

**PRAIRIE RECOMMENDING  
COMMITTEE FOR OAT AND BARLEY**

**Operating Procedures**

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## *Operating Procedures*

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# PRAIRIE RECOMMENDING COMMITTEE FOR OAT AND BARLEY

## *Operating Procedures*

### **1 TERMS OF REFERENCE**

The Prairie Recommending Committee for Oat and Barley (PRCOB) is responsible for the testing and evaluation of barley and oat candidate cultivars and for making recommendations to the Variety Registration Office of the Canadian Food Inspection Agency for their registration in western Canada.

The PRCOB has several mandates:

- a) To act as a forum for exchange of information relevant to the development of improved cultivars of barley and oat crops for western Canada.
- b) To advise regulatory agencies regarding legislation and regulations governing barley and oat breeding and cultivar production.
- c) To establish guidelines and co-ordinate trials to evaluate the performance of potential cultivars of barley and oat crops.
- d) To advise on the performance of lines in registration trials and make recommendations in support of registration to the Variety Registration Office, Canadian Food Inspection Agency.

### **2 COMMITTEE STRUCTURE & MEMBERSHIP**

#### **2.1 Structure and Operation**

The PRCOB consists of an Executive and four Evaluation Teams. Evaluation Teams are responsible for the assessment of relative agronomic performance, disease resistance and end-use quality (separate teams for barley and oat).

- a) · Executive Committee
  - Chair and Secretary
  - Evaluation Team Chairs and Secretaries
- b) · Evaluation Teams
  - Breeding & Agronomy (ETA) – oat and barley
  - Disease (ETD) – oat and barley
  - Barley Quality (ETBQ)
  - Oat Quality (ETOQ)

#### **2.2 Membership**

There are two types of membership within the PRCOB.

- Full Members (voting privileges)
- Associate Members (non-voting)

All members are proposed by Evaluation Teams and are approved by majority vote of the PRCOB. Individuals who do not qualify for Full or Associate membership, but are interested or otherwise involved with the process, may attend, with prior permission of the PRCOB Chair, and participate in the meetings, but may not vote on motions or resolutions.

### **2.2.1 Full (Voting) Members**

Full members of the PRCOB consist of individuals actively engaged in the production, development and/or evaluation of potential barley or oat cultivars for western Canada and who possess the expertise to do so. Voting privileges on an Evaluation Team are based on the area of expertise. Membership may be held on one or more Evaluation Teams, depending on the expertise and interest of the individual.

In addition to PRCOB members with scientific expertise, positions are also allocated to producers and representatives of producer organizations. Examples:

- Farmer organization members
- Canadian Seed Growers' Association

It is expected that members will vote impartially and attend the annual meeting regularly. Voting members who fail to attend three consecutive meetings, without an acceptable explanation, are relegated to Associate membership.

Evaluation Team membership lists, with appointed Chairs and Secretaries, will be maintained to indicate major area of expertise.

### **2.2.2 Associate (Non-Voting) Members**

Associate members are individuals with a legitimate interest in the activities of the PRCOB, such as: representatives of the Canadian Food Inspection Agency, Agriculture and Agri-Food Canada Administrators, Provincial Government Agriculturists, University Administrators or Business Managers whose organizations are active in cultivar production, development or evaluation. Associate Members do not have voting privileges but are allowed a voice during PRCOB and Evaluation Team meetings. The appointment of Associate Members is subject to PRCOB approval.

### **2.3 PRCOB Executive**

The Executive of the PRCOB will consist of the Chair and Secretary of the PRCOB and the Chairs and Secretaries of all the Evaluation Teams. The Chair and Secretary of the PRCOB will be chosen from among all members of the PRCOB. Evaluation Team Chairs and Secretaries are chosen from among their respective voting members. All positions are for a three-year renewable term, with normally only one renewal, and commence on April 1. The Chair and Secretary of the PRCOB will sit on the executive of the Prairie Grain Development Committee (PGDC).

### **2.4 Meetings**

The PRCOB normally meets annually in the third or fourth week of February at a location determined by the (PGDC) at the previous year's meeting. Extraordinary meetings may be called on 30 days notice or with less notice upon the consensus of the membership.

Meetings are open to all interested parties. The PRCOB or Evaluation Teams may, by a majority vote, create 'in camera' portions of meetings as necessary. Meetings will operate under, 'Procedures for Meetings and Organizations 3<sup>rd</sup> Edition, M.K. Kerr and H.W. King'.

