

**GUIDE TO THE OPERATION OF THE  
ONTARIO CEREAL CROPS COMMITTEE  
AND  
GENOTYPE TESTING PROCEDURES**

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**Also refer to 'OCCC Trial Methods and Procedures', available on [www.gocereals.ca](http://www.gocereals.ca)**

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## 1.0 INTRODUCTION

The roles of the Ontario Cereal Crops Committee (OCCC) are to:

- Act as the recommending body for cereal variety registration in Ontario. As a CFIA recognized recommending body, the committee's tasks include:
  - Understanding and following the Seeds Act and CFIA guidelines regarding registration of cereal varieties. The concept of harm to the industry is central to not supporting candidate varieties for registration.
  - Set variety registration protocols and minimum standards including agronomic performance, quality, disease reaction, and check varieties
  - Evaluate sponsor generated and supplied data to determine adherence to protocols
  - Advise CFIA of candidate support decisions
    - To 'support' or 'do not support' candidate for registration in Ontario
    - To 'object' or 'do not object' to requests for extension of registration to Ontario from other regions. Objection would be based on the candidate being a potential harm to the industry (ie disease).
- Coordinate cereal performance testing in Ontario and dissemination of the results by:
  - Setting testing protocols including methodologies; test site selection and inspection; data collection, summarization publication and distribution; and managing financial aspects of running the testing system
- Provide a forum to review cereal-related research (public and private) to facilitate its coordination. Part of this role leads to the inclusion of new information in the OMAFRA Agronomy Publication 811).

The crops for which OCCC holds this mandate are:

Barley  
Oats  
Wheat  
Spelt  
Triticale  
Buckwheat

The OCCC has no authority outside of Ontario.

## **2.0 OCCC STRUCTURE**

### **2.1 Membership**

The OCCC has membership from public and private sectors with interest in cereal production and utilization.

Representation on the OCCC is [see also Appendix 1]

OCCC Executive (non-voting members, 2 year terms)

- Chairman
- Past Chair
- Vice Chair
- Secretary
- Treasurer

OCCC Voting Members (one vote each)

- Agriculture and Agri-Food Canada
- Canadian Grain Commission
- Canadian Seed Trade Association
- Grain Farmers of Ontario
- Ontario Agri Business Association
- Oat and Barley Council of Ontario
- Ontario Millers Association
- Ontario Ministry of Agriculture, Food and Rural Affairs
- Ontario Seed Growers Association
- Ontario Soil and Crop Improvement Association
- University of Guelph

Ex-officio Non Voting Member

- Canadian Food Inspection Agency

OCCC Coordinator Members (non-voting, 2 year terms)

- Performance Trial coordinator
- Disease coordinators
- Quality Subcommittee chair
- Winter wheat Registration coordinator
- Spring Wheat Registration coordinator
- Barley Registration coordinator
- Oat Registration coordinator
- Data coordinator

OCCC embodies three committees (see also Appendix 1)

- Quality Subcommittee
- Appeals Committee (the executive)
- Confidentiality Committee

## **2.2 Meetings**

The OCCC meets in January, August and October. Other meetings may be held as required.

### Meeting topics:

January: review production topics and consider registration support requests from sponsors  
August: review and discuss winter cereal performance trial data and protocols for the upcoming year  
October: review and discuss spring cereal performance trial data and protocols for the upcoming year

All interested parties are welcome to attend and participate in the meetings at the discretion of the meeting chair.

There is a \$20.00 entrance fee to attend OCCC meetings.

## **2.3 Voting Procedures**

Fifty percent attendance of the voting Committee membership constitutes a quorum. Only Committee members may vote. Over fifty percent of the voting members present must vote in the affirmative for a motion to be carried. A secret ballot may be requested by any member for any motion, with approval of a majority of the members present. The Committee has adopted Sturgis' Rules of Parliamentary Procedures.

## **2.4 Waiving of Rules**

The OCCC may waive minor deviations from rules. A 2/3 majority vote is required to suspend or waive rules if necessary.

## **3.0 REGISTRATION PROCEDURES**

### **3.1 Cultivar Evaluation Procedures**

All candidate cultivars for registration are to be tested under an approved standard procedure for field crop production and data collection as set by the OCCC (see document OCCC Trial Methods and Procedures). This procedure is reviewed annually.

### **3.2 Crop Coordinators**

Registration Coordinators are appointed by the OCCC. Coordinators aid the committee in setting standards for respective species (e.g. designation of standards and protocol). Coordinators also check and report on data submissions accompanying sponsor registration requests to determine if all requirements for registration have been met including quality and disease as set forth in this "Guide" and whether a waiving of rules would be required to meet these requirements. Coordinators also present a list of support requests to the OCCC for voting at the January meeting. For the list of crop coordinators, refer to Appendix 1.

### **3.3 Testing Sites**

For Registration Trials, sponsors are responsible for site locations, subject to OCCC approval. There must be at least 20 km between sites in any one growing area, except where significant differences in growing environment are demonstrated (e.g. extreme differences in soil type or disease pressure). One third of the registration data must come from "independent sites" for conventional (non-restrictive) registration support.

All grain harvested in registration tests by test co-operators conducting registration trials for themselves or others must be retained until December 1 of the current year, and preferably until the next year's crop is sown.

### 3.4 Inspection of Trials

For registration tests, sponsors must inform OCCC crop species coordinators of the location and other appropriate information of sponsor-run trials by May 31. Inspection of registration trials will take place for probationary growers only and only for a period of three years. Inspections will be done by an OCCC appointed inspection team which is composed of at least three persons, of which at least two-thirds must approve acceptability of the test. Each test site for the probationary grower will be inspected as soon after heading as possible to confirm that each test is being conducted in an acceptable manner and is acceptable for uniformity of stand, pests, fertility and other agronomic characteristics.

Probationary growers must provide detailed maps and directions showing test location, along with a detailed sketch of the location itself, showing where the test is located within the field. A randomization plan must also be provided. A sign clearly visible from the road must be posted. If the inspectors cannot find the test in a reasonable period of time or cannot reach it, the test will not be inspected.

### 3.5 Registration Categories

- a) Conventional - Non-restrictive
- b) Contract - Restrictive
- c) Special consideration - Non-restrictive

### 3.6 Support Requirements

#### 3.6.1 Support for Plant With Novel Traits Varieties

Where a PNT (Plant with Novel Traits) variety is being considered for registration support, the sponsor must inform the OCCC at the time of request for support that the variety is a PNT and also reveal the modified trait to the Committee. All other requirements for registration support must be met as outlined below.

#### 3.6.2 Data Requirements For Registration Support of Candidate Cultivars - Conventional (Non-Restrictive) (see below for Spelt, Buckwheat, Triticale, or Winter Durum)

- a) **Agronomy:** Cultivar sponsors must provide the OCCC with evidence that their candidate cultivar(s) is/are adapted to the growing conditions that normally prevail in the intended areas of Ontario. Evidence under this category is to be obtained from plots grown in Ontario (**\*see note below**) and includes:

- yield (10 station yrs, minimum 2 yrs, 4 rep trials; see Section 4.0)
- number of days to heading (minimum 2 station-years)
- 1000 kernel weight (minimum 2 station-years)
- weight per volume (minimum 2 station-years)
- lodging resistance (minimum 2 station-years)
- winter survival (for winter cultivars; minimum 2 station-years)
- disease data for specific crops (see Section 3.10 and Appendix 4 & 5) Fusarium below.

\* **NOTE:** Data from Canadian sites immediately adjacent to Ontario may be accepted by the OCCC on an individual basis. They must meet all OCCC requirements. A minimum of 8 station-years in Ontario and two from such outside tests will be acceptable for registration purposes.

### Reaction to Fusarium for wheat

For registration purposes, requirements are for a minimum of 4 station-years of inoculated test data for winter wheat and a minimum of 2 station-years for spring wheat (see Appendix 4 & 5 for specific wheat support requirements).

- b) **Quality:** The candidate cultivar(s) must fit into the quality requirements of the cereal industry in Ontario. Data should be provided from a minimum of six station-years planted over two years with a minimum of two station-years per year. The OCCC uses the Quality Subcommittee Guidelines (Appendix 6) as the template to define:
- 1) the category to which a line belongs,
  - 2) the checks pertinent to the category,
  - 3) the quality traits that have to be monitored and the performance in relation to the checks.

The Quality Subcommittee advises the OCCC of its assessment of quality in relation to the checks of candidate cultivars.

**c) Submission of Data:** Sponsor generated data for non-restrictive registration purposes must be sent to the appropriate species coordinator(s) of the OCCC no later than two weeks prior to the January meeting date. If there are problems with submissions (protocol or merit) coordinators will advise sponsors who must have their final requests to all OCCC and Quality subcommittee members at least one week prior to the January meeting date (see section 4.0 for support request protocol and dates for all three registration categories - conventional non-restrictive, contract restrictive and special consideration non-restrictive). Submissions for support received after the above deadlines will not be considered, unless the committee agrees to waive the deadline in response to a request from the sponsor. Role of coordinators can also be found in sections 4.0.

