Pathways to phase-out contentious inputs from organic agriculture in Europe

ORGANIC PLUS

PEAT ALTERNATIVES:

- **CATALONIA**

Glòria Colom and Joan Manubens

Escola Agrària de Manresa

gloriap@gencat.cat>

Rafi Cáceres

IRTA RECERCA I TECNOLOGIA AGROALIMENTÀRIES

rafaela.caceres@irta.cat

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Overview on peat replacement (Catalonia)

Searching for new materials to be applied. Steps:

- **Prospection of raw materials**
- **Characterization of such materials**
- **Transformation of the raw materials**
  - **Extrusion at ATB** of some of the prospected materials:
    - Cane (*Arundo donax*) by-product
    - Forest biomass (cleaning forest-small branches, some part of shurbs)
  - **Composting of selected materials**
- **Agronomic trials**
  - Peat-free seedlings: use of extruded materials (Catalan and others) and other “yet ready” composts. EAM-IRTA
  - Container-grown species: in next future

Prospected and characterized materials:

By-product	Origin
Forest biomass	La Roca
Maize straw	Lleida
Forest by-product (small size particle biomass)	Famadas and Tervex/Tecmasa
Horse manure	Hípica Can Rosell
Winery byproducts (3)	CADES PENEDÈS
Arundo donax (1 time shreded)	Vilassar de Mar
Arundo donax (2 times shreeded)	Vilassar de Mar

Two selected raw materials:

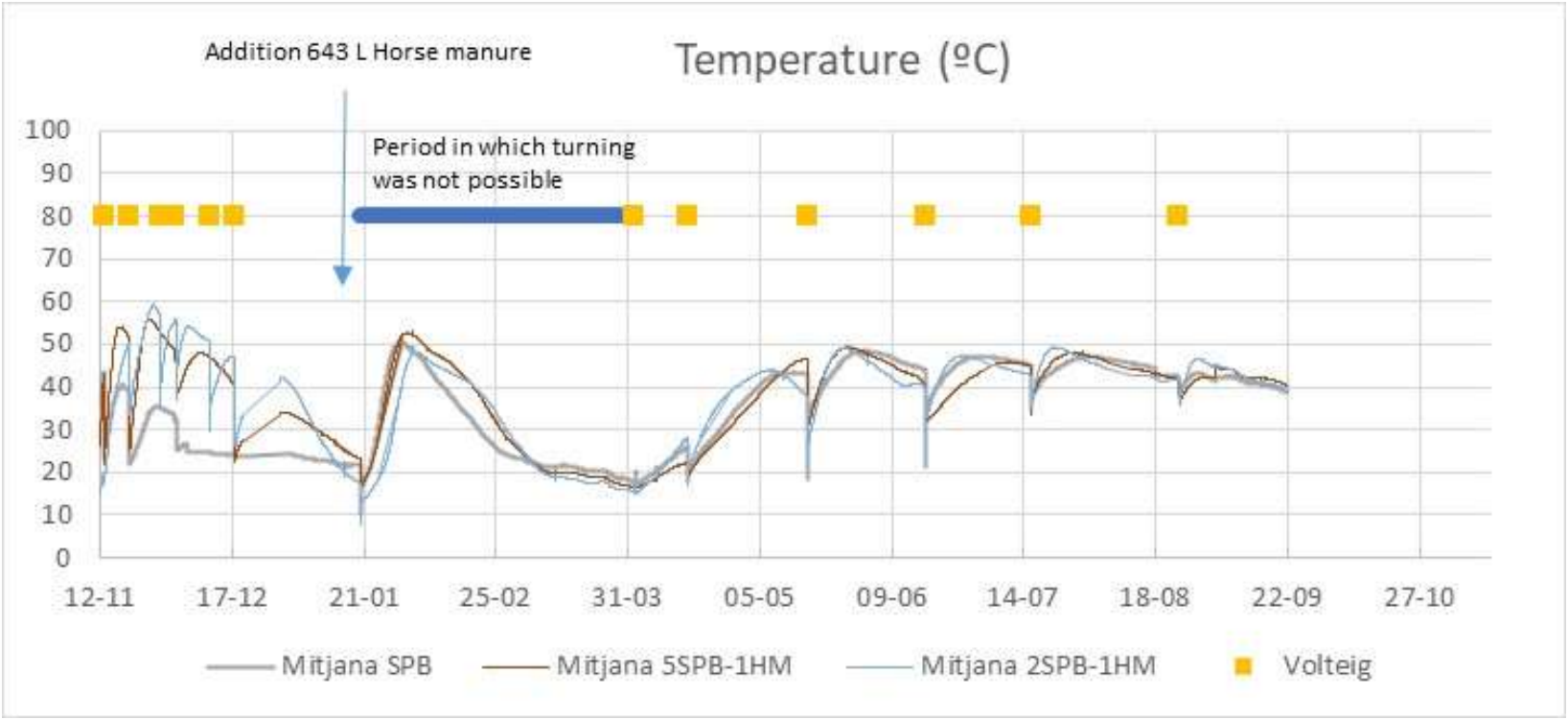
a) Biomass by-product (mainly)

