNR, ISA-CM, ISA-PT, DUTH, AVS, AUTH, ISUBU,
UBM, ENAM, IVIA

ABOVEGROUND BIODIVERSITY

COMPANION PLANTS
CNR, AUTH, DUTH, AVS, ISA-CM, ISA-PT, ENAM, ISUBU, UNICT, INAT, IVIA, UBM

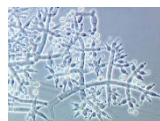


NATURAL DERIVED COMPOUNDS
CNR, DUTH, ENAM, IVIA, UNICT, AUTH, ISA-CM, ISA-PT, IVIA, UBM, UMBB



POLLINATORS
CNR, AUTH

BELOWGROUND BIODIVERSITY



SOIL SYMBIONTS

UMBB, UBM, ISA-PT, UNIUPO, ENAM, INAT, ISUBU, DUTH, AVS, UNIUPO, CNR, ISA-CM



CROP RESIDUES

ENAM, INAT, UMBB

ECONOMIC IMPACT
ISUBU, ENAM, UNICT



HARVEST QUALITY
AUTH, IVIA, UMB, INAT, ENAM, ISA-PT, UNIUPO



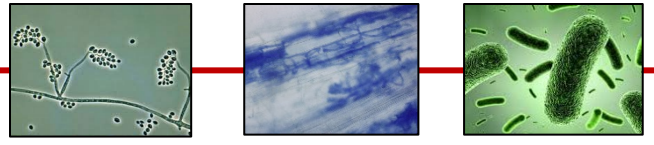
DISSEMINATION
ALL



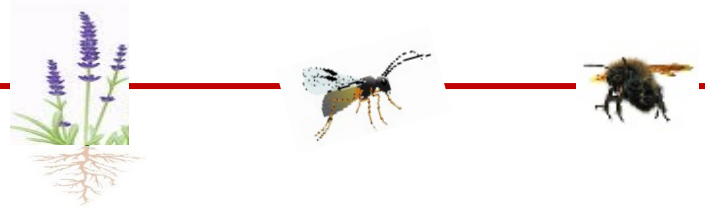
**WP 1
COORDINATION AND MANAGEMENT**

ECOSYSTEM SERVICES

**WP 2
FUNCTIONAL BIODIVERSITY IN THE SOIL**



**WP 3
FUNCTIONAL BIODIVERSITY ON THE SOIL**

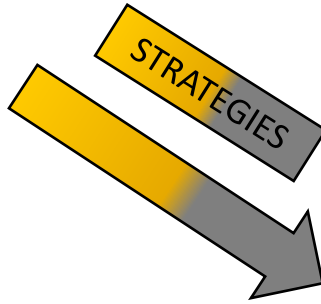


**WP 6
UPTAKE, DISSEMINATION, FORMATION**

PROTECTION

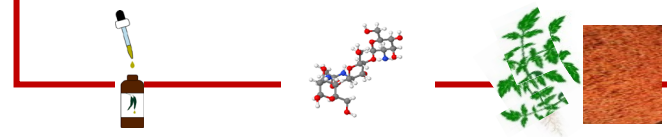