### **3.6.3 Data Requirement for Registration Support of Candidate Spelt Cultivars - Conventional (Non-Restrictive)**

Cultivar sponsors must provide the OCCC with evidence that their candidate spelt cultivar(s) is/are adapted to the growing conditions that normally prevail in the intended areas of Ontario. Evidence under this category is to be obtained from plots grown in Ontario and includes:

- yield (4 station years, minimum 2 years; see Section 4.0)
- report all agronomic data collected including: number of days to heading, 1000 kernel weight, weight per volume, lodging resistance, winter survival (where applicable) and disease data.

Reaction to Fusarium for spelt: inoculated test data from 2 station-years are required. For registration purposes, candidate spelt cultivars must have Fusarium Head Blight symptoms less than or at least not significantly greater than the worst agronomic check, where the worst check in non-inoculated field tests has a minimum of 3% infected heads and in inoculated tests has a Fusarium Head Blight Index equal to or greater than 15% (see Appendix 7 for Agronomy and Disease checks).

Fusarium inoculum used in evaluating Ontario cultivars must be representative in pathogenicity of the pathogen population occurring in Ontario as shown by reaction of designated inoculation check(s) (as per Disease Coordinator). All fusarium data must be reported.

Conventional registration of spelt wheat (non-restrictive):

1. Merit testing - arithmetically compared to check variety as environmental index only.
2. Minimum of four station-years of data over two years testing, at least two tests in any one year, if only two years of data are presented.
3. All data may be generated by sponsor.
4. One or more of the current SRW or HRW wheat agronomy check varieties are to be used as comparative check variety for yield until a spelt variety is registered, which would then



become the check. Refer to Appendix 7 for the current OCCC Approved list of checks.

Data from all tests must be presented in summary form for all traits measured. All the replication data for all traits measured must be made available to the OCCC upon request.

Tests (checks and candidate cultivars) with C.V.s greater than 16% in a four-replicate test may not be included in the means for yield. Even if yields are not used in the mean, other data must be presented. A test shall consist of OCCC designated checks and any number of candidate cultivars, with at least four replications planted. All tests need not contain the same candidates.

#### **3.6.4 Data Requirement for Registration Support of Candidate Buckwheat Cultivars - Conventional (Non- Restrictive)**

Cultivar sponsors must provide the OCCC with evidence that their candidate buckwheat cultivar(s) is/are adapted to the growing conditions that normally prevail in the intended areas of Ontario.

Evidence under this category is to be obtained from plots grown in Ontario and includes:

- yield (4 station years, minimum 2 years; see Section 4.0)
- report all agronomic data collected, to include: number of days to flowering and/or maturity, 1000 seed weight, weight per volume, lodging resistance, disease data. (flowering defined as 3 flowers visible on 75% of plants; maturity defined as 70% brown seed)

Conventional registration of buckwheat (non-restrictive):

- 1) Merit testing - arithmetically compared to check variety as environmental index only.
- 2) Minimum of four station-years of data
- 3) Minimum of two years testing, at least two tests in any one year, if only two years of data are presented.
- 4) All data may be generated by sponsor.
- 5) Variety AC Manisoba to be used as comparative check variety for yield.

Data from all tests must be presented in summary form for all traits measured. All the replication data for all traits measured must be made available to the OCCC upon request.

Tests (checks and candidate cultivars) with C.V.'s greater than 16% in a four-replicate test may not be included in the means for yield. Even if yields are not used in the mean, other data must be presented. A test shall consist of OCCC designated checks (see Appendix 7) and any number of candidate cultivars, with at least four replications planted. All tests need not contain the same candidates.

#### **3.6.5 Data Requirement for Registration Support of Candidate Triticale Cultivars – Conventional (Non-Restrictive)**

Cultivar sponsors must provide the OCCC with evidence that their candidate triticale cultivar(s) is/are adapted to the growing conditions that normally prevail in the intended areas of Ontario.

Evidence under this category is to be obtained from plots grown in Ontario and includes:

- 1) Merit testing - yield (minimum 4 station years, minimum 2 tests per year; arithmetically compared to check cultivar(s) as environmental index only; (see Section 4.0).
- 2) Report all agronomic data collected including: number of days to heading, 1000 kernel weight, weight per volume, lodging resistance, winter survival (where applicable) and disease data.
- 3) All data may be generated by sponsor.
- 4) Wheat cultivar Superior to be used as comparative check cultivar for yield until a triticale cultivar is registered, which would then become the check.
- 5) Letter from miller requesting a pilot run for milling.

Data from all tests must be presented in summary form for all traits measured. All the replication

data for all traits measured must be made available to the OCCC upon request.

Tests (checks and candidate cultivars) with C.V.s greater than 16% in a four-replicate test may not be included in the means for yield. Even if yields are not used in the mean, other data must be presented. A test shall consist of OCCC designated checks and any number of candidate cultivars, with at least four replications planted. All tests need not contain the same candidates.

Reaction to Fusarium for Triticale: inoculated test data from 2 station-years (minimum 3 reps per test) are required. For registration purposes, candidate triticale cultivars must be compared with at least:

- one check from S/HS (susceptible to highly susceptible) category,
- one check from MS (moderately susceptible) category and
- one from MR (moderately resistant) soft white/soft red/hard red categories.

The variety representing the S/HS check should have a moderate to severe level of infection. Representative checks for each category are provided in Appendix 4 & 5.

The level of resistance of the candidate cultivar to Fusarium, in inoculated tests, based on visual assessment of FHB symptoms and deoxynivalenol (DON) level must not be worse than the worst of the highly susceptible check(s), average across locations. Candidate cultivars that do not meet or have not been demonstrated to meet the above fusarium protocol would be considered to possess a potential to harm Ontario's wheat industry.

Fusarium inoculum used in evaluating Ontario cultivars must be representative in pathogenicity of the pathogen population occurring in Ontario as shown by reaction of designated inoculation check(s) (as per Disease Coordinator). All fusarium data must be reported.

Reaction to Ergot for Triticale: For registration purposes, Ergot counts should be done on candidate lines, only if present and presented on a scale of 0-9.

### **3.6.6 Data Requirement for Registration Support of Candidate Winter Durum Cultivars - Conventional (Non-Restrictive)**

Cultivar sponsors must provide the OCCC with evidence that their candidate winter durum cultivar(s) is/are adapted to the growing conditions that normally prevail in the intended areas of Ontario. Evidence under this category is to be obtained from plots grown in Ontario and includes:

- 1) Merit testing - yield (minimum 4 station years, minimum 2 tests per year; arithmetically compared to check cultivar(s) as environmental index only; see Section 4.0).
- 2) Report all agronomic data collected including: number of days to heading, 1000 kernel weight, weight per volume, lodging resistance, winter survival and disease data.
- 3) All data may be generated by sponsor.
- 4) See Appendix 7 for wheat cultivars to be used as comparative checks for yield until a winter durum cultivar is registered, which would then become the check.
- 5) Letter from miller requesting a pilot run for milling.

Data from all tests must be presented in summary form for all traits measured. All the replication data for all traits measured must be made available to the OCCC upon request.

Tests (checks and candidate cultivars) with C.V.s greater than 16% in a four-replicate test may not be included in the means for yield. Even if yields are not used in the mean, other data must be presented. A test shall consist of OCCC designated checks (see Appendix 7) and any number of candidate cultivars, with at least four replications planted. All tests need not contain the same candidates.

Reaction to Fusarium for winter durum wheat: inoculated test data is required from 2 station-years (minimum 3 reps per test). For registration purposes, candidate winter durum wheat cultivars must be compared with at least:

- one check from S/HS (susceptible to highly susceptible) category,
- one check from MS (moderately susceptible) category and
- one from MR (moderately resistant) soft white/soft red/hard red categories

The variety representing the S/HS check should have a moderate to severe level of infection. Representative checks for each category are provided in Appendix 7 for list of check cultivars.

The level of resistance of the candidate cultivar to Fusarium, in inoculated tests, based on visual assessment of FHB symptoms and deoxynivalenol (DON) level must not be worse than the worst of the highly susceptible check(s), average across locations. Candidate cultivars that do not meet or have not been demonstrated to meet the above fusarium protocol would be considered to possess a potential to harm Ontario's wheat industry.

Fusarium inoculum used in evaluating Ontario cultivars must be representative in pathogenicity of the pathogen population occurring in Ontario as shown by reaction of designated inoculation check(s) (as per Disease Coordinator). All fusarium data must be reported.

### **3.7 Security of Unregistered Cultivars**

All persons and institutions conducting agronomic, disease and quality trials on behalf of the OCCC agree to abide by the "Code of Ethics for Plant Breeders and Co-operators Conducting Cultivar Evaluation Trials in Canada" as detailed in Appendix 3.

### **3.8 Seed Requirements For Registration Tests**

Seed of all candidate cultivars is to be provided untreated unless agreed upon by sponsors and indicated by the species trial coordinator. Decisions to treat seed and seed treatments to use are made year-by-year and differ for each crop kind. All varieties in a trial must be treated (or untreated). Where seed is treated it should be done so in accordance with best practices and in full observance of all manufacturers' recommendations.

All foreign varieties and breeding lines must be tested under their original designations or breeder's code.

### **3.9 Check Cultivars**

Check cultivars should be of a least Certified #1 seed standard and be provided by the sponsor, at no cost, from the same seed lot to all co-operators.