Small particle biomass by-product

Large quantities are produced.
Very homogeneous, recalcitrant product

b) With horse manure (available N source)

View of the composting piles (intermediate scale): small size biomass by-product (SSB) + increasing percent of horse manure (HM)



PEAT-FREE SEEDLINGS

Trials spring 2020 – Tomato seedlings

Joan Manubens, Rafi Cáceres, Glòria Colom

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Materials

2 composts

3 extruded materials + compost CB (1/1 V)

T: peat (control) 	**Mix V-CB: vineyard+CB** 
CPO: vegan compost (pruning residues; vetch, oat and fresh forage; pine sawdust; rock dust; native microorganisms) 	**Mix P-CB: poplar+CB** 
CB: forest residues + solid fraction of beef slurry compost 	**Mix C-CB: cane+CB** 

+ ORGANIC PLUS

EXPERIMENTAL CONDITIONS

- SPRING SEASON
- GREENHOUSE
- SPECIES: TOMATO
- IRRIGATION: TAP WATER
- OWN SUBSTRATE FERTILITY (NO ADDED FERTILIZERS)
- THREE REPLICATES IN DIFFERENT TRAYS

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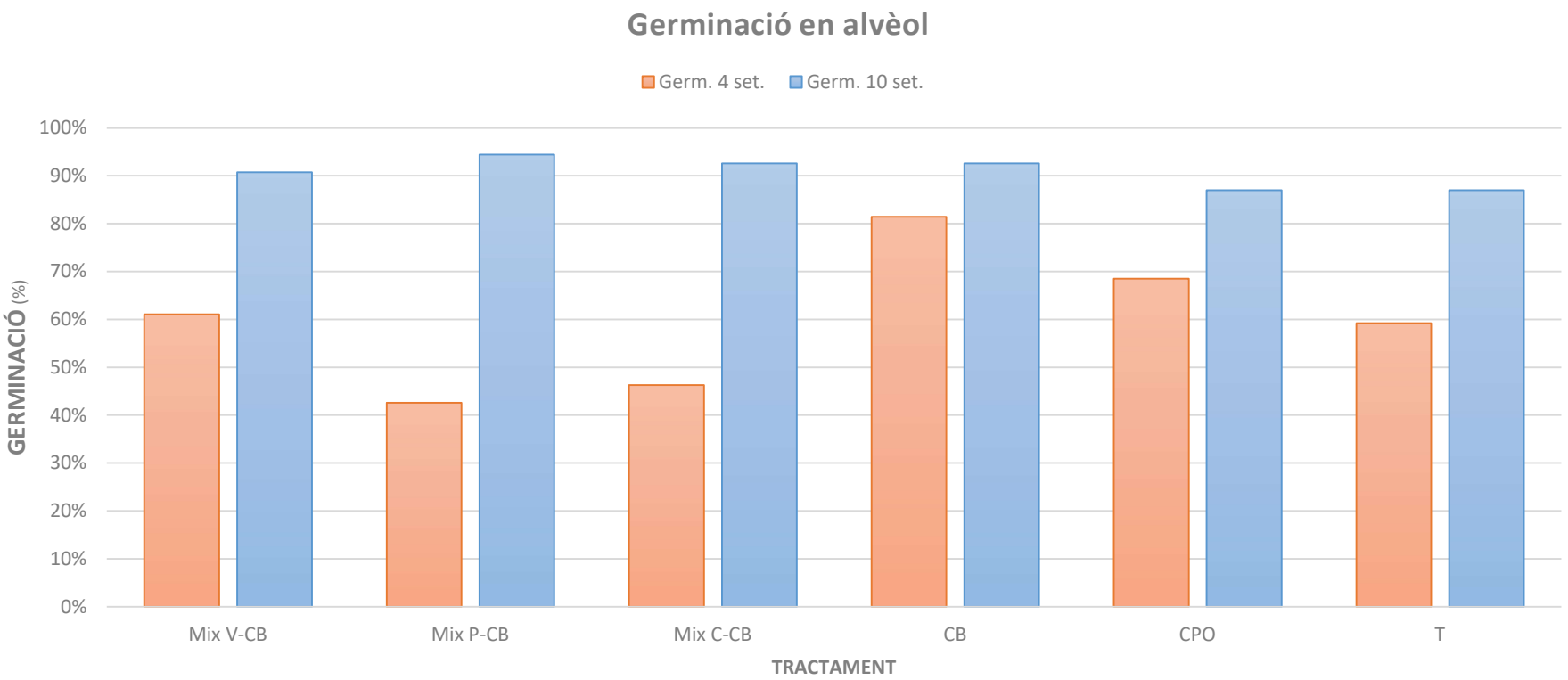
Germination at 4 and 10 weeks



