

Comparing the Effectiveness of Select Companion Plants for Management of Pest & Beneficial Insects on Outdoor Grown Cannabis

Background

- Outdoor grown drug type *Cannabis sativa* L. (Fig. 1) is threatened by economically damaging pests.
- Growers must rely on non-chemical IPM tactics to mitigate arthropod pests on outdoor grown cannabis because only a few insecticides are registered.
- Cultural control** is an **IPM strategy** that manipulates the growing environment of a crop, promoting the existing beneficial insect populations and potentially repelling and retaining insect pests.
- Companion planting** is a form of **cultural control** (Fig. 2).



Figure 1. Drug type cannabis crown.



Figure 2. Companion plants between rows of cannabis.

Objectives

- 1) Compare select companion plants for their effectiveness in outdoor grown cannabis in Ontario; and
- 2) Assess the feasibility of utilizing companion plants for IPM on cannabis using a plant performance index score, diversity index and observations.

Companion Planting

- Involves growing other plants alongside the primary crop plant, providing food and shelter for beneficial insects or disrupting insect pests (Fig. 3).
- Companion plants can be either crop or non-crop plants.

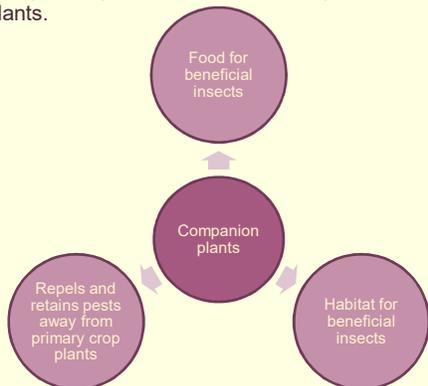


Figure 3. An explanation of how companion plants can work in the field.

Companion Plants



Teddy Bear Sunflower



Cosmos



Borage



Sunspot Sunflower



Marigold



Alyssum



Dill



Rosemary

Methods

- The study was conducted at a licensed outdoor cannabis operation in Thorndale, Ontario.
- Planting followed a 3x3 lattice square design over 4 hectares of cannabis production.
- Companions were assessed for the following:
 - Plants lost
 - Management effort
 - Drought resistance
 - Pests and beneficial insects
 - Management Costs
- Companion plants were scored using a plant performance index (Table 1).
 - *Details of the criteria used to rank the performance of the plants are provided in a handout*

Results

- Marigold was found to have the highest attraction for beneficial insects.
- Sunflowers were found to have the highest attraction and hence retention of insect pests away from the cannabis.

Table 1. The total scores of each of the companion plant species on the plant performance index. The total score is out of 25. Higher scores correlate to superior plant performances.

Companion Plant Performance Index

Companion plants	Parameters					Total	Overall Performance
	Resilience	Management effort and cost	Drought tolerance	Beneficial Attractiveness	Pest Attractiveness		
Borage	5	3	5	2	4	19	1 st
Marigold	5	4	3	5	2	19	2 nd
Sunspot Sunflower	5	4	3	3	4	19	3 rd
Alyssum	5	4	2	4	3	18	4 th
Teddy Bear Sunflower	5	4	2	2	5	18	5 th
Dill	5	4	1	4	3	17	6 th
Rosemary	5	5	4	1	1	16	7 th
Cosmos	5	3	3	3	2	16	8 th

Conclusion

Top 3 recommended companion plants based on the performance index scoring:



Growers can select combinations of plants that synergize in their roles as companion plants.

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