Check cultivars are reviewed annually and are selected from the best varieties. (See Appendix 11.) Some varieties may be checks for special features or agronomic traits. The checks against which a candidate variety is compared may change during the life of the registration candidate. (See Section 4.3a)

### **3.10 Agronomic Methods and Data Collection**

The crop production methods of the test should generally follow those for the crop as recommended in the OMAFRA Publication 811, Agronomy Guide for Field Crops, except as specified in the document "OCCC Trial Methods and Procedures".

Special tests may be run in parallel to the main sponsor registration tests for testing cultivars in specialized regimes (e.g. Intensive Cereal Management).

Data collection should be done by generally accepted practices except as specified in the document “OCCC Trial Methods and Procedures”. Disease data should be collected when diseases are present. All disease data must be presented.

The harvested area per replication shall consist of at least 2 rows, each at least 2.5 metres long with a maximum of 30 centimetres between rows.

### 3.11 Analysis of Data

All yield data should be subjected to statistical analysis. Normally, tests are not rejected on the basis of coefficients of variation (C.V.'s) alone. A C.V. greater than 16% for a four-replicate test (for checks and candidates) or its equivalent for tests with fewer replications is considered to be caution on the use of the data. All test data (reps) must be available to the OCCC (see Section 4.0).

## 4.0 REGISTRATION SUPPORT PROTOCOL

### 4.1 Voting Procedures

Candidate cultivars that pass protocol and merit requirements will be voted on in a block or slate. Species Coordinators review the agronomic performance of candidate varieties, while Quality and Disease Coordinators report on the acceptability of candidate varieties from his/her perspective. Those that meet registration requirements but are flagged with a weakness(es) that in the Committee's judgement may adversely impact Ontario agriculture may also be pulled out of their respective block or slate and voted on separately. Any member may have a candidate removed from a block, with consensus, for flagging purposes. Voting on cultivars that do not meet protocol and/or merit requirements or are 'flagged' as above and are therefore not included in the block is by secret ballot. The sponsor of a cultivar, if a voting member, may vote on a motion supporting the registration of that cultivar.

The OCCC will advise CFIA-VRO of the Committee decision “to support” or “to object to” the registration of the cultivar.

A motion: **“to support”** indicates that the cultivar is judged to be of benefit to Ontario agriculture based on Ontario generated data.

**“to object to”** is only used when there is a potential for harm to a market. Documentation must be provided to sponsor and VRO (e.g. disease epidemic potential).

**“do not object to”** is used when sponsors request extension of registration into Ontario from other regions. Candidate must not be harmful to Ontario Agriculture (e.g. Fusarium Head Blight)

### 4.2 Duration of Committee Support

Once a variety is supported by OCCC, the sponsoring individual or organization may apply to CFIA for registration. CFIA requirements to successfully register a variety can be found at <http://www.inspection.gc.ca/english/plaveq/variet/vartoce.shtml>

Submission of registration to CFIA may be deferred until January 20, 3 years after support from OCCC. After this date, committee support for the variety expires. The sponsor can request an extension to registration support to complete the application process to CFIA, if desired.

#### 4.3 Requirements for Conventional Registration (Non-Restrictive):

- a) Merit testing – the average relative yield<sup>1</sup> across all trials of the candidate variety must be arithmetically equal to (2 significant figures), or better than, the mean of the relative yields of the agronomic checks designated for yield. A candidate with lower yield may be acceptable if it is superior in some other significant characteristic so that it would fill a need not being met by existing registered cultivars.
- b) Minimum of two years testing, with at least two tests in any one year, if only two years of data are presented.
- c) Minimum of ten station-years planted, with a minimum of eight station-years of data, allowing for two test failures.
- d) At least one-third of the tests planted, calculated to the nearest test, must come from independent sources. However, if for any reason beyond the control of the sponsor, the data from independent tests are unusable, (e.g. winterkill, or excessive C.V.), the “independent source” requirement for the candidate cultivar(s) shall be deemed to have been met.
- e) Data from all valid tests must be presented in summary form for all traits measured. All the replication data for all traits measured must be made available to the OCCC upon request.
- f) Tests (checks and candidate cultivars) with C.V.’s greater than 16% in a four-replicate test may not be included in the means for yield. Even if yields are not used in the mean, other data must be presented. A test shall consist of OCCC designated checks and any number of candidate cultivars, with at least four replications planted. All tests need not contain the same candidates.
- g) Sponsor responsibility - supplying all merit data to the OCCC for registration support, including quality and disease data where applicable, organization of tests and site inspections. Sponsors must have support requests to species coordinators at least two weeks prior to the January meetings and to OCCC voting members, including the Quality subcommittee, at least one week prior to the January meeting. Proof of ownership (or marketing rights) must be made available to the OCCC if the candidate cultivar was not bred by the sponsor.
- h) OCCC responsibility - designation of agronomic, disease and quality check cultivars and site inspectors, approval of test protocol, designation of number of quality determinations needed for quality support and voting on support requests.
- i) Agronomy, quality and disease protocol and merit requirements are outlined in section 3.6 above for traditional registration support.

#### 4.4 Requirements for Contract Registration (Restrictive):

Contract registration is used to allow the orderly and legal sale, in Ontario, of cereal varieties with market related uniqueness, where the biochemical or biophysical characteristics of candidates distinguish them from the majority of registered varieties of the same kind or species AND where they would have adverse affects on the identity of those registered varieties. Sponsors may wish to use this category to register candidates that would pose harm to the marketplace if pursued in a non-restrictive manner. **Parts c), d) and e) of the support request below may be achieved in a confidential manner\* as described in section f).**

- a) Identification and ownership: Sponsor must provide species, name or experimental number and proof of ownership or market rights if sponsor is not original breeder.
- b) Agronomic merit: Sponsor must provide data from four station-years of yield trials from a minimum of two years. All tests can be sponsor derived. Tests must include appropriate checks and although comparative yields must be reported, no set yield level need be reached. All comparative data for measured traits must be reported.

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<sup>1</sup> Relative yield is calculated by dividing the yield of a candidate line or check by the mean yield of the currently designated yield checks in each trial.

- c) Uniqueness: Sponsor must state market related uniqueness.
- d) Market or end use: Sponsor must identify end user and show proof of end user's acceptance and intention to purchase seed or grain produced under contract. This demonstrates end user merit.
- e) Harm:
  - i. Sponsor must show harm that candidate would cause if registered in a non-restrictive manner.
  - ii. Sponsor must demonstrate a closed system of production and marketing to be followed that includes:
    - 1. Material sent to end user
    - 2. Material in excess of end user's requirements
    - 3. Material below end user's requirements
    - 4. Material retained for seed but in excess of requirements
  - iii. Sponsor must provide Fusarium data for wheat (as per Section 3.6 and Appendix 4 or 5)
- f) \* **Confidentiality protocol:** Uniqueness, market or end use and harm sections (other than Fusarium data) of a contract registration request may be pursued in a confidential manner with the Confidentiality Subcommittee. Decisions will be made by consensus. Refer to Appendix 1 for the structure of the Confidentiality Committee.
- g) Request support dates: If confidentiality is requested, the sponsor must notify the chair and secretary of the OCCC at least three weeks prior to the January meetings. The Confidentiality Subcommittee will be organized and ready to accept the confidential sections at least two weeks prior to the January meetings by which time the sponsor must supply the required information. . The OCCC voting members must receive the public part of the documentation at least one week prior to the January meeting as per sponsor responsibility in 4.2).

NOTE: The variety registration office may have additional requirements to fulfill before contract registration is granted. Please consult VRO "Procedures for the Registration of Crop Varieties in Canada" at the following web address  
<http://www.inspection.gc.ca/english/plaveq/variet/proced/procede.shtml>

#### 4.5 Requirements for Special Consideration Registration (Non-Restrictive):

Special consideration is used to allow the orderly and legal sale, in Ontario, of cereal varieties with market related uniqueness, where the biochemical or biophysical characteristics of candidates distinguish them from the majority of registered varieties of the same kind or species. **Parts c), d) and e) of the support request below may be achieved in a confidential manner\* as described in section f).** Harm is not involved.

- a) Identification and ownership: Sponsor must provide species, name or experimental number and proof of ownership or market rights if sponsor is not original breeder.
- b) Agronomic merit: Sponsor must provide data from four station-years of yield trials from a minimum of two years. All tests can be sponsor derived. Tests must include appropriate checks and although comparative yields must be reported, no set yield level need be reached. All comparative data for measured traits must be reported.
- c) Uniqueness: Sponsor must state market related uniqueness.
- d) Market or end use: Sponsor must identify end user and show proof of end user's acceptance\*. Merit may have been demonstrated only to end user and the quality is not within and existing class, therefore:

Sponsor must demonstrate a closed system of production and marketing to be followed that includes:

- 1. Material sent to end user: Example of grower/end user contracts or signed statement of

- fact may be presented to OCCC.
2. Material in excess of end user's requirements: Signed statement by end user that all material will be processed, or that any excess material will not be co-mingled with any class other than feed, may be presented to OCCC.
  3. Material below end user's requirements: Signed statement by end user that all material not processed will not be co-mingled with grain of any class other than feed, may be presented to OCCC.
  4. Material retained for seed but in excess of requirements: Signed statement from sponsor that excess seed will not be co-mingled with seed or grain of any class other than feed, may be presented to OCCC.
- e) Harm: Sponsor must provide Fusarium Head Blight data for wheat as per Section 3.6 and Appendix 4 or 5.
  - f) \* **Confidentiality protocol:** Uniqueness, market or end use sections of a special consideration registration request may be pursued in a confidential manner with the Confidentiality Subcommittee. Decisions will be made by consensus. Refer to Appendix 1 for the structure of the Confidentiality Committee.
  - g) Request support dates: Are the same as in contract registration 4.4 g) above.