MIX V-CB: Extruded Populus + compost; MIX P-CB: Extruded Populus + compost; MIX C-CB: Extruded cane + compost; CB: Forest-beef compost; CPO: Vegan compost; T: Peat;

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Plant: Biometric parameters

	CB	CPO	T	MIX C-CB	MIX V-CB	MIX P-CB
Average height (cm)	11,0	11,6	8,2	2,9	3,2	2,8
Average width (cm)	5,6	5,6	4,7	0,8	1,4	1,0

CB: Forest-beef compost; CPO: Vegan compost; T: Peat; MIX C-CB: Extruded cane + compost; MIX V-CB: Extruded Populus + compost; MIX P-CB: Extruded Populus + compost;

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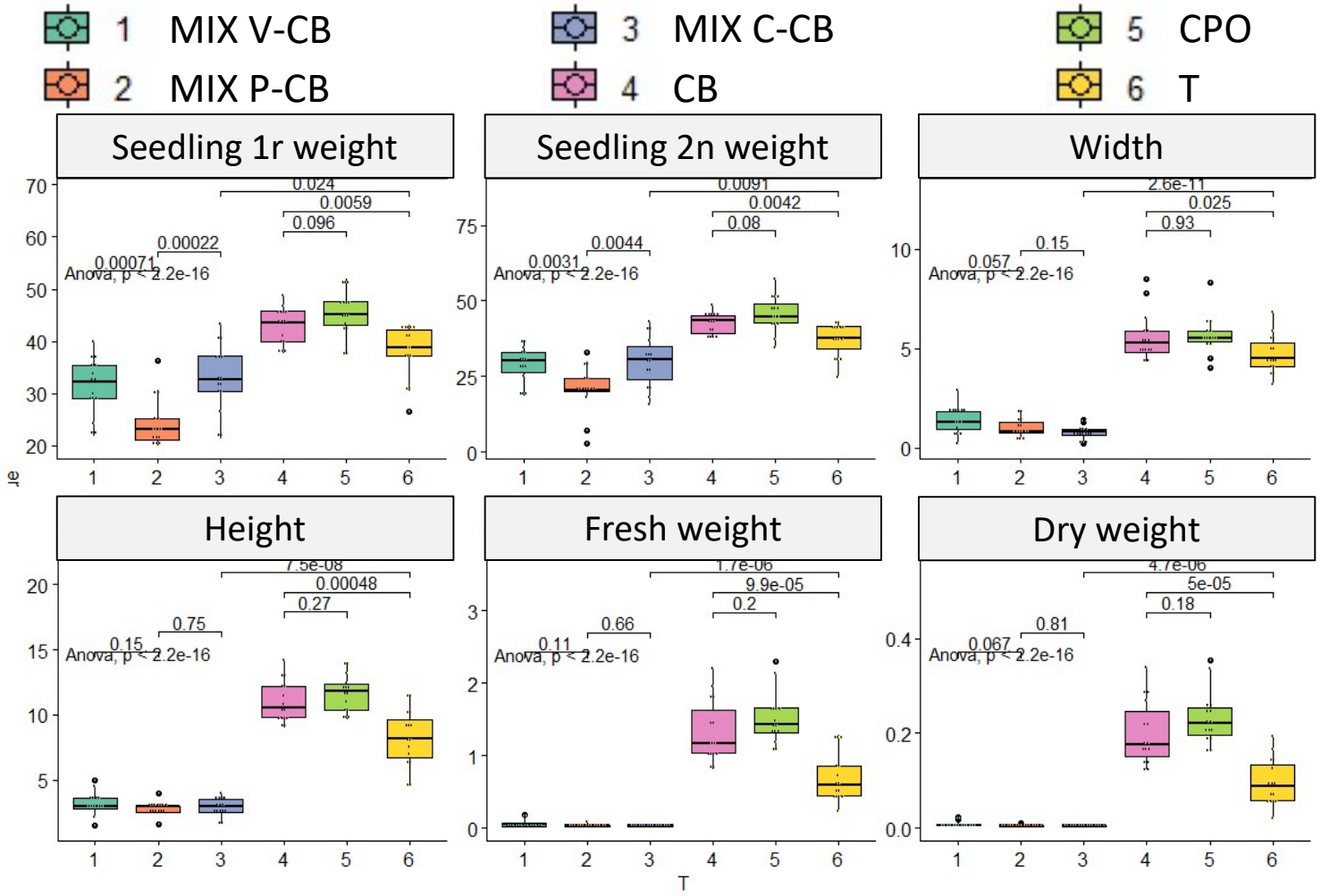

