COLE CROP IPM NEWSLETTER: Late June Update (Instragram Updates from the Field: @ufvvegipm)

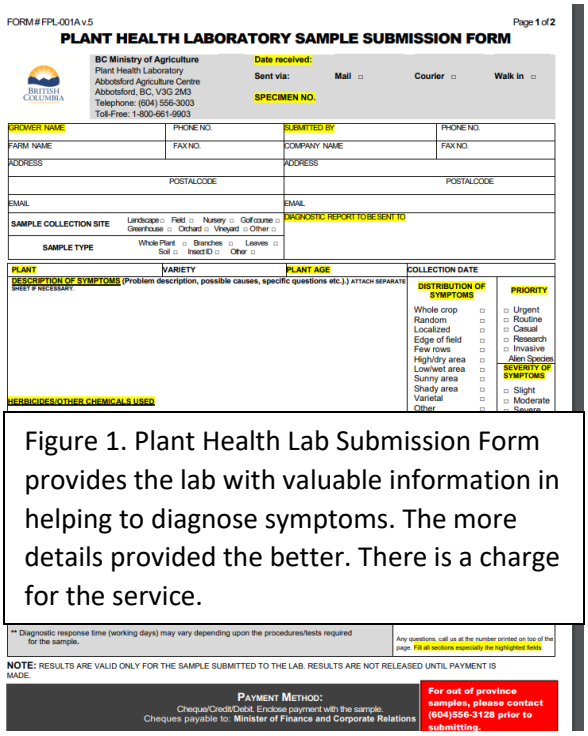
This newsletter (Bulletin 4) will be focusing on cole crop diseases.

Scouting Tips – Disease Monitoring

When monitoring fields for insect pests, growers should also be looking for any symptoms of abnormal crop appearance. Some causes of abnormal appearance are abiotic (*i.e.* not caused by a living thing). These include nutrient stress, herbicide phytotoxicity or other environmental stress (*e.g.* edema). Other causes of abnormal appearance are biotic (*i.e.* caused by a living thing). Ensure that insect feeding is not the cause. Then try and characterize the symptoms. Ask yourself some questions:

- Where on the plant are the symptoms? (Whole plant or lower or upper leaves)
- If symptoms are on leaves, are they on the bottom of the leaf or the top or both?
- What colour and shape are the leaf symptoms? Do they cross veins?
- What is going on below ground? Do the roots look “normal” – lots of root hairs and side roots, feel firm and not mushy, no strange shapes?

Make note of how extensive the symptoms are in the field and if there is a pattern in their appearance. For example, are the abnormal-looking plants along the row ends, but the interior plants look fine? Or are the symptoms distributed randomly. If the symptoms are very minor (*e.g.* only in 1 sample out of 10), then make note of where they are observed (flagging the site is a good idea). Come back in a week and see if the impacted plant(s) looks worse or if the symptoms are now on more plants (*e.g.* 4 samples out of 10 with symptoms).



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PLANT HEALTH LABORATORY SAMPLE SUBMISSION FORM

BC Ministry of Agriculture
Plant Health Laboratory
Abbotsford Agriculture Centre
Abbotsford, BC, V3G 2M3
Telephone: (604) 556-3003
Toll-Free: 1-800-661-9903

Date received:
Sent via: Mail ☐ Courier ☐ Walk in ☐
SPECIMEN NO.

GROWER NAME	PHONE NO.	SUBMITTED BY	PHONE NO.
FARM NAME	FAX NO.	COMPANY NAME	FAX NO.
ADDRESS		ADDRESS	
POSTALCODE		POSTALCODE	
EMAIL		EMAIL	

SAMPLE COLLECTION SITE: Landscape ☐ Field ☐ Nursery ☐ Golf course ☐ Greenhouse ☐ Orchard ☐ Vineyard ☐ Other ☐
DIAGNOSTIC REPORT TO BE SENT TO
SAMPLE TYPE: Whole Plant ☐ Branches ☐ Leaves ☐ Soil ☐ Insect ID ☐ Other ☐

PLANT	VARIETY	PLANT AGE	COLLECTION DATE

DESCRIPTION OF SYMPTOMS (Problem description, possible causes, specific questions etc.) ATTACH SEPARATE SHEET IF NECESSARY.