#### **4.6 Interim Registration**

"Interim Registration" is defined as a registration for an initial three-year period, unless, less time is requested. Renewals of interim registration (one year) are permitted to a maximum of 5 years. Interim registration may be used for all registration categories.

#### **4.7 Support for Extension of Registration to Ontario**

The Committee shall consider requests for extension of registration into Ontario from other regions. In order for the candidate cultivar to receive a "do not object" vote, it must not be harmful to Ontario Agriculture and must meet Fusarium Head Blight and deoxynivalenol (DON) requirements as outlined in Appendix 4 or 5. If the committee deems that there is potential for harm to Ontario's cereal industry, OCCC will notify VRO, CFIA that the OCCC "objects to extension of registration to Ontario"

#### **5.0 OCCC APPEALS PROCEDURE**

A sponsor whose cultivar has been rejected by the committee may appeal the decision to the Appeals Subcommittee for reconsideration. Contract and Special Consideration Registration Request Supports pursued in a confidential manner may be appealed in a similar manner. Refer for Appendix 1 for structure of the Appeals Committee.

Successful appeals will be referred back to the full committee for re-consideration.

Appeals may be based on:

1. an error of consequence was made in the data that was submitted.
2. additional information is available
3. the accepted procedure in reviewing the data was not followed.
4. there are any other justifications for an appeal as accepted by the Committee.

## **6.0 PERFORMANCE TRIAL PROTOCOLS**

### **6.1 Introduction**

The Performance Trials of spring and winter cereals are conducted under the direction of the Ontario Cereal Crop Committee. Seed of Certified or equivalent breeder or pre-breeder status of registered varieties or candidates for registration is supplied by the variety/cultivar's sponsor for inclusion in the Performance Trial. Performance trials are grown at OCCC designated sites by collaborators on a cost recovery basis. Sponsors pay the full cost of the Performance trials (less any specified contributions by third parties). The OCCC determines costs and fees, administers collection of fees from sponsors and payment of costs to collaborators. This protocol applies to all cultivars/varieties entered within the Ontario Performance Trials.

### **6.2. Responsibilities**

The growing, retrieval and dissemination of data obtained from the Performance Trials is the responsibility of the OCCC, their appointed members and/or appointed delegates. Those responsibilities include setting performance protocols including methodologies and minimum standards, selecting testing sites and data collection, summarization and publication of collected data.

This protocol is authorised and administered by the Ontario Cereal Crops Committee (OCCC) and implemented through the Performance Trial and Data Coordinators.

The protocol shall not be altered without the prior approval of the OCCC. Requests and suggestions for amendment of the current protocol should be directed to the Performance Trial Coordinator.

Performance Agronomy Site Operators and Disease Site Operators are designated and supervised by the OCCC through the Performance Trial Coordinator and must have access to suitable facilities and expertise. A list of approved Sites and Operators can be found in Appendix 10.

### **6.3. Compliance**

Concerns regarding compliance to protocols or validity of data, tests or trials used to acquire information must be addressed through the Performance Trial Coordinator.

### **6.4 Security of Unregistered Cultivars**

All persons and institutions conducting agronomic, disease and quality trials on behalf of the OCCC agree to abide by the "Code of Ethics for Plant Breeders and Co-operators Conducting Cultivar Evaluation Trials in Canada" as detailed in Appendix 3.

### **6.5 Cultivar Evaluation and Assessments**

All cultivars in Performance Trials are tested under approved standard procedures for field production and data collection as set by the OCCC and outlined in the document 'OCCC Trial Methods and Procedures'. Trials and test data must be monitored by Agronomy/Disease Site Operators to ensure that the results provide a sound basis for estimating a cultivar's/variety's performance. Only data found to be sufficiently reliable will be used to calculate the mean variety performance. Agronomy and disease characteristics to be assessed by the various trial operators are detailed in 'OCCC Trial Methods and Procedures'. All agronomy and disease characteristics detailed within the protocol and their associated values shall be reported.

### **6.6 Cultivar/Variety Entry**

All Varieties registered [National, Regional or Interim status] with CFIA for sale in Ontario or varieties supported for registration by OCCC or other CFIA recognized crop committees are eligible for entry into the Ontario Performance Trials. Winter cereal cultivars/varieties shall be permitted for inclusion in the OCCC Performance trials if they are being submitted for registration support at the January meeting immediately following entry to the trial.



Varieties/cultivars are entered online in the member area of the [www.gocereals.ca](http://www.gocereals.ca) website. Refer to Appendix 9 for detailed information.

**Testing Areas and Locations:** Trials are arranged into geographic areas with locations in most major cereal growing areas of the province and may change as the need arises. The sponsor may select the geographic areas of the province to enter a variety but entry into all agronomic sites within an area is mandatory. Also, evaluation for fusarium heat blight is mandatory for winter wheat and spring wheat, in all locations (3 for winter wheat and 2 for spring wheat). See Appendix 10 for detailed site and location information.

The OCCC will review applications for location changes and additions at its August and November meetings, for winter and spring cereals, respectively.

**Fees:** Costs associated with operation of the performance trials are established by the OCCC based on actual fee for service costs. Costs are reviewed annually and updated as necessary. Fees charged to variety sponsors are based on the actual trial costs less any contributions from outside sources.

Sponsors will be invoiced for fees after the deadline for entries on a “Net 30 Days” basis.

Fees are non-refundable.

In the event that third party funding/contributions are available, a portion of the entry fees may be reimbursed. Lines entered, but not receiving support for registration, or not being registered with CFIA by the time of publication of the data shall not receive reimbursement, if available. See Appendix 8 for fee structure.

Sponsor accounts must in good standing. **Sponsors whose accounts are in arrears after the following dates will have data withheld on all of their entered varieties and may jeopardize their ability to further enter varieties into trials until such time as their account is in good standing.**

Winter Cereals: May 31

Spring Cereals: August 31

**Agronomy and Disease Site Operator Payment:** In the event that a site is lost due to crop failure (for example winter survival, hail, flooding etc), the Site Operator will be paid 50% of the total that would normally be paid to compensate for planting and other costs.

## 6.7 Trial Seed

The sponsor of the entered cultivar/variety is responsible for ensuring that Agronomy/Disease Site Operators receive all seed in accordance with OCCC procedures and criteria as detailed in Appendix 9. In the case of late or non-arrival of a cultivar/variety, the spot will be filled with an approved filler variety as designated by the Performance Trial Coordinator and the sponsor will be assessed the full cost of entry.

**Seed Quantities:** The number of pure, live, viable seeds required for each location is reviewed annually. Current requirements can be found in the members area of the [www.gocereals.ca](http://www.gocereals.ca) website under “Winter Cereal Guidelines” and “Spring Cereal Guidelines” in the “Entry Forms and Lists” section. Shipping information of each site co-operator can be found in Appendix 10, and also in the same section of the members area of the [www.gocereals.ca](http://www.gocereals.ca) website, as seed quantities.

## 6.8 Trial Management and Assessment

Refer to the document ‘OCCC Trial Methods and Procedures’ for recommended trial management practices and required and recommended trial assessment for agronomic/disease characteristics.

## **6.9 Inspection of Trials**

All Performance trials are inspected as organized by the Performance Trial Coordinator at an appropriate time during the growing season to ensure that they meet protocol and follow procedures as set by the OCCC and also to assess site acceptability, condition of plots, presence of disease etc. Inspections will be done by an OCCC appointed inspection team which is composed of at least three persons, of which at least two-thirds must approve acceptability of the test.

Agronomy/Disease Site Operators are responsible for completing the 'Trial Information Report', to be sent to the Performance Trial Coordinator prior to or at the time of inspection for signing by the inspection team. Site Operators can obtain a blank copy of the report by contacting the Performance Trial Coordinator.

## **6.10 Submission of Data**

The Agronomy/Disease Site Operator supplies a crop specific agronomic/disease data to the Performance Data Coordinator by using the 'Procedure for Entering and Reviewing Data' provided by the Performance Data Coordinator and also found in the members only area on the [www.gocereals.ca](http://www.gocereals.ca) website. Only the data input template shall be used for transferring data to the Performance Data Coordinator. No other entries data, other than those within the original entry list, shall be listed within the data report. All site data reports must be returned in the order of the entries submitted, ensuring that each data point truly represents the values of their respective cultivar. The Agronomy/Disease Site Operator shall ensure that all data supplied be complete and free from errors prior to transmission. Any errors should be reported and corrected prior to release of any OCCC data. All data collected shall be forwarded to the Performance Data Coordinator within the period outlined in the Appendix 12, OCCC Timelines.