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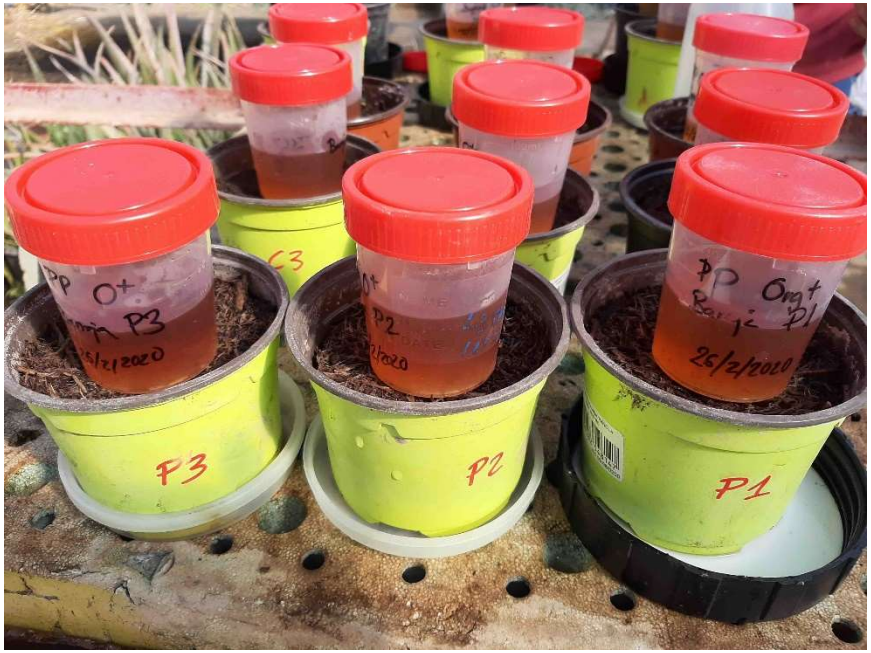
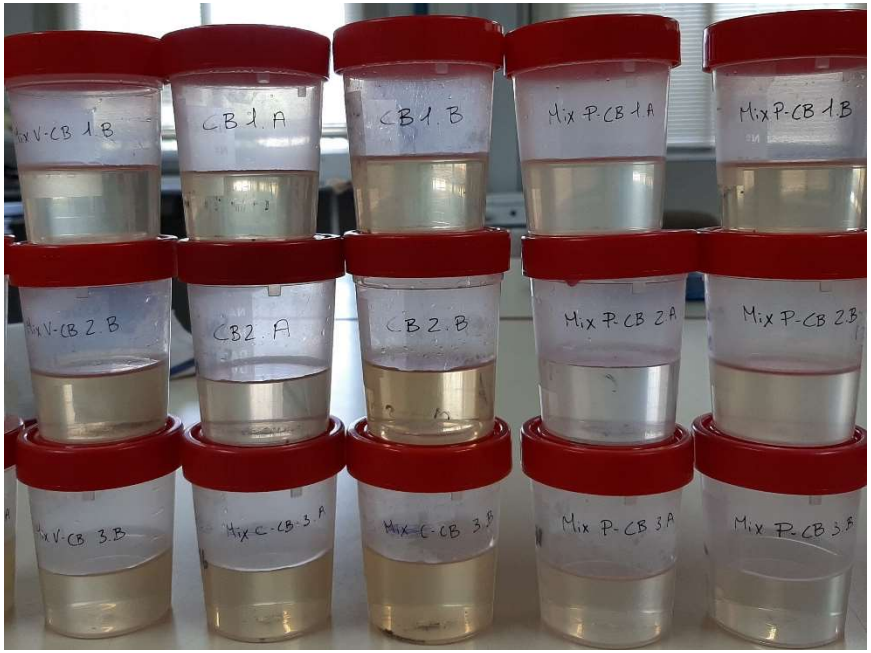
Substrate: induced percolates for testing its fertility