DISTRIBUTION OF SYMPTOMS: Whole crop ☐, Random ☐, Localized ☐, Edge of field ☐, Few rows ☐, High/dry area ☐, Low/wet area ☐, Sunny area ☐, Shady area ☐, Varietal ☐, Other ☐

PRIORITY: Urgent ☐, Routine ☐, Casual ☐, Research ☐, Invasive Alien Species ☐

SEVERITY OF SYMPTOMS: Slight ☐, Moderate ☐, Severe ☐

HERBICIDES/OTHER CHEMICALS USED:

** Diagnostic response time (working days) may vary depending upon the procedures/tests required for the sample.

Any questions, call us at the number printed on top of the page. Fill all sections especially the highlighted fields.

NOTE: RESULTS ARE VALID ONLY FOR THE SAMPLE SUBMITTED TO THE LAB. RESULTS ARE NOT RELEASED UNTIL PAYMENT IS MADE.

PAYMENT METHOD:
Cheque/Credit/Debit. Enclose payment with the sample.
Cheques payable to: Minister of Finance and Corporate Relations

For out of province samples, please contact (604)556-3128 prior to submitting.

Figure 1. Plant Health Lab Submission Form provides the lab with valuable information in helping to diagnose symptoms. The more details provided the better. There is a charge for the service.

Next, to identify what is causing the abnormal appearance, growers should submit suspect samples to the BC Agri Plant Health Lab. The lab provides an information sheet on how to collect a good sample which can be found here: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/plant-health/plant-healthlab-sample-submission.pdf

The main points are to send multiple plants with the symptoms in question, to NOT send already dead plants (because dead plants tell no tales), and to send as much of the plant as possible (include roots). A submission form is also included with the sample (Fig. 1), and the more details provided on the form the better. The form can be found here: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/plant-health/plant_health_laboratory_sample_submission_form.pdf

Why is proper diagnosis important? Without proper diagnosis of what is causing the abnormal growth of plants, growers may not make the correct decisions for addressing the problem in the current growing season. For example, nutrient stress cannot be addressed with fungicides. As well, a bacterial disease will not be controlled with nutrient or fungicide applications. And finally, not all problems can be corrected in the current growing season. For example, plants that are collapsing due to clubroot infection cannot be treated with the addition of any kind of input currently available. Further, for a soil borne pathogen like clubroot, growers should arrange work so that infected fields are entered last so that they don't move soil on boots and equipment into new, uninfected fields.

Finally, without proper diagnosis better cultural control decisions for the NEXT growing season cannot be made. For example, if clubroot is present in the field then growers should plan for a rotation out of cole crop production for at least 2 to 4 years. For other pathogens, disease tolerant or resistant varieties could be chosen for the next growing season. Thus taking the time to monitor and then properly diagnose disease symptoms can save growers time and money, not just in the current growing season but also future seasons.