The Performance Trial Coordinator will review the information with the Data Coordinator and make recommendations to the OCCC regarding the inclusion or exclusion of data to be published.

## **6.11 Publication of Data**

Varieties that are not offered for sale in Ontario will not be included in the public release of the Performance Trials results [Infosheet]. The sponsor/breeder is required to inform the Performance Trial Coordinator of any change in status by June 1, in order for the variety to be included in the public release of the Performance Trials results [Infosheet].

For varieties that were not fully registered at the time of entry, the sponsor/breeder is required to inform the Performance Trial Coordinator by October 31 (spring cereals) and March 31 (winter cereals) that lines have been registered and that the performance data should be presented in the public release of the Performance Trials results [Infosheet] if data are available

Guidelines on the publication of OCCC Performance trial data can be found in Appendix 11.

## **6.12 Protocol Review and Revision**

The Performance Trial Coordinator is responsible for review of the Performance Trial Protocols and Procedures.

The list of currently approved agronomic and disease characteristics as recognised by the OCCC is in the document "OCCC Trial Methods and Procedures". Any industry, sponsor and/or participant within the OCCC may request the assessment of additional characteristics within the Ontario Performance Trial System. Proposals for changes to performance protocols [ie site changes, additional trials or tests, fee structure etc] must be directed to the Performance Trial Coordinator by the following dates:

- Winter Cereals: August 15<sup>th</sup>

- Spring Cereals: October 15<sup>th</sup>

The assessment of additional and approved characteristics must be in keeping with currently approved Performance Trial protocols and procedures. Any approved special test or trial procedure should be considered as an addition to the standard requirements of the current OCCC protocol. Once agreed upon and approved by the OCCC any additional costs for assessment will be added to the fees currently charged the sponsor for Performance assessment. All sponsors/breeders shall be informed of any changes to the assessment of characteristics and resulting changes within the OCCC Performance fee structure.

## **APPENDIX 1 – STRUCTURE OF THE OCCC**

### **ORGANIZATION**

### **INDIVIDUAL**

### **CONTACT**

#### **OCCC Executive (non-voting members)**

Chair		Mr. Mark Etienne	mjetienne@dow.com
Past Chair		Mr. Martin Harry	mharry@secan.com
Vice Chair		Ms. Meghan Moran	mmoran@gfo.ca
Secretary		Mr. David Morris	davidtmorris@rogers.com
Treasurer		Mr. Peter Johnson Ms Ellen Sparry (alternate for signatures)	peter.johnson@bell.net esparry@redwheat.com

#### **OCCC Voting Members (in no particular order)**

Agriculture and Agri-Food Canada	AAFC	Dr. Alek Choo	ThinMeiw.Choo@agr.gc.ca
Canadian Seed Trade Association	CSTA	Ms. Ellen Sparry	esparry@redwheat.com
Canadian Grain Commission	CGC	Dr. Bin Xiao Fu	Binxiao.fu@grainscanada.gc.ca
Ontario Millers Association	OMA	Ms. Sheilagh Arney	sheilagh.arney@adm.com
Ontario Ministry of Agriculture, Food and Rural Affairs	OMAFRA	Mr. Scott Banks	scott.banks@ontario.ca
Ontario Soil and Crop Improvement Association	OSCIA	Mr. Les Nichols	les.nichols@ontariosoilcrop.org
Ontario Seed Growers Association	OSGA	Mr. Peter Szentimrey	peter@ssltd.ca
Grain Farmers of Ontario	GFO	Mr. Henry Van Ankum	henryvanankum@sympatico.ca
Ontario Ag Business Association	OABA	Andy Wilder	awilder@parrishandheimbecker.com
University of Guelph	U of G	Dr. Ali Navabi	anavabi@uoguelph.ca
<b>Ex-officio Non-voting Member</b>			
Canadian Food Inspection Agency			

<b>ORGANIZATION</b>	<b>INDIVIDUAL</b>	<b>CONTACT</b>
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**OCCC Quality Subcommittee**

Chair (ADM Milling)	Ms. Sheilagh Arney	Sheilagh.arney@adm.com
Secretary (non-voting)	Mr. David Morris	davidtmorris@rogers.com
Kraft Milling	Mr. Peter Worfolk	peter.worfolk@mdlz.com
Canadian Grain Commission	Dr. Bin Xiao Fu	Binxiao.fu@grainscanada.gc.ca
Canadian Grain Commission	Mr. Daryl Beswitherick	Daryl.beswitherick@grainscanada.gc.ca
Ontario Ag Business Association	Mr. Andy Wilder	awilder@parrishandheimbecker.com
Quaker/Pepsico	Mr. Eric Ouellette	eric.ouellette@pepsico.com
ECORC, Grain Quality Lab	Dr. Lucasz Pietrzak	lukasz.pietrzak@agr.gc.ca
Grain Farmers of Ontario	Ms. Meghan Moran	mmoran@gfo.ca
Griffith Labs	Mr. Joachim Baur	jbaur@griffithlaboratories.com
Oat and Barley Council of Ontario	Mr. Craig Martin	craig@cribit.com
P & H Milling	Mr. Sunny Mathew	smathew@phmilling.com
P & H Milling	Ms. Ingrid Coyle	icoyle@phmilling.com
Griffith Labs	Mr. Luke Hazlett	lhazlett@griffithlaboratories.com
Canadian Seed Trade Assoc.	Ms. Ellen Sparry	esparry@redwheat.com
J C Baking Innovation	Mr. Jim Chen	jim.chen@jcbakinginnovation.com
Kellogg (OCIRC)	Mr. YuLai Jin	YuLai.Jin@kellogg.com
U of Guelph	Ms. Sanaa Ragae	sragae@uoguelph.ca
ADM Milling Co	Mr. Tao Huang	tao.huang@adm.com

**OCCC Crop Coordinators**

Performance Testing	Ms. Ellen Sparry	esparry@redwheat.com
Disease - Spring Cereals & Winter Cereals	Dr. Lily Tamburic	ltamburi@uoguelph.ca
Quality Sub-Committee Chair	Ms. Sheilagh Arney	Sheilagh.arney@adm.com
Winter Wheat Registration	Ms. Ellen Sparry	esparry@redwheat.com
Spring Wheat Registration	Ms. Ellen Sparry	esparry@redwheat.com
Spring Barley Registration	Dr. Alek Choo	ThinMeiw.Choo@agr.gc.ca
Winter Barley Registration	Mr. Mark Etienne	metienne@hylandseeds.com
Oat Registration	Dr. Weikai Yan	Weikai.Yan@agr.gc.ca

**Other OCCC Roles**

Performance Data Coordinator	Jonathan Brinkman	jbrinkma@uoguelph.ca
OCCC Webmaster		tech_help@gocereals.ca

**OCCC Appeals Committee**

The Appeals Subcommittee consists of the executive members of the OCCC

**OCCC Confidentiality Committee**

The Confidentiality Subcommittee is elected by the OCCC and is comprised of 3 members who do not have potential conflicts of interest and are willing to sign confidentiality agreements. Decisions will be made by consensus.

## **APPENDIX 2 – ROLES AND RESPONSIBILITIES**

<u>Roles</u>	<u>Responsibilities</u>
Ontario Cereal Crop Committee	<ul style="list-style-type: none"> <li>• Approval of Protocols, Procedures and Regulations</li> </ul>
Performance Trial Coordinator	<ul style="list-style-type: none"> <li>• Oversee activities to ensure all requirements are met in respect to conduct of tests and trials</li> <li>• Recommend Performance Trial Site locations for each cereal trial series</li> <li>• Enforce deadline dates for inclusion of entries in trials</li> <li>• Organize trial inspections</li> <li>• In co-operation with the Data Coordinator, make recommendations regarding the inclusion or exclusion of data to be published.</li> <li>• Coordination &amp; presentation of each of cereal trial series to OCCC</li> </ul>
Performance Data Coordinator	<ul style="list-style-type: none"> <li>• Coordinates the 'gocereals' website.</li> <li>• Where required, provides trial location designs for agronomy and disease sites</li> <li>• Receive and validate the data from Trial Site Operators and Pathology Trial Operators. Prepare data for publication.</li> <li>• Inspect and evaluate trial data and make recommendations for inclusion or exclusion of specific data</li> </ul>
Performance Agronomy Site Operators	<ul style="list-style-type: none"> <li>• Conduct OCCC trials in accordance with current protocols and procedures, implement and follow the directions of the Performance and Data Co-ordinators.</li> <li>• Notify Performance Trial Coordinator of seed requirements for the site they manage</li> </ul>
Performance Disease Site Operators	<ul style="list-style-type: none"> <li>• Conduct OCCC inoculated disease trials in accordance with current protocols and procedures, implement and follow the directions of the Performance and Data Co-ordinators.</li> </ul>
Registration Crop Coordinators	<ul style="list-style-type: none"> <li>• Recommend standards for respective species for registration support protocols</li> <li>• Evaluate sponsor generated data for adherence to OCCC registration support requirements and prepare report of candidate lines</li> <li>• Coordinate sponsor driven orthogonal tests and provide entry lists to cooperating site operators</li> </ul>
Registration Disease Coordinators	<ul style="list-style-type: none"> <li>• Recommend standards for respective species for registration support protocols</li> <li>• Evaluate sponsor generated data for adherence to OCCC registration support requirements and prepare report of candidate lines</li> </ul>
Quality Committee	<ul style="list-style-type: none"> <li>• Assesses candidate cultivar(s) to ensure that they fit into the quality requirements of the cereal industry in Ontario.</li> </ul>

## APPENDIX 3

### **CODE OF ETHICS FOR PLANT BREEDERS AND CO-OPERATORS CONDUCTING CULTIVAR EVALUATION TRIALS IN CANADA**

The mutual interests of all engaged in cultivar development and evaluation are served by the climate which engenders the greatest freedom of communication and exchange of breeding material, while at the same time providing adequate safeguards to the breeder of any material.