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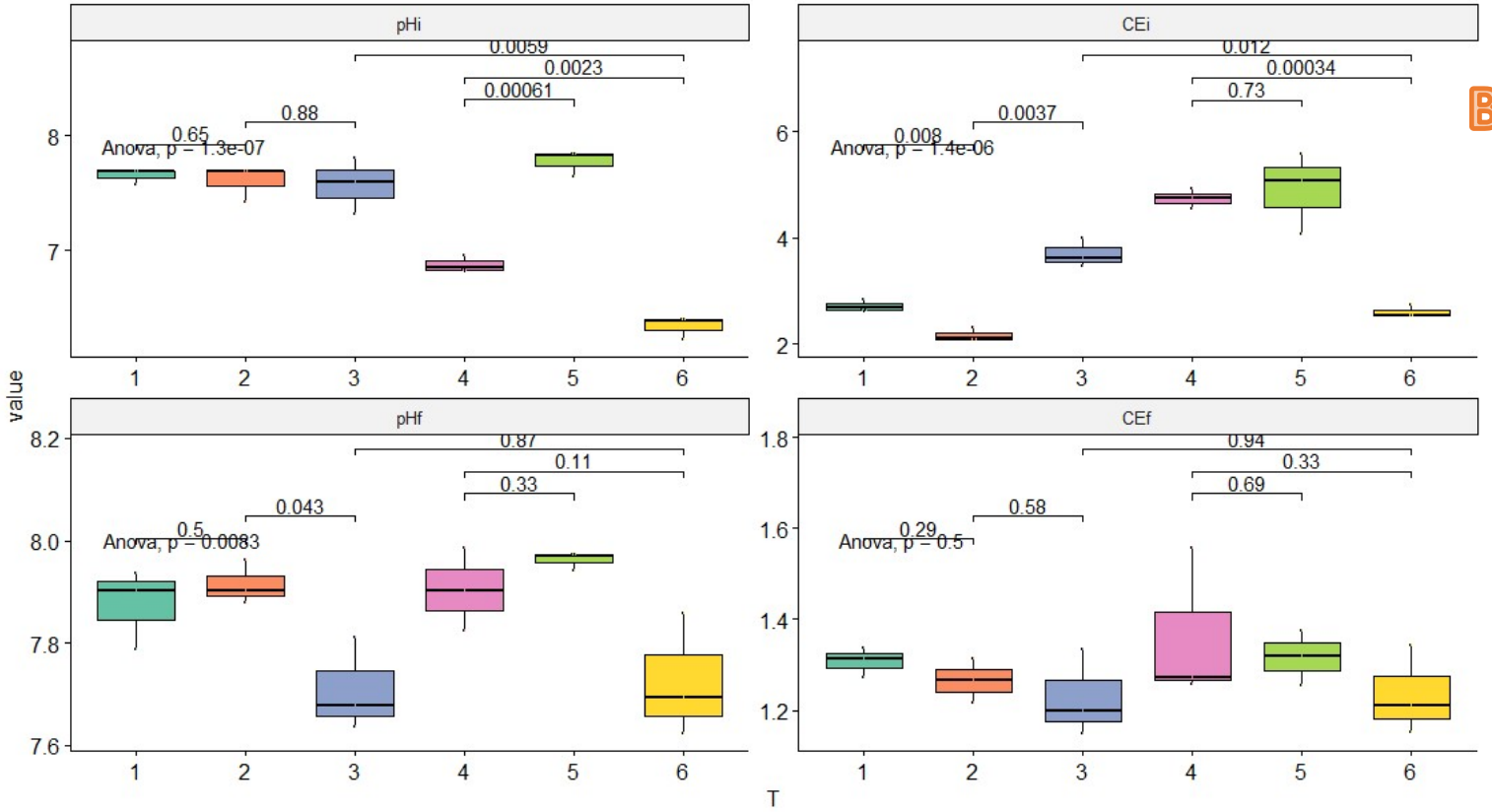
Induced percolates: pH, CE