The normal sequence for the February annual meeting is as follows (logistics may result in changes):

- Possible joint plenary session with other recommending committees of the PGDC
- Evaluation Teams meet separately
- PRCOB meets

## **3 THE REGISTRATION PROCESS**

### **3.1 Recommendation for Registration**

The PRCOB will recommend candidate barley and oat cultivars for registration for western Canada. Recommendations to “support” or “object to” a candidate cultivar are made on the basis of information provided to the PRCOB via the registration trials and evaluation by the Evaluation Teams.

Recommendations to support the registration of a candidate cultivar are in effect for three years from the date of recommendation. Candidate sponsors submitting PRCOB recommended cultivars to the VRO that are more than two years old will be required to obtain a letter from the secretary of the PRCOB stating that the recommendation is still valid with a new date on the letter of support.

The candidate sponsor will provide to the PRCOB secretary an electronic copy of their “Request for Support for Registration”. The deadline for sending the file to the Secretary is 12PM MST – 12 days prior to the meeting (generally the second Friday in February). The deadline for posting on the PGDC Website is one week prior to the PRCOB annual meeting.

In the event that the PDGC website is not available for postings, the PRCOB Secretary will distribute the “Requests for Support for Registration” by e-mail at least one week prior to the PRCOB meetings. It is incumbent upon the members to inform the Secretary of changes to their e-mail addresses, and non-receipt of “Requests for Support for Registration” due to a change in e-mail address will not be considered grounds for ineligibility of consideration of candidate lines.

The PRCOB may refuse to consider a request on the grounds of late circulation, illegibility or inaccuracy. The PRCOB may suspend a particular guideline to allow consideration of a candidate by a two-thirds majority vote. The rationale for such action and the record of the empowering vote will form part of the recorded decision.

#### **3.1.1 Role of the Evaluation Team**

Each Evaluation Team (Breeding & Agronomy, Disease, and Quality) will consider the merit of candidate cultivars proposed for registration prior to the PRCOB meeting. The recommendation arising from this evaluation, and its basis, will be provided by the Evaluation Team Secretary to the PRCOB at the time of candidate deliberations.

It is recognized that in the case of the Disease and Quality Evaluation Teams, only those specific traits are considered but the Breeding and Agronomy Evaluation Team will discuss disease reaction and quality parameters, as they constitute part of the “breeding” package.

Under unusual circumstances the committee may deal with the case of a candidate cultivar without individual team considerations. A majority vote of the PRCOB is required to take this course of action.

#### **3.1.2 Role of the PRCOB**

The purpose of the PRCOB is to provide a recommendation to “support” or “object to” the application for registration of a candidate cultivar of grain or forage, based on information provided by the registration trials and interpretation of the data by the Evaluation Teams.

It is the responsibility of the PRCOB Secretary to inform the Registrar, Variety Registration Office, Canadian Food Inspection Agency in writing of the decision of the PRCOB with copies to the candidate sponsor, and the PRCOB Chair. Copies of the statements from the Evaluation Teams will also be provided to the candidate sponsor and to the Registrar.

### 3.1.3 Voting Procedures

Voting is valid only when a quorum is present. The quorum for Evaluation Team and PRCOB meetings shall be fifty percent of the voting members. It is expected that all members will vote impartially.

Voting for the Evaluation Teams is normally by a show of hands, a secret ballot may be held if a majority supports a motion to do so. Voting in the PRCOB is by secret ballot; however, a show of hands may be held if a majority supports a motion to do so. The Chair is allowed to actively participate in the discussions and is entitled to vote. A simple majority will constitute a positive recommendation. In the event of a tie, a revote will be conducted in which the Chair, the Secretary and the sponsor of the motion to support will not cast a vote.

In extraordinary circumstances and at the discretion of the pertinent Chair, votes may be conducted using regular mail, facsimile or electronic mail. The quorum for this type of vote shall be a response from fifty percent of the voting members.

Where the number of abstentions is equal to or greater than one-third of the votes cast, the Chair will ask for a revote. If the revote results in the number of abstentions being equal to or greater than one-third of the votes cast, the Chair will file a report stating that no recommendation could be made.

#### 3.1.3.1 Evaluation Team Votes

At Evaluation Team deliberations, the attributes of the candidate cultivars will be considered on the basis of individual disciplines (Breeding & Agronomy, Disease, Barley Quality, Oat Quality).

