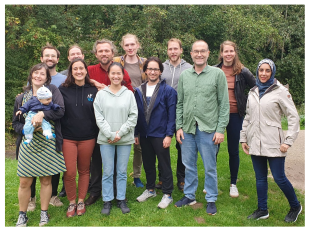

Semantic Technologies for Companion Planting

with the CoPla Ontology

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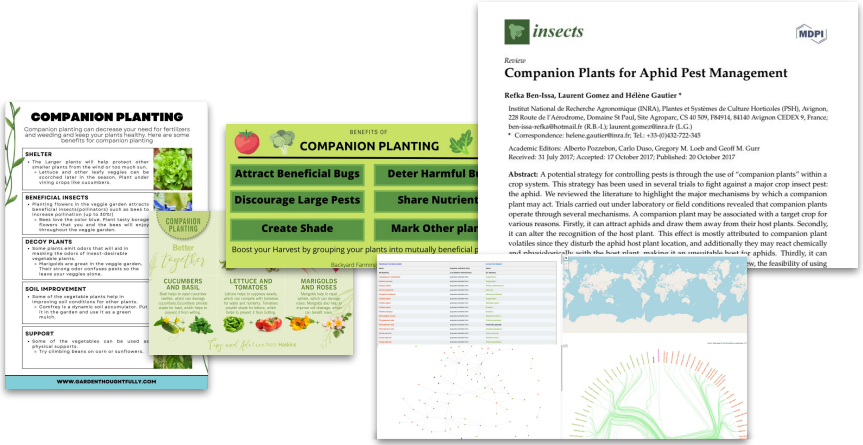
Companion planting

- Benefits:
  - plant growth and health,
  - natural pest deterrent,
  - soil enhancers
- Leverages synergies between plants

Challenges

- Dispersed and multimodal knowledge
- Complex relationships



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Approach: the CoPla ontology

https://homesteadandchill.com/benefits-companion-planting-chart/

Requirements

R1: include the core concepts;

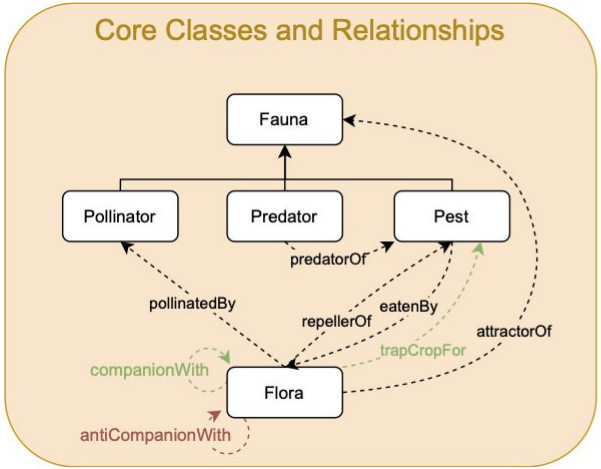
R2: describe different types of companion and anti-companion relationship;

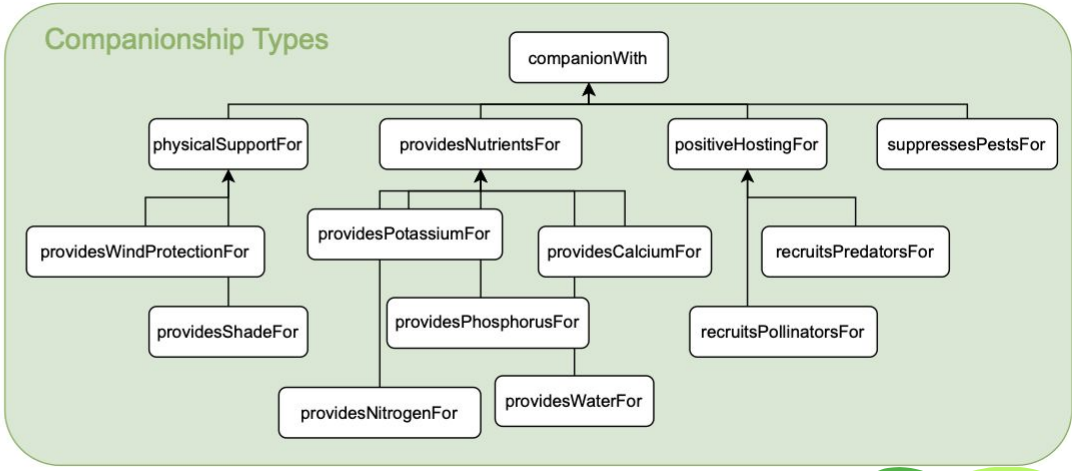
R3: define properties describing various mechanisms of companion planting;

R4: describe qualities of optimal and sub-optimal garden configurations;

R5: model specific plant species and their metadata (common and scientific names)