MIX V-CB: Extruded Populus + compost; MIX P-CB: Extruded Populus + compost; MIX C-CB: Extruded cane + compost; CB: Forest-beef compost; CPO: Vegan compost; T: Peat;

1 MIX V-CB
2 MIX P-CB
3 MIX C-CB
4 CB
5 CPO
6 T



Begining

End

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Induced percolates: Nitrates, P, K

MIX V-CB: Extruded Populus + compost; MIX P-CB: Extruded Populus + compost; MIX C-CB: Extruded cane + compost; CB: Forest-beef compost; CPO: Vegan compost; T: Peat;

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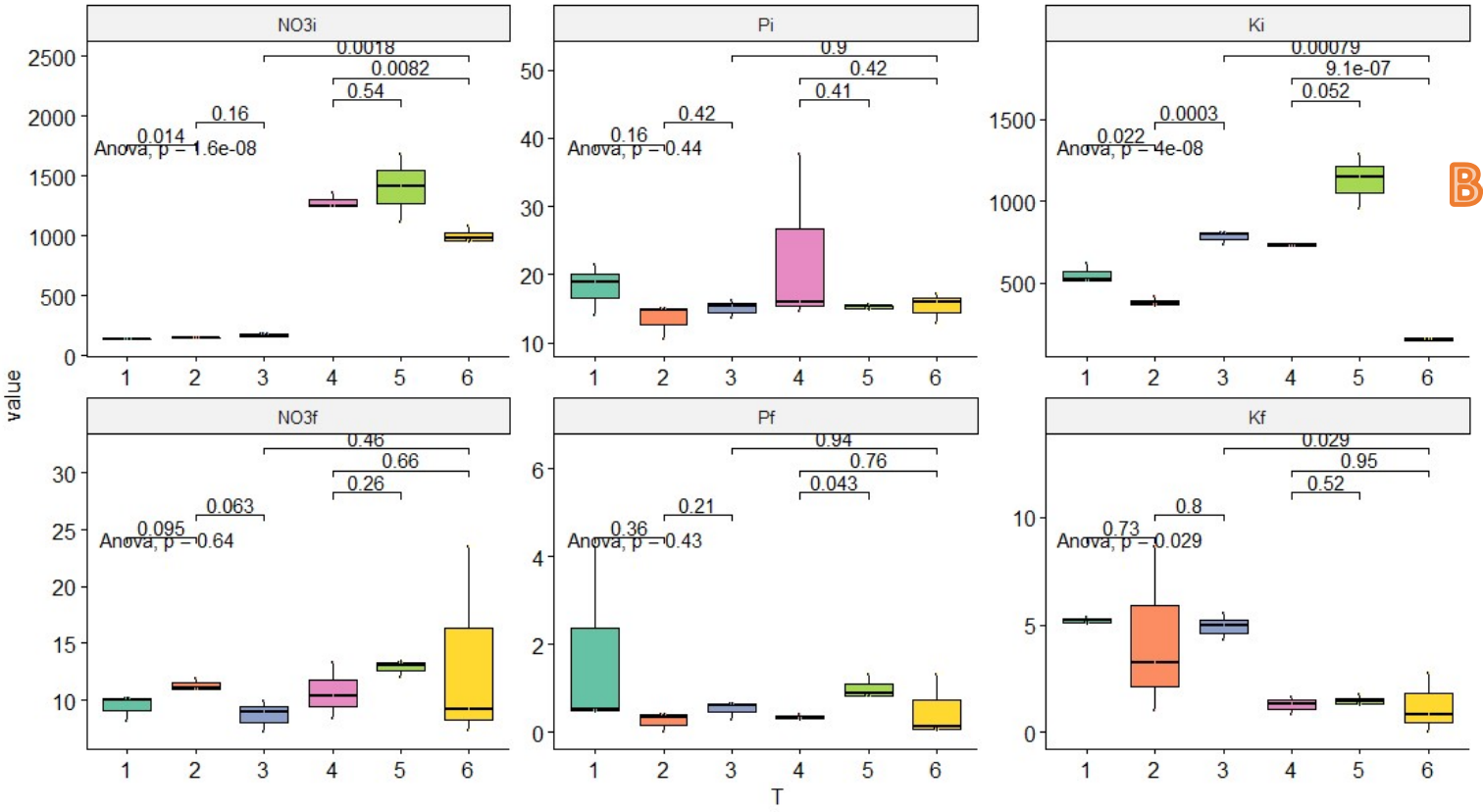