It is the desire of all breeding institutions to receive credit for their discoveries and to recognize the discoveries of other institutions, both privately and publicly funded. For this reason, it is recommended that breeders, test co-operators, institutions and companies conducting cultivar trials in Canada subscribe to the following code of ethics:

#### A. GENERAL

In case of conflict between this code and any provincial or federal legislation such as plant breeders' rights legislation, the legislation would prevail.

#### B. WRITTEN PERMISSION NOT REQUIRED

Material registered and/or commercially available as a cultivar in any country may be used without the permission of the Breeder, as parental material for making crosses or for induction of mutations, for the purpose of creating other cultivars.

#### C. WRITTEN PERMISSION REQUIRED

1. Material not registered and/or commercially available as a cultivar in any country may only be used as parental material in a breeding program with the written permission of the breeder.
2. When the repeated use of a cultivar is required for the production of seed of another cultivar, the written permission of the breeder must be obtained. This does not preclude the use of a registered cultivar as a recurrent parent in a back - cross breeding program.
3. Selection within a normally self pollinated cultivar for the purposes of creating a new cultivar may only be done with the written permission of the breeder.
4. The isolation of parental lines that are present as mixtures in hybrids and any use of them may only be made with the written permission of the breeder.
5. Material not registered and/or commercially available as a cultivar in any country, may not be distributed for purposes other than registration tests, without the written permission of the breeder.
6. Seed multiplication of any unregistered cultivar, for purposes other than for seed stocks for registration trials, may only be made with the written permission of the breeder.

Note: It is recommended that this code be implemented for any material entered into variety registration trials on or after January 1, 1989.



## APPENDIX 4

### Requirements Regarding Fusarium Head Blight for OCCC Registration Support of Spring Wheat Varieties in Ontario

1. FHB data must be presented from inoculated trials over 2 station-years, 3-4 replicates per year.
2. At least one check from S/HS (susceptible to highly susceptible) and one check from either I/MS (intermediate to moderately susceptible) or R/MR (resistant to moderately resistant) categories needs to be included. The level of infection of the variety representing the S/HS check should have a moderate to severe level of infection. Representative checks for each category are provided in Table 1. **Checks must be approved by the Ontario Cereal Crop Committee.**

The level of resistance of the candidate cultivar to FHB, based on visual assessment of symptoms, and DON must be better than or equal to the I/MS check(s).

Candidate cultivars that do not meet or have not been demonstrated to meet the above three requirements would be considered to possess a potential harm to Ontario's wheat industry, if they were extended for registration to Ontario.

Representative checks for each category are provided in Table 1.

**Table 1.** The three categories of FHB resistance in spring wheat and representative cultivars/lines

<u>Category</u>	<u>Preferred Check Cultivars</u>	<u>Acceptable Alternate Check Cultivars</u>
R/MR	AAC Scotia	Alsen, FHB37, HY644, Fuzion
I/MS	Carberry, Norwell	AC Barrie, AC Brio, AC Helena, Superb, AC Voyageur, Columbus, Quantum, SS Blomindon, SS Fundy, Torka, Celtic
S/HS	HY162-HRF	5700PR, AC Foremost, Roblin, AC Vista

**APPENDIX 5**

**Requirements Regarding Fusarium Head Blight for OCCC Registration Support of Winter Wheat Varieties in Ontario**

1. FHB data must be presented from inoculated trials over 4 station-years, 3-4 replicates per year.
2. At least one check from S/HS (susceptible to highly susceptible), one check from MS (moderately susceptible) and one from MR (moderately resistant) categories needs to be included. The level of infection of the variety representing the S/HS check should have a moderate to severe level of infection (Table 1). **Checks must be approved by the Ontario Cereal Crop Committee.**
3. The level of resistance of the candidate cultivar to Fusarium, based on visual assessment of FHB symptoms and deoxynivalenol (DON) level must not be worse than the worst of the MS checks.

Candidate cultivars that do not meet or have not been demonstrated to meet the above requirements would be considered to possess a potential to harm Ontario's wheat industry.

Representative checks for each category are provided in Table 1.

**Table 1.** The three categories of FHB resistance in winter wheat and representative cultivars/lines

<b><u>CATEGORY</u></b>	<b><u>REPRESENTATIVE CHECK CULTIVARS</u></b>	
	<b>Soft Winter Wheats</b>	<b>Hard Red Winter Wheats, Hard White Winter Wheat and Winter Durum</b>
MR	25R51, Ava	AC Morley
MS	Emmit, 25R39	Princeton
HS/S	AC MacKinnon, 25R40	Wentworth (red) Whitebear (white) OAC Amber (durum)

## **APPENDIX 6 – OCCC Quality Guidelines for Registration Support (Feb 2009)**

### **1. WHEAT – Guidelines are based on grade #1 wheat**

Sample Submission for Quality assessment: A 3 kilogram sample of each of the registration candidates (composite of all reps) along with a 3 kilogram sample of each check cultivar must be sent each year for quality analysis. A bulk sample over replications of each candidate and checks from all tests over at least a two year period must be used for quality determinations. For wheat, quality determinations are performed on all samples. The ECORC Quality Lab, Ottawa is currently performing quality evaluations for wheat. Refer to Appendix 12 for deadlines of sample shipments to the Quality Lab. Other quality labs may be utilized if approved by the OCCC.

#### A. SOFT: Ontario Soft Winter Wheat (CEWW, CESRW)

CHECK:		Venture (white) Branson (red)
GRAIN:	Test Weight, kg/hl	=>76
	Kernel Hardness	=> 70.0
	Grain Protein %	Mean of checks -0.5 and +1.5
	Falling Number, sec	=> Mean of checks
MILLING (Flour):	Yield, % of grain (corrected to ash)	=> Mean of checks
	Flour Ash	=< Highest Check
	Flour Protein	Mean of checks -0.5/ +1.5
	Protein Difference	< ( Mean of checks + 30%)
COOKIE	Spread cm	Mean of checks +/- 0.25
	W/T cm	Mean of checks +/- 0.50
ALVEOGRAM	Pressure (P) mm H2O	Mean of checks +/- 10
	Length	Mean of checks +/- 50
	P/L Ratio	Mean of checks +/- 0.10
	Energy (W), 10E-4J	Mean of checks +/- 15
SRC	Lactic Acid	90 minimum
	Water	54 maximum

#### B. HARD: Ontario Hard Spring Wheat (CERS, CEHWS)

CHECK:		Norwell and AC Carberry
GRAIN:	Test Weight, kg/hl	=>78
	Kernel Weight	=> Mean of the checks
	Kernel Hardness	=< Mean of the checks
	Protein	> (Mean of the checks – 1.0)
	Ash Content, %	=< Mean of the checks
MILLING (Flour):	Falling Number, sec	> (Mean of the checks – 10%)
	Yield, % of grain	=> Mean of the checks
	Ash	=< Mean of the checks
	Protein	Mean of the checks +/- 1.5
FARINOGRAPH	Protein Difference	< (Mean of the checks + 30%)
	Absorption	> Mean of the checks – 2.5
	Peak	Mean of the checks +/- 2.5
	Stability	> (Mean of the checks – 1.5)
RVA DATA	MTI	< (Mean of the checks + 10)
	Peak V	> (Mean of the checks – 20%)
BAKE	Loaf Volume	> (Mean of the checks – 50)
OTHER	Starch Damage	< (Mean of the checks + 1)

C. HARD: Ontario Hard Winter Wheat (CEHRW, CEHWW)

CHECK:		AC Morley and Gallus
GRAIN:	Test Weight, kg/hl	=>78
	Kernel Weight	=> Mean of the checks
	Kernel Hardness	=< Mean of the checks
	Protein	=> Mean of the checks
	Ash Content, %	=< Mean of the checks
	Falling Number, sec	> (Mean of the checks - 10%)
MILLING (Flour):	Yield, % of grain	=> Mean of the checks
	Ash	=< Mean of the checks
	Protein	=> Mean of the checks
	Protein Difference	< (Mean of the checks + 30%)
FARINOGRAPH	Absorption	=> Mean of the checks
	Peak	> (Mean of the checks - 1.0)
	Stability	=> Mean of the checks
	MTI	< (Mean of the checks + 10)
RVA DATA	Peak V	> (Mean of the checks - 20%)
BAKE	Loaf Volume	> Mean of the checks
OTHER	Starch Damage	< (Mean of the checks + 1)

D.  
DURUM: Ontario Durum Wheat (CESAD, CEWAD)

- To be determined

## OATS

### A. HULLED/COVERED

CHECK:	Bradley and Vitality	
	Plumpness	Minimum 50% plump (% by weight over a 6/64" x 3/4" slotted screen)
OAT GRAIN (with hull)	Test Weight	38 lb/ W bu or 42.5 lb/A bu (53 kg/hL, 245 g/0.5 L) or equivalent to/ greater than check varieties
	Groat %	equal to or greater than quality check, target 73% or higher
	Thin oats	10% maximum through a 5/64" x 3/4" slotted screen lab precision grader
	Kernel Weight	Minimum 30 g / 1000 kernels
MILLING:	Ease of dehulling	Hull moderately easy to remove
	Breakage during processing	Equal to or better than check varieties
	Milling yield	160 pounds maximum to make 100 pounds of finished product
GROAT:	Flavor	Clean characteristic oat flavour
	Color	White to cream
	Protein	13% minimum (as is N x 6.25) or equivalent to check varieties (higher protein content preferred)
:	Groat oil %	7.5 maximum (as is). Lower values are desirable for milling purposes
	Beta-Glucan*	4% minimum (D.B.)
	Total Dietary fibre**	10% minimum (D.B.)