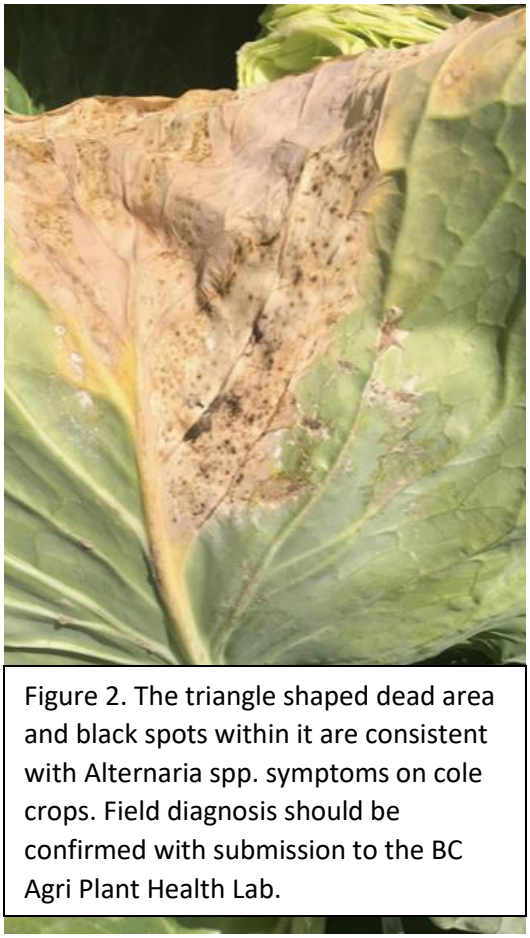

Figure 2. The triangle shaped dead area and black spots within it are consistent with Alternaria spp. symptoms on cole crops. Field diagnosis should be confirmed with submission to the BC Agri Plant Health Lab.

Foliar symptoms observed in the last 2 weeks

In the past week we have observed symptoms on now mature cabbage that are consistent with Alternaria leaf spot or black spot disease (Fig. 2). Cabbage and Brussels sprouts growers don't usually worry about black spot until August. However, during our 2018 field survey we found black spot on cabbage in early June. While infected outer wrapper leaves on fresh market cabbage or Brussels sprouts could be peeled off, this disease can reduce marketability of cauliflower in particular. It is also important to not have Alternaria-infected cabbage going into storage. If Alternaria has been confirmed in fields, later plantings can be protected in part by incorporating infected crop residue, as this will reduce the spread of spores. Alternaria is spread all through the summer via wind, rain or irrigation splashes, and movement of equipment from infected fields to clean fields. Long periods of leaf wetness under warm temperatures

promote infection. If using fungicides, it is important to ensure that coverage is adequate. **Learn more** about Alternaria biology and management see:
OMAFRA: http://www.omafra.gov.on.ca/IPM/english/brassicas/diseases-and-disorders/alternaria.html#advanced
BC Vegetable Production Guide:
https://www2.gov.bc.ca/gov/content/industry/agriservice-bc/production-guides/vegetables/cole-crops

Pests found in the past 2 weeks (and to continue to look for)

Figure 3. The crown of this cabbage plant is heavily infested with cabbage aphids. The formation of the head is deformed. Spots on leaves are consistent with black spot disease (but field diagnosis is to be confirmed).

Aphids – We are now seeing very large colonies of cabbage aphids in the crowns of mature cabbage (Fig. 3) and on the leaves of kale and broccoli. Management is very challenging once large colonies form. Growers should ensure they are getting adequate coverage with their contact insecticide sprays (organic or conventional). Because natural enemies continue to be active it is important to also choose products that will be soft on natural enemies. Natural enemies will continue to contribute to aphid control throughout the summer. See Bulletin 3 for more information about aphid monitoring and natural enemies.

The Cole Crop Newsletter is prepared by Renee Prasad (UFV Agriculture) in consultation with Dru Yates (ES Cropconsult Ltd.), and Susan Smith (BC Agri). The purpose of this newsletter is to educate producers on the current status of cole crop pests in the Fraser Valley. Pest status in individual fields will vary. Funding is from Brassica Levy Research Fund, Processing Vegetable Industry Development Fund and the Fraser Valle Cole Crop Growers Association. References to products are for educational purposes and do not imply endorsement or recommendations for use. Growers should always read and follow label directions. Full labels for products registered in Canada can be accessed via Health Canada: https://www.canada.ca/en/health-canada/services/consumer-product-safety/pesticides-pest-management/registrants-applicants/tools/pesticide-label-search.html

BCVMC BC VEGETABLE MARKETING COMMISSION

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