

- 1) The Statement of Work in Appendix B is hereby deleted and replaced with the following

APPENDIX "B"

STATEMENT OF WORK

Preparing, deploying, and maintaining Burkard spore samplers across southern Alberta from June to August, 2019-2020

Background

Monitoring the air for plant pathogens is a promising avenue of research for developing disease management tools. One of the main technologies used to capture air samples is the Burkard multi-vial cyclone sampler, manufactured by Burkard Manufacturing in the UK. Our lab has deployed these machines for several years across southern Alberta, however during that time they have performed inconsistently and required plenty of maintenance which was not previously accounted for in the research program. Because these samplers are located in remote locations, monitoring them to ensure they are working correctly has become an onerous task which we are not prepared for, both in terms of man hours and technological expertise.

Objective

It is AAFC objective to contract with a company that will prepare, deploy, and maintain up to twelve Burkard spore samplers across southern Alberta. We are looking for a company that has the experience and resources to provide robust trouble shooting. The end goal is to obtain a consistent, reliable set of data from the spore samplers, which will enable the lab to fulfill its research duties.

Scope of Work

- 1) Within 1 week after contract award the contractor will receive 12 Burkard, multi-day volumetric spore samplers.
 - a. At the contractors premises the traps will be inspected over a 3-week period to determine reliability of each trap. This includes checking wiring and operation of the timing box (programming of the timer box).
- 2) The contractor will make repairs to the traps, if necessary. Repairs include re-wiring and trouble-shooting of equipment malfunction. If parts are required, the company will purchase parts from Burkard Manufacturing.
 - a. If repair costs for an individual sampler is estimated to exceed \$500, the contractor shall confirm with AAFC that this cost is acceptable before proceeding with the repair.
 - b. Cost of parts will be paid out at cost, unless cost of repair exceeds \$5000 annually. If cumulative annual costs exceed \$5000, an amendment can be made to the contract.

- 3) After traps are functioning, they will either be returned to AAFC-Lethbridge for storage until deployment, or they will be deployed. After storage and with time permitting, traps will be run and tested for additional 3 weeks by the contractor to ensure traps are working prior to deployment.
- 4) In June 2019 and 2020, traps will be deployed to dry bean fields near Cranford, Vauxhall, and Taber in southern Alberta.
 - a. AAFC will locate fields (minimum of 3, maximum of 6), contact producers and receive necessary permissions from producer's to use their fields for sampling, and obtain permission for the contractor to enter fields. The location of fields and permissions will be obtained at a date no later than May 1 of each year.
 - b. The deployment will be the responsibility of AAFC-Lethbridge with assistance from producer cooperators and contractor.
 - c. 1 -2 fields may receive 3 samplers, while the remaining will have 1 sampler only.
 - d. At the discretion of the AAFC Principal Investigator, AAFC may work with the company to place samplers with producers and in fields that the company already cooperates with.
- 5) The contractor will coordinate placing of traps with producer cooperators and AAFC-Lethbridge staff, and will provide training to cooperators on operation of the traps.
 - a. If collaborating growers allow, spore traps will be placed in each bean field, at least 40 m from the field's edge. If collaborating growers do not allow this, spore samplers will be placed on the downwind edge of the bean field.
 - b. Training will include a supply kit for each operator, and a checklist for trap maintenance.
- 6) Once traps are deployed, the contractor will monitor trap functioning, and make repairs as necessary.
 - a. Company will receive and respond to reports of problems communicated by the cooperators who will be collecting samples from the trap on a weekly basis.
 - b. Local repairs will be attempted first, but it is understood that some problems can only be fixed by Burkard Manufacturing Inc (manufacturers of the spore samplers). In this case, the contractor will deal with Burkard for shipping to the UK and coordinating repair of the samplers.
- 7) Company will modify collection vials (provided by AAFC-Lethbridge) to fit in the traps by cutting off the lids of 1.5 mL vials and ensuring the modified vials will fit into the slots on the spore sampler. Vials will be provided by AAFC.
- 8) The contractor will instruct cooperators on how to collect and clearly label each vial with its location and date of collection.
- 9) The contractor will coordinate collection of vials from the 9 – 12 deployed spore samplers and arrange for shipping or delivery to AAFC-Lethbridge twice a week.
 - a. Vial collection: The contractor will instruct cooperators on how to collect and ship directly to AAFC-Lethbridge.
 - b. Vial delivery: Cooperators will be instructed by the contractor to ship vials on the same day they are collected.
- 10) At the end of each season, the contractor will gather the spore samplers, clean them, make any necessary repairs, and bring them to AAFC for storage over the winter.