\* testing should be completed by Quaker Oats or other Lab using Quaker protocol

\*\* oat as now defined by Health Canada 2010 Web Posting 'Oat Products and Blood Cholesterol Lowering'

### B. HULLESS/NAKED

CHECK:	Navaro	
GROAT:	Plumpness	Equal to or better than quality check
	Kernel Weight	For Milling purposes, kernel weight should be similar to groat weight of hulled varieties
	Oil	Equal to or better than quality check
	Protein	Equal to or better than quality check
	Test weight	Equal to or better than quality check
	Hull %	Equal to or better than quality check

**APPENDIX 7 - OCCC Designated Check Cultivars as of January 2014**

	<b><u>Agronomy &amp; Disease</u></b>	<b><u>Quality</u></b>	<b><u>Fusarium (inoc)</u></b>
Oat: covered	Vitality Bradley Oscar	Vitality Oscar	
Oat: hullless	Navaro	Navaro	
Barley: 2-row covered	Bornholm HY435-2R		
Barley: 6-row covered	HY 621-6R HY 101-6R		
Barley: 2-row hullless	AAC Starbuck		
Barley: 6-row hullless	AAC Azimuth		
Barley: winter	McKellar H260-WB		
Wheat: HRS	Norwell	Norwell, Carberry	See Appendix 4
Wheat: EFS	HY 162-HRF		See Appendix 4
Wheat: spring durum	Hallmark	letter of acceptance from end-user	Hallmark
Wheat: Winter durum	OAC Amber	letter of acceptance from end-user	See Appendix 5
Wheat: SWW/SRW	Emmit Ava	Venture (white) Branson (red)	See Appendix 5
Wheat: HRW (Medium and Strong)	AC Morley Wentworth	AC Morley Gallus	See Appendix 5
Wheat: HWW	AC Morley Wentworth Whitebear	AC Morley Gallus	See Appendix 5
Spelt	Heritage Emmit		Heritage (MR) Princeton (MS)
Buckwheat	AC Manisoba		

## **APPENDIX 8 – PERFORMANCE TRIAL FEE STRUCTURE (2015)**

(for map showing testing areas, go to [GoCereals.ca](http://GoCereals.ca))

### **Winter Wheat Test Fees per Entry**

Testing Area	Agronomy Cost per location	# Locations	Cost for Area
Area I	\$ 160	3	\$ 480
Area II	\$ 160	4	\$ 640
Area III	\$ 160	3	\$ 480
Fusarium inoculated trials*	\$ 130	3	\$ 390
Data management fee*	\$ 40	1	\$ 40
All areas	\$ 160	10	\$ 2,030

### **Spring Wheat Test Fees per Entry**

Testing Area	Agronomy Cost per location	# Locations	Cost for Area
Area II	\$ 160	3	\$ 480
Area III	\$ 160	3	\$ 480
Area V	\$ 160	2	\$ 320
Fusarium inoculated trials*	\$ 130	2	\$ 260
Data management fee*	\$ 40	1	\$ 40
All areas			\$ 1,580

### **Spring Barley Test Fees per Entry**

Testing Area	Agronomy Cost per location	# Locations	Cost for Area
Area II	\$ 160	3	\$ 480
Area III	\$ 160	2	\$ 320
Area V	\$ 160	2	\$ 320
Data management fee*	\$ 40	1	\$ 40
All areas			\$ 1,160

\* - mandatory

### **Oat Test Fees per Entry**

Testing Area	Agronomy Cost per location	# Locations	Cost for Area
Area II	\$ 160	3	\$ 480
Area III	\$ 160	2	\$ 320
Area V	\$ 160	2	\$ 320
Data management fee*	\$ 40	1	\$ 40
All areas			\$ 1,160

\* - mandatory

**All fees are payable upon entry. Data will not be released or published for cultivars where testing fees have not been paid. Failure to remit payment may also jeopardize future entry into the trial by the sponsor until full payment is made.**

## **APPENDIX 9 – PERFORMANCE TRIAL ENTRY GUIDELINES AND SEED REQUIREMENTS**

### **Entry Guidelines:**

Varieties/cultivars are entered by the sponsor online in the member area of the [www.gocereals.ca](http://www.gocereals.ca) website. Sponsors who have not been assigned a login user id and password should contact the Performance Trial Coordinator. **The sponsor must have an account with OCCC and must not be in arrears.**

### **Eligible Varieties**

To be eligible for entry into the performance trials, the cultivar/variety must:

- a. Be registered for sale in Ontario
- b. OR have been supported for registration by OCCC within the previous 2 years
- c. OR in the case of winter wheat is going to be submitted to the OCCC for registrations support at the January meeting following entry
- d. OR have been supported for registration by another recognized recommending committee in Canada within the previous 2 years AND, in the case of wheat, the OCCC has not objected to the extension of registration to Ontario.

### **Variety Information**

The following cultivar information must be supplied at the time of entry:

1. Wheat classes: -a = awned, hrw = hard red winter, sww=soft white winter, srw=soft red winter, hrs = hard red spring, hws = hard white spring, efs = eastern feed spring, sd = spring durum

Barley classes: 6R = six row, 2R = two row, -n = naked/hulless; feed or malt type

Oat classes: y = yellow, w = white, - n = naked/hulless

2. Test Area(s) requested: I, II/IV, III, and/or V/VI.
3. Variety registration designation, date registered, CFIA registration number

### **Sponsor Seed Requirements**

**Seed should be of minimum Certified #1 quality.**

#### **Seed Treatments:**

Seed must be treated in accordance with the best practice and in full observance of all manufacturers' recommendations. Seed packages must be labeled to indicate what seed treatment has been applied.

#### Winter Wheat:

Because of the risk of European chafer at some sites, it is recommended that seed be treated with a registered insecticide that will control chafers.

Seed must be treated with a registered fungicide that contains difenoconazole to provide control of soil –borne dwarf bunt.

#### Spring Cereals:

All seed must be treated. Only registered fungicidal seed treatments applied at the rate recommended by its manufacturer are allowed.

**Labelling of seed** - Sponsors must ensure that all seed is clearly labelled with cultivar variety name, % germination, 1000k wt. and seed treatment and rate used.

**Seed Shipment** - Ship **entries directly to each Trial Site Operator** listed in Appendix 10 by the dates specified in "Entry Guidelines and Fees for Spring Cereals" or "Entry Guidelines and Fees for Ontario



Winter Wheat Performance Trials". (available on GoCereals.ca) Seed of a cultivar that arrives too late at a site for planting shall be substituted at the expense of the sponsor. No data for the missing cultivar will be reported in that testing Area.

**APPENDIX 10. – OCCC PERFORMANCE TRIAL SITES**

<u>Testing Area</u>	<u>County/District</u>	<u>Operator</u>	<u>CROP TRIALS</u>			
			Winter Wheat	Spring Wheat	Barley	Oats
I	Essex	AAFC-GPCRC – Woodslee	A, M			
I	Kent	U of Guelph – Ridgetown	A, I, M			
I	Lambton	U of Guelph – Inwood	A, M			
II	Middlesex	Dow Agrosiences - Nairn	A, M			
II	Bruce	Dow Agrosiences Kincardine <sup>3</sup>	A, I, M	A, M	M	A, M
II	Waterloo	Dow Agro. - West Montrose		A, I	M	A, M
II	Wellington I	U of Guelph - Elora	A	A	M	A
II	Wellington II	C & M Seeds - Palmerston	A, M	A, M	M	A, M
III	Grenville	U of Guelph - Kemptville	A			
III	Dundas	U of Guelph - Winchester		A, M	M	A, M
III	Addington	AAFC-ECORC - Bath	A, M			
III	Carleton	AAFC-ECORC - Ottawa	A, I	A, I	M	A
III	Carleton	AAFC-ECORC – Osgoode <sup>1</sup>			M	
III	Leeds-Grenville	AAFC-ECORC – Heckston <sup>1</sup>				A
III	Prescott/Russel	AAFC-ECORC – Ste. Isidore		A		
V & VI	Temiskaming	U of Guelph – New Liskeard <sup>2</sup>	A, M	A, M	M	A, M
V & VI	Nipissing	U of G (NLCAT) – Verner		A	M	A
V & VI	Rainy River	EMO – Emo <sup>1</sup>		A	M	A

<sup>1</sup> Unofficial site at no extra cost to sponsors

<sup>2</sup> Unofficial site for winter wheat; official site for other crops

<sup>3</sup> Official site for winter wheat; unofficial site for other crops

<sup>4</sup> M – Managed trials will be treated with a foliar fungicide. All barley trials will be treated where possible.