POLLINATION

NUTRITION



SUSTAINABLE INPUTS

**WP 4
NATURAL DERIVED COMPOUNDS**

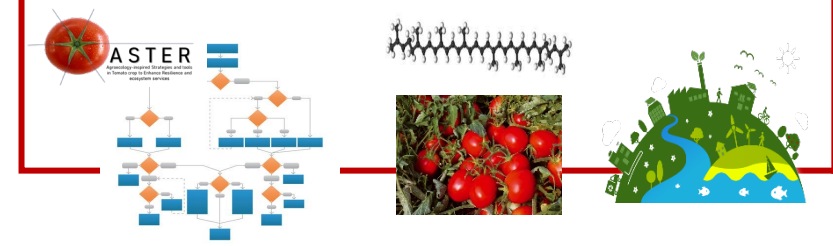


TOOLS

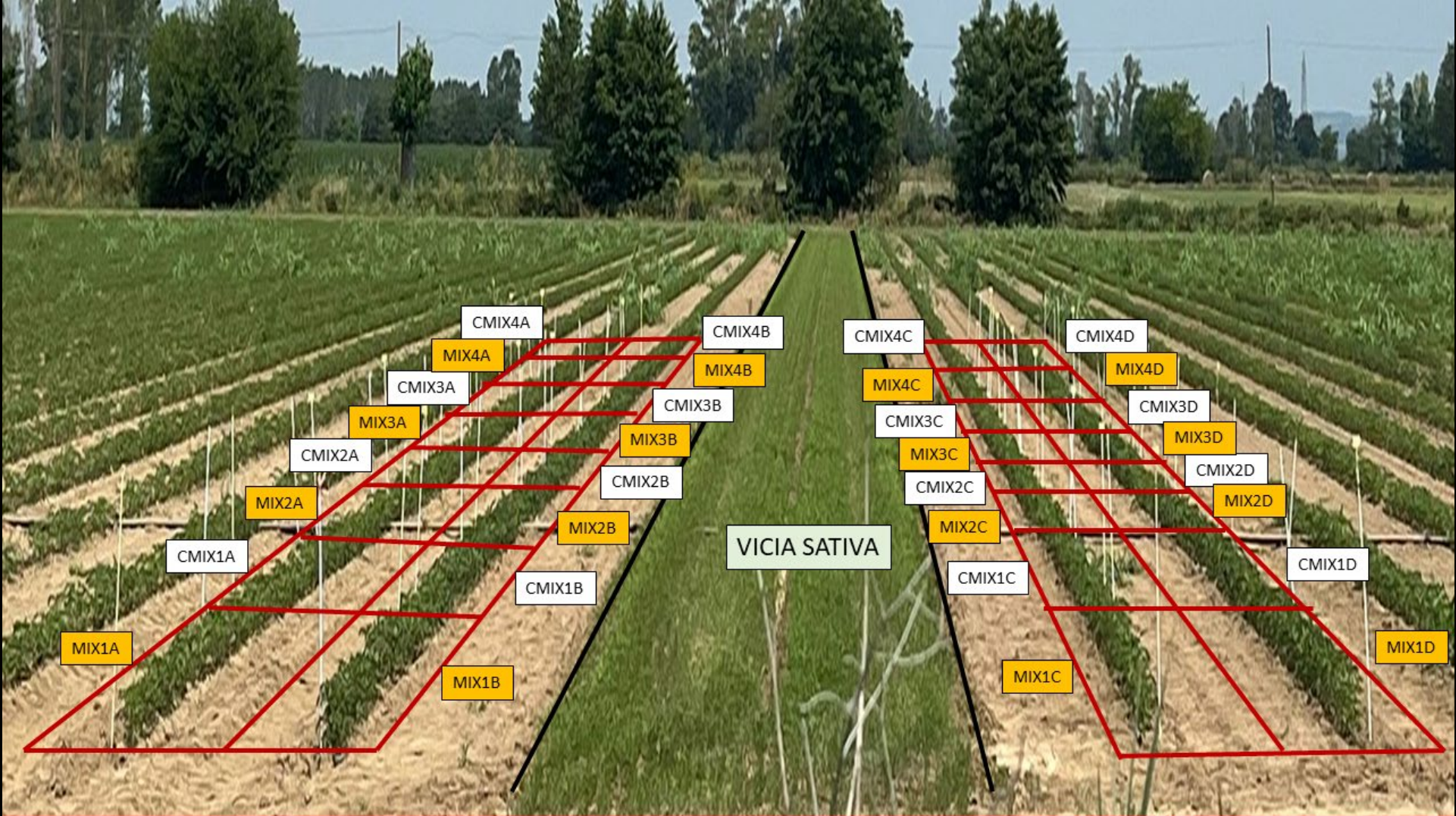


IMPACT

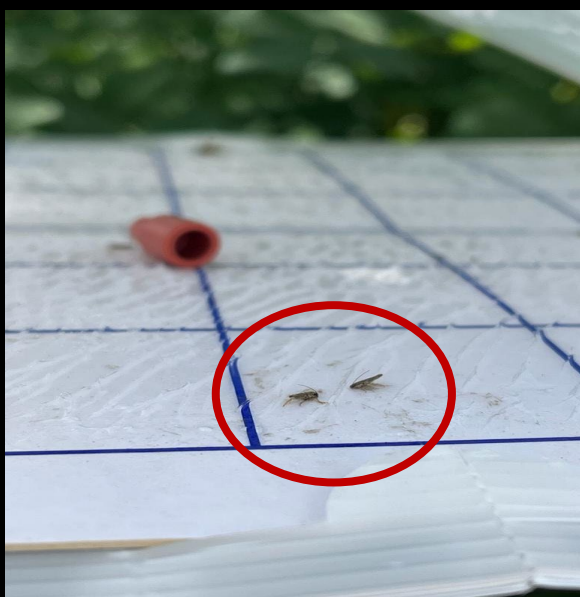
**WP 5
IMPLEMENTATION**



FIELD TEST IN BOSCO MARENGO



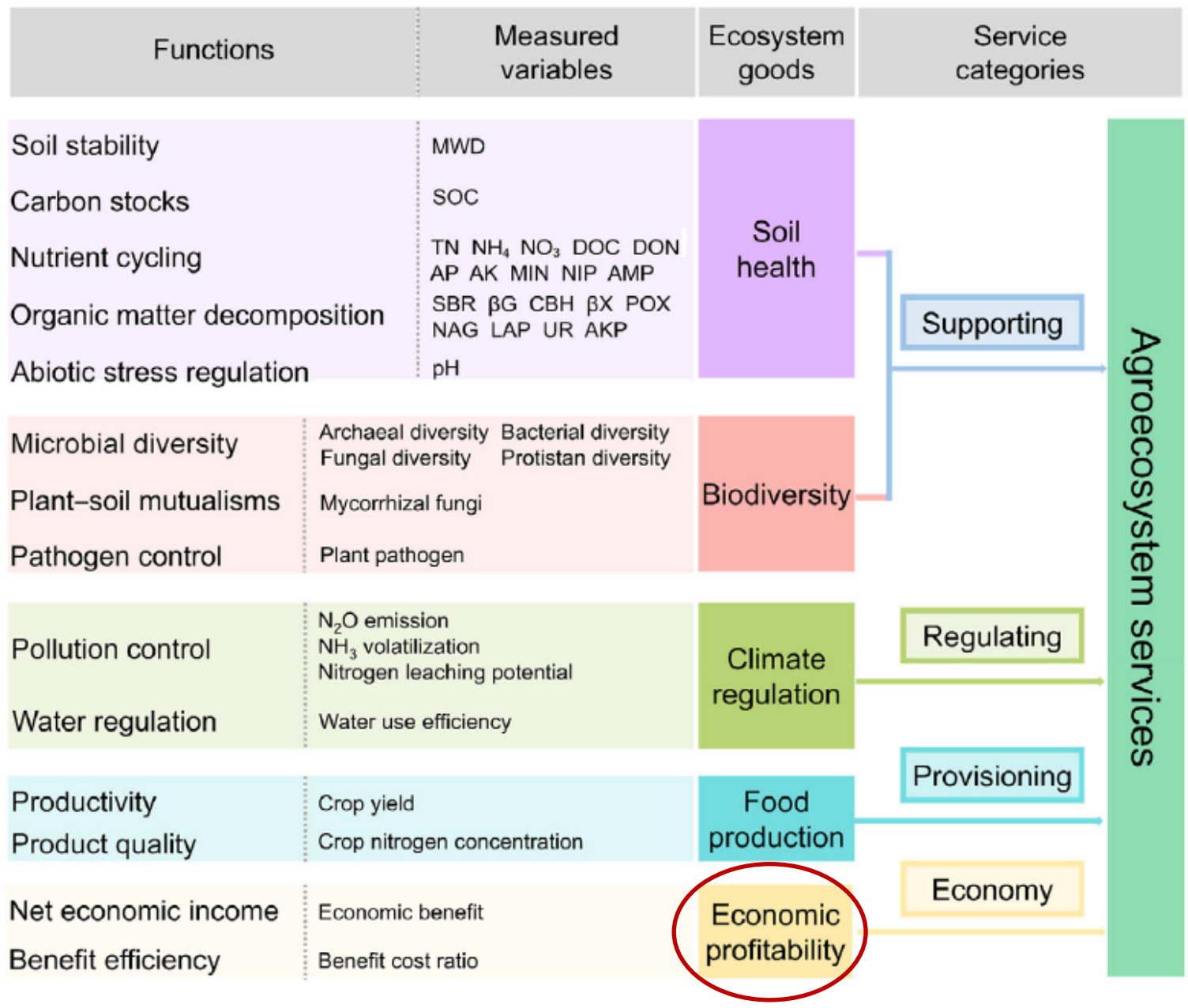
FIELD TEST IN BOSCO MARENGO

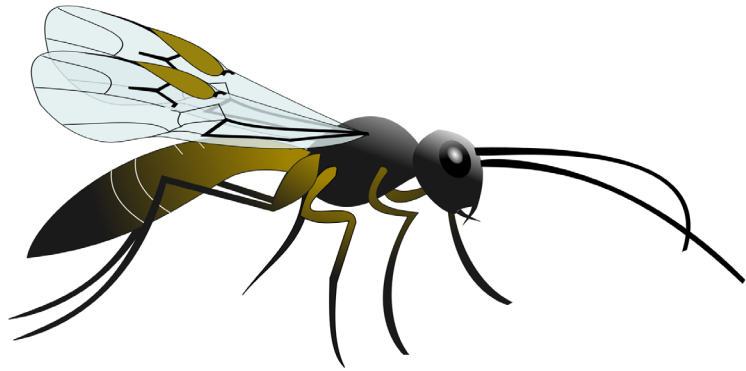


SIDE EFFECTS OF FIELD TESTS



1200 KG OF FRESH TOMATO FRUITS





THANKS