GARLIC GERMPLASM AND CLEAN SEED PRODUCTION

A Data Management Plan created using DMP Assistant

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Project abstract:

A garlic clean seed project will directly benefit the garlic sector by removing barriers to purchasing disease-free seed in Ontario. This project will improve the efficiency of producing clean seed, decrease the wait time, increase the number of cultivars available to growers and as a result reduce the cost to growers. This project will improve the productivity and profitability of the Ontario garlic sector as a whole and increase the sector's capacity to meet the domestic demand. Garlic production in Ontario is an estimated $30 million industry with significant yield losses of 25–50% due to both virus and nematode infection. Over the last decade, the majority of growers have experienced extreme crop failure and all growers have experienced virus-like symptoms or nematodes in their field.

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Copyright information:

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Data collection

Provide an overview of the data that will be generated, collected or acquired to support this project. If data will be acquired from a third party, specify the source.

Determining the ideal conditions to propagate garlic in vitro is not fully understood and currently only publicly available for one cultivar, 'Music' in Canada. This project aims to address this knowledge gap by:

1. Use assessments from a multisite garlic cultivar trial to harvest genetic material in the form of scapes from 5 new lines, in addition to 'Music' and put into tissue culture and virus indexed
2. Assess the 5 new lines and create selections to have the best multiplication method
3. Conduct transfer protocol based on in vitro growth type
4. Conduct transfer protocol based on density
5. Determine optimum media volumes in tissue culture vessels
6. Determine ideal storage conditions for growth media
7. Determine optimum media type including modifications to vegetative and bulb development media
8. Determine the idea growth cycle (time of year to grow out plants in the greenhouse)
9. Determine the best fertilizer regime for feeding plantlets to result in marketable roundels
10. Assess the acclimation rates of plants going into the greenhouse based on humidity
11. Determine the best density to grow plantlets within the greenhouse
12. Work with OMAFRA to transfer knowledge about clean seed production to grower stakeholders

What method(s) of data collection will be employed?

Data will be derived from measurements (weight, height, number) of plantlets in the lab and screenhouse.

What types of data will be included?

Numeric data.

What software or digital formats will be used to collect, manage and analyze the data?

MS Excel.

Provide an indication of the scope of the data?

Approximately 5 new cultivars will be analysed for growth in the lab and screenhouse. These cultivars will have multiple lines that will be followed to the final product.

Data storage

Estimate the size of data storage that will be required.

Approximately 1 GB of data will be generated.

Where will your data be stored during the collection, collation and analysis phases of the project?

All data is stored on a password protected computer and a second copy is stored in a drive on a server within the SPUD unit.

What backup strategy will be employed?

The data will be backed up on a remote hard drive that is backed up when the laptop is attached to the desk station at the SPUD unit.

How will your data files be organized? What file naming conventions will you use? A brief overview or example would be adequate.

Folders will be created for data for each experiment. Files within each folder will have the project name and date. (ie. Garlic Media 13 Aug 21.xls)

What metadata will be developed for your data? Will there be supplemental documentation prepared to assist with the interpretation and analysis of your data?

Each column in the spreadsheet will have a description text heading (e.g. "garlic cultivar"). Notes will be used to describe the variable in detail. A supplementary document (additional tab) will be used to assist the understanding of that data if it becomes complex and a note does not suffice. If there is E-mail correspondence regarding the data, the E-mail will be attached as a word file within the excel spreadsheet.

Data archiving and preservation

Will you deposit your data in the UG data repository or an external data repository? If you are opting to not archive your data in a repository, where will your data be housed after completion of your project?

The data will be archived in the UG data repository for long-term preservation.

Discuss any data transformations that will be needed so your data is preserved in appropriate, non-proprietary formats.

The data will be exported from Excel and preserved as plain text CSV files.

If some of your data will not be preserved, how long will you retain it? Will the non-preserved data be destroyed?

The raw data will be retained for three years and then destroyed.

Sharing and reuse

Will the data that you archive in a data repository be made available for sharing and reuse by other researchers?

There are IP and commercial concerns that prohibit sharing. Data that is **not containing** IP will be made available for sharing and reuse by other researchers and openly shared through the UG data repository.

Explain which version of your data or subset of your data will be shared.

The de-identified, final version of the data will be shared if data is shared to the criteria above.

When will your data be available for discovery by other researchers? Will you impose an embargo on publication of your data? If so, please provide details on the duration of the embargo.

Data that is **not containing** IP will be made available for sharing after the study has been published.

Will you limit who can access your data? If so, who will that be and why are you limiting the data's reuse?

The data is building off of IP created by the Garlic Growers Association of Ontario and OMAFRA. New IP created will be limited to reuse that will directly impact Ontario garlic growers. The raw data may be provided to researchers who submit a request to the PI in consultation with the SPUD unit.

Are there specific license terms you will assign to users of your data?

The data will be licensed with a CC Attribution-ShareAlike license after approved by the PI in consultation with the SPUD unit.

Restrictions/limitations

Are there limitations or constraints on how you manage your data resulting from legal, ethical or intellectual property concerns?

Data that contains new IP or does not have commercial restraints for the Ontario garlic industry, will be limited to researchers asking for use from the PI in consultation with the SPUD unit.

Would your data need to be anonymized or de-identified before being shared with others?

The data will need to be de-identified before sharing. The version of the data containing confidential IP/information will be archived in a data repository but not available for sharing.

Confidential information

What information do you want to include in your DMP that should not be publicly shared?

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None.