Current requirements for the amounts of seed to be supplied can be found in the members area of the [www.qocereals.ca](http://www.qocereals.ca) website under “Winter Cereal Guidelines” and “Spring Cereal Guidelines” in the “Entry Forms and Lists” section.

**Site Operator information:**

Test Area	Site Operator	Crop Type	Contact Info
I	U of G (RC)	Winter Wheat Winter Wheat FHB Inoculation	Lily Tamburi-Illinic, University of Guelph, Ridgetown Campus, 120 Main St E., Ridgetown, ON, N0P 2C0, tel: 519-674-1633, ltamburi@uoguelph.ca
I	AAFC-GPCRC	Winter Wheat	Gavin Humphreys, Oliver Wu, G.P.C.R.C., 2585 County Road 20, Agriculture and Agri-Food Canada, Harrow, Ontario N0R 1G0. Tel #: (519) 738-1302; <a href="mailto:Xiaoguang.Wu@AGR.GC.CA">Xiaoguang.Wu@AGR.GC.CA</a> <a href="mailto:gavin.humphreys@agr.gc.ca">gavin.humphreys@agr.gc.ca</a>
II	U of G-Plant AG	Winter Wheat	Ali Navabi, Melinda Drummond Dept. of Plant Agriculture, Crop Science Bldg., University of Guelph, Guelph, Ontario N1G 2W1. Tel. #. (519) 824-4120 Ext. 56829 <a href="mailto:anavabi@uoguelph.ca">anavabi@uoguelph.ca</a> <a href="mailto:drummond@uoguelph.ca">drummond@uoguelph.ca</a>
		Spring Wheat	
		Barley	
		Oats	
II	C & M Seeds	Winter Wheat	Ellen Sparry, C&M Seeds, 6180 5 <sup>th</sup> Line, Palmerston, ON, N0C 2P0; tel: 519-343-2126 <a href="mailto:esparry@redwheat.com">esparry@redwheat.com</a>
		Spring Wheat	
		Barley	
		Oats	
II	Dow AgroSciences	Winter Wheat	Mark Etienne, DOW AgroSciences, Nairn Research Lab, 10640 Petty Street, PO Box 250, Ailsa Craig, Ontario N0M 1A0. Tel. #: (519) 232-4341 x225 <a href="mailto:mjetienne@dow.com">mjetienne@dow.com</a>
		Winter Wheat FHB Inoculation	
		Spring Wheat	
		Spring Wheat FHB Inoculation	
		Barley	
		Oats	
III	AAFC-ECORC	Winter Wheat	Gavin Humphreys, Andre Kalilililo, E.C.O.R.C, AAFC. Bldg. 143, Ottawa, ON, K1A 0C6. Tel #: (613) 759-1643. <a href="mailto:gavin.humphreys@agr.gc.ca">gavin.humphreys@agr.gc.ca</a> <a href="mailto:andre.kalikililo@agr.gc.ca">andre.kalikililo@agr.gc.ca</a>
		Winter Wheat FHB Inoculation	
		Spring Wheat	Shahrokh Khanizadeh / Xuelian Wang, E.C.O.R.C., AAFC, Bldg. 143, Ottawa, ON , K1A 0C6. Tel #: (613) 759-1627 <a href="mailto:Shahrokh.Khanizadeh@agr.gc.ca">Shahrokh.Khanizadeh@agr.gc.ca</a>
		Spring Wheat FHB Inoculation	
		Barley	Alex Choo / Steve Thomas, E.C.O.R.C., AAFC, Bldg. 143, Ottawa, ON , K1A 0C6. Tel #: (613) 759-5051 <a href="mailto:thinmeiw.choo@agr.gc.ca">thinmeiw.choo@agr.gc.ca</a> , <a href="mailto:Steve.Thomas@agr.gc.ca">Steve.Thomas@agr.gc.ca</a>
		Oats	Weikai Yan / Brad DeHaan, E.C.O.R.C., AAFC, Bldg. 143, Ottawa, ON , K1A 0C6. Tel #: (613) 759-1625, <a href="mailto:weikai.yan@agr.gc.ca">weikai.yan@agr.gc.ca</a> , <a href="mailto:dehaanbg@agr.gc.ca">dehaanbg@agr.gc.ca</a>
III	U of G-KCAT	Winter Wheat	Katina Wren, Univ of Guelph, Kemptville Campus, 830 Prescott St., Kemptville, Ontario K0G 1J0. Tel. #: (613) 258-8336 ext 61681 <a href="mailto:kwren@uoguelph.ca">kwren@uoguelph.ca</a>
		Spring Wheat	
		Barley	
		Oats	
V/VI	U of G-NLCAT (Includes Emo)	Winter Wheat (unofficial site)	John Kobler, New Liskeard Agriculture Res. Station, 340 Armstrong St., Box 6007, New Liskeard, ON, P0J 1S0 Tel: (705) 647-8525; <a href="mailto:jokobler@uoguelph.ca">jokobler@uoguelph.ca</a>
		Spring Wheat	
		Barley	
		Oats	

## **APPENDIX 11 - OCCC, Ontario Performance Data Publication Guidelines**

The Ontario Cereal Crops Committee encourages the publication of the complete data from the Ontario Performance Tests. This includes the complete tables, including footnotes, for yield, varietal characteristics and fusarium reaction as they appear in the **INFOSHEET** or on the website: <http://www.gocereals.ca>

### **Guidelines:**

Whenever OCCC performance data are used, credit to the Ontario Cereal Crops Committee must be stated and direction given to the official OCCC data set at [www.gocereals.ca](http://www.gocereals.ca)

OCCC will permit publication of specific subsets of data. The following data may be excluded from publication:

- Complete tables (yield, varietal characteristics, fusarium reaction)
- Data on all entries within a quality class within a table. When one or more classes are excluded from a table, the means of the entire test and the number of entries and locations in the entire test (including the excluded classes) must be included in the table. All table footnotes, as they appear on the **Infosheet**, must be included.
- The following columns may be excluded from the varietal characteristics table for all varieties presented:
  - TKW
  - Height
  - Disease reaction columns. All disease reaction columns may be excluded as a set. Exclusion of individual columns showing reaction to specific diseases is not acceptable.

Permission to publish OCCC performance data must be granted before publication. To obtain permission, contact the Performance Trial Coordinator listed in Appendix 1.

"If the sponsor of proposed promotional material believes that the Performance Trial Coordinator is in a conflict of interest, or a perceived conflict of interest, with respect to the proposed material, it will be referred to the representative of the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) on the OCCC for review."

## **APPENDIX 12: DEADLINE DATES**

### **Registration Deadlines:**

1. **Site Inspection Requests:** For registration tests, sponsors must notify crop coordinators of trials by May 31 for all crops.
2. **Data Submission**
  - a. Quality Coordinator must send applicable data to the sponsors three weeks prior to the January meeting.
  - b. Disease Coordinator must send fusarium inoculation data to sponsors before the August meeting for fall cereals; for spring cereals - at least three weeks before January meetings.
  - c. Sponsor generated data for unrestricted registration requests must be sent to appropriate species coordinators two weeks prior to the January meeting date and to the OCCC members one week prior to the January meeting date.
  - d. Sponsors asking for confidentiality for restricted registration requests must advise the chair and secretary of the Variety Subcommittee at least three weeks prior to the January meetings, then proceed as per (b) above.
3. **Data Submission to Out-of-Province Crop Committees:** Data should be sent one week prior to their meetings for registration support. Contact the OCCC secretary for names and addresses.
4. **Quality Samples to ECORC Lab**  
Soft Winter – September 20; Hard Winter – September 25; Spring Cereals – October 15
5. **Meeting Dates for Registration**
  - Winter Cereals - Usually held in the last week of August - early September to designate checks for registration tests and in January to vote on candidate cultivars.
  - Spring Cereals - Held in January to designate checks and vote on candidate cultivars.

### **Performance Trial Deadlines:**

1. **Entry Deadlines:** Sponsors now enter varieties through a web based process. Go to [www.gocereals.ca](http://www.gocereals.ca) for information on deadlines for each species.
2. **Seed to Cooperators**  
Go to [www.gocereals.ca](http://www.gocereals.ca) for information on deadlines for each species.  
**Meeting Dates for Performance Trials**
  - Winter Cereals - Usually held in the third week of August to coordinate performance trials.
  - Spring Cereals - Held in late October to coordinate performance trials and make production recommendations for OMAFRA Publication 811.

### **Actual Meeting Dates**

Consult Minutes or Agendas of the OCCC or [www.gocereals.ca](http://www.gocereals.ca)