Deliverables and Schedule

Deliverables:

- 1) Test, troubleshoot, and prepare spore samplers for deployment in the 2019 and 2020 growing seasons.
 - a. The contractor must ensure all spore samplers are working correctly prior to deployment and must make any modifications necessary to do so (rewiring, new batteries, ordering new parts from Burkard, etc.)
- 2) Deploy spore samplers.
 - a. In conjunction with AAFC-Lethbridge staff and cooperators, spore samplers will be deployed in bean fields near Cranford, Taber, and Vauxhall each season.
 - b. Exact field locations will be chosen by AAFC-Lethbridge staff and communicated to the contractor; AAFC-Lethbridge staff will be present to assist in the placement of each sampler in each field (language: English).
- 3) Ensure samplers continue to sample on a daily basis during each of the growing seasons.
 - a. Each spore sampler will be deployed for approximately 60 days (end of June to end of August) for 2019 and 2020.
 - b. Each spore sampler will need to be checked at least once a week, either directly by the contractor or by one of the cooperators, to ensure it is functioning properly.
 - c. If a spore sampler malfunctions, attempt to fix it in the field. If such a fix is not possible, take the spore sampler back to the shop and repair it.
 - d. The contractor must maintain a collection of notes for each sampler regarding fixes made; a digital copy of this will be given to AAFC-Lethbridge at the end of each season (language: English).
 - e. The contractor must develop and maintain a handbook for trouble shooting the spore samplers in each season; a digital copy of this will be given to AAFC-Lethbridge at the end of each season (language: English).
- 4) Collect and deliver sampler vials from spore samplers at least twice a week to AAFC-Lethbridge.
 - a. Company must collect samples, or arrange to have them collected by collaborators, from all vials twice a week and deliver them to AAFC-Lethbridge within 24 hours of collection.
 - b. Vials must be clearly labeled with the sample date and site (language: English)
- 5) Perform end of season tidy up of spore samplers.
 - a. Samplers will be brought from the fields by either cooperators or AAFC-Lethbridge staff. Contractor will collect these either from AAFC-Lethbridge, or from a mutual rural meeting point (eg Taber Bean Plant) for end of season cleaning and testing.
 - b. Clean all spore samplers, and restore them to the working conditions they were in at the start of their deployment.
 - c. Return samplers to AAFC-Lethbridge for winter storage.

Schedule:

| Date | Deliverable |
|------|-------------|
| 2019 | |

| | |
|--------------------------------|---|
| April – May | Deliverable 1: test, trouble shoot, and prepare spore samplers for deployment; submit documentation on spore sampler uniformity |
| June | Deliverable 2: deploy spore samplers |
| June – August | Deliverable 3: ensure samplers work Deliverable 4: collect and deliver sampler vials to AAFC-Lethbridge |
| August - September | Deliverable 5: end of season tidy up Deliverable 3: submit documentation on trouble shooting spore samplers |
| 2020 | |
| January - March | Deliverable 1: test, trouble shoot, and prepare spore samplers for deployment; submit documentation on spore sampler uniformity |
| April - June | Storage at AAFC facilities |
| June | Deliverable 2: test and deploy spore samplers |
| June – August | Deliverable 3: ensure samplers work Deliverable 4: collect and deliver sampler vials to AAFC-Lethbridge |
| August - September | Deliverable 5: end of season tidy up Deliverable 3: submit documentation on trouble shooting spore samplers |
| Option Period #1 – 2021 | |
| January - March | Deliverable 1: test, trouble shoot, and prepare spore samplers for deployment; submit documentation on spore sampler uniformity |
| April - June | Storage at AAFC facilities |
| June | Deliverable 2: test and deploy spore samplers |
| June – August | Deliverable 3: ensure samplers work Deliverable 4: collect and deliver sampler vials to AAFC-Lethbridge |
| August - September | Deliverable 5: end of season tidy up Deliverable 3: submit documentation on trouble shooting spore samplers |

Language of Work

The contractor may work in any language it prefers, although all correspondence and deliverables must be completed in English as indicated above.

Location of Work and Travel

All trouble shooting and repairs are to be completed at the contractor's site. It will be the contractor's responsibility to collect the spore samplers from AAFC-Lethbridge at the beginning of each season. It will also be the contractor's responsibility to coordinate the collection of the

sampler vials from each site. It will be AAFC-Lethbridge's responsibility to find suitable collaborators for collection of the sampler vials from each site. It will be the contractor's responsibility to coordinate the collection of the sampler vials from each site. The contractor will travel to the sites as needed throughout the summer for repairs only. It will be the company's responsibility to return the spore samplers to AAFC-Lethbridge at the end of each season for storage.

Duration/Period of Contract

April 1, 2019 – September 30, 2020, with a one year option to extend