The CoPla ontology



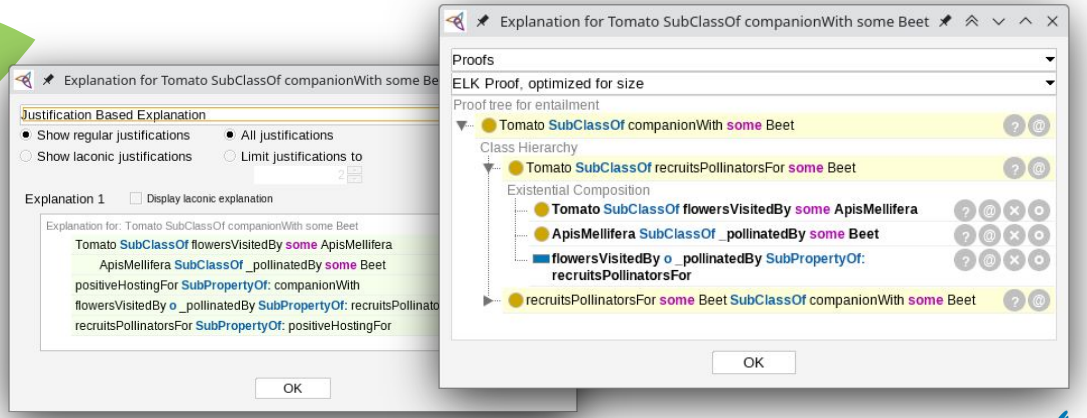


Data integration

- Companion planting charts
  (*Tomato **subClassOf** Fauna*;
  *Tomato **subClassOf** companionWith Beet*)
- Wikidata
  (*Tomato **taxonName** "Solanum lycopersicum"*)
- GloBI: Plant-plant, or plant-animal interactions
  (*Tomato **subClassOf** flowersVisitedBy **some** ApisMellifera;
  ApisMellifera **subClassOf** pollinates **some** Beet*)
- Books: companionship mechanisms
  *(flowersVisitedBy **o** pollinates **subPropertyOf** recruitsPollinatorsFor)*

Show Cases

1. Finding and explaining (anti-) companions
2. Analysing garden configurations
3. Suggesting plant placement



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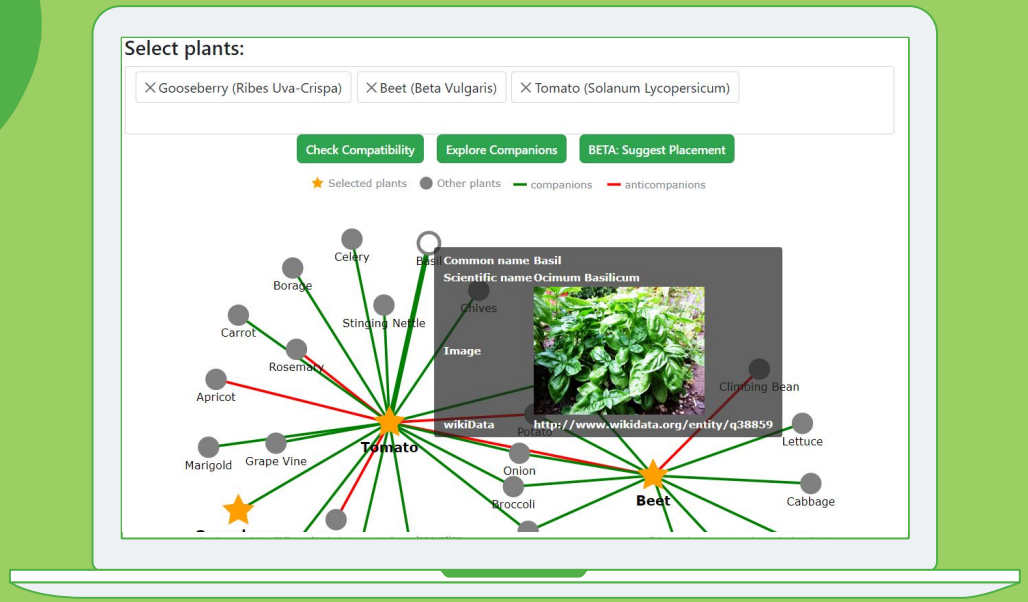
Select plants:
Gooseberry (Ribes Uva-Crispa)
Beet (Beta Vulgaris)
Tomato (Solanum Lycopersicum)
Check Compatibility
Explore Companions
BETA: Suggest Placement
Selected plants
Other plants
companions
anticompanions
Celery
Borage
Chives
Carrot
Stinging Nettle
Rosemary
Apricot
Common name Basil
Scientific name Ocimum Basilicum
Image
wikiData
http://www.wikidata.org/entity/q38859
Climbing Bean
Lettuce
Marigold
Grape Vine
Tomato
Onion
Broccoli
Beet
Cabbage

Demo

To sum up...

- The CoPla ontology can help sustainable planting
- CoPla ontology integrates multi-modal data and formally explains garden configuration
- We can contribute to sustainability with the technologies that are already available!

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