Begining

End

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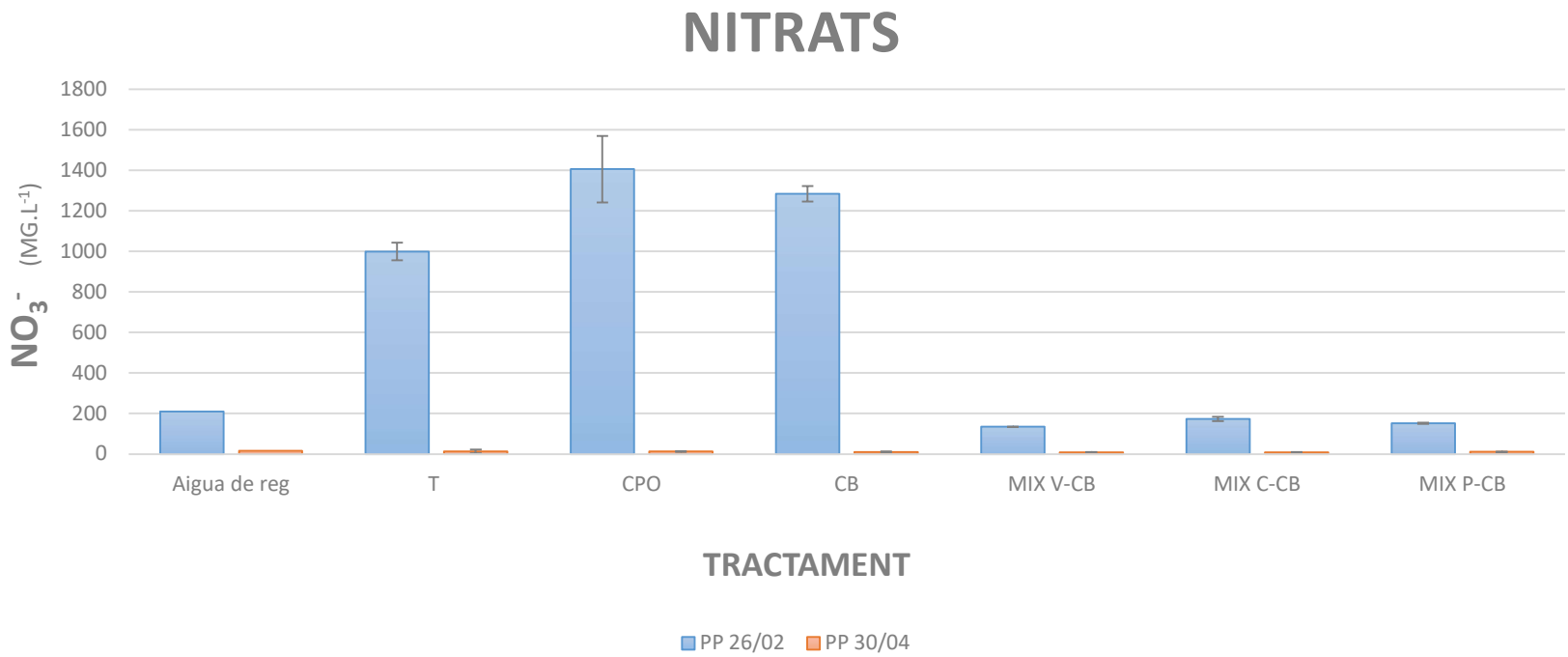
Nitrate comparison at the beginning and the end of the experiment.



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First conclusions

Under the experimental conditions:

a) Extruded material did not work, at least at the tested mixtures. N starvation could be the reason.

b) The treatments with 100% compost worked, even better than peat.

c) In general, the fertility of all substrates tested at the end of the experiment was weak

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Trial autumn 2020: first steps

2 sources of variation:

- **Substrates** (extruded materials from 50 to 20%)
- **Fertilization** with poultry fertilizer (or not).

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