The Evaluation Team Chair will call for a vote of those in favour of each of the following Categories:

- Support:** The candidate's total attributes for the traits being considered are an improvement over those of the check cultivar(s) and/or an improvement over those specified in agreed-to performance guidelines.
- Do Not Object:** The candidate's attributes for the traits being considered are similar to those of the check cultivar(s).
- Object:** The candidate's attributes for the traits being considered are inferior to those of the check cultivar(s).
- Abstain:** Abstentions are only expected in the case of an openly declared conflict of interest or in the absence of information on which to base a decision.

#### 3.1.3.2 PRCOB Votes

At the PRCOB level, members will consider the overall attributes of the candidate (the balance of agronomy, disease and quality traits) based on information provided by the registration trials and interpretation of the data by the Evaluation Teams. Deficiencies in one characteristic may be compensated for by strength for another character.

The written reports from each Evaluation Team will be presented orally by the Chair or Secretary of the Evaluation Team. A motion to support the registration of the candidate cultivar follows. If necessary, upon the discretion of the PRCOB Chair, the case for support is then presented by the breeder or designate. This should only be necessary if one or more of the Evaluation Teams have raised concerns about attributes of the candidate cultivar. Following discussion, all members (including, if an eligible voting member, the candidate sponsor) will cast a vote.

Votes are cast in three categories (Support, Object, Abstain) based on the data supplied. Members are reminded that at PRCOB deliberations, abstentions are expected only in the case of an openly declared conflict of interest.

If erroneous data or omission of pertinent data is used as a basis of decision, the candidate sponsor may call for a re-vote. This request must be in writing with an explanation and a new supporting document. The Chair and Secretary will determine if there was an omission or error and if this information may have changed the original decision. If so, the PRCOB will be informed and a re-vote will be conducted. If the PRCOB meetings have concluded, the vote will be carried out using regular mail, facsimile or electronic mail.

Any disagreement with interpretation of procedure will be raised at the PRCOB meeting and settled by majority vote.

### **3.2 Appeal of PRCOB Recommendation**

Decisions of the PRCOB are based on the collective expert judgment of the members using prescribed procedures. The judgment exercised is not subject to appeal. Appeals will be heard strictly on the basis of failure to follow procedures or the use of incorrect information in the decision making process. If the sponsor wishes to make such an appeal, a written application must be directed to the Executive of the PRCOB. This application shall indicate the basis of the appeal and include a copy of the data package prepared for the candidate line in question. If the meeting is still in session, the appellant (candidate sponsor) shall be given the opportunity to present their case personally to an Appeals Committee. The committee will consist of the Executive of the PRCOB plus one member, who is not a member of PRCOB, selected by the appellant from the executive of the PGDC, and who will chair the committee; provided they are not members of the same organization as the appellant, in which case alternates will be selected. Following presentation of the arguments, the appellant will withdraw and a vote will be conducted. If the appeal is lodged after the PRCOB meeting has adjourned, the appellant will make the case in writing through the PRCOB Chair, with the vote conducted by regular mail, facsimile or electronic mail. The decision will be based on a simple majority of those Appeal Committee members present but there must be a quorum of at least 60%. In the event of a tie, a revote will be conducted in which the Chair of the Appeal Committee will not cast a vote. The appellant will be informed of the decision and its rationale in writing within 30 days.

If the appellant wishes to appeal further, a three-person appeal board will be selected: one by the appellant, one by the PRCOB Chair and one to be agreed upon by both the appellant and the PRCOB Chair. The appeal board will choose its own Chair and determine its own procedure. The appellant will pay the expenses of the appeal board at federal government rates.

### **3.3 Contract Registration**

Contract Registration is available for candidate cultivars where biochemical or biophysical characteristics distinguish them from the majority of registered cultivars of the same kind or species. Further, it must be shown that these characteristics could compromise the end-use suitability of cultivars registered for traditional commodity markets. Thus, to qualify for Contract Registration, the owner/sponsor of the cultivar must demonstrate the possibility of industry harm if granted an unrestricted registration. Definitions of harm for each commodity crop are to be determined by the PRCOB and are to be based on scientific assessment of quality, agronomic and disease reactions of the candidate cultivar and not on socio-economic factors.

Contract registration is not to be used as a substitute for traditional forms of registration (full or interim) in situations where the PRCOB has objected to the registration of the candidate cultivar based on deficiency in merit. However, the PRCOB may suggest that the candidate be considered for Contract Registration where there is rationale to do so. In this case, a meeting of the Contract Registration Committee (CRC), which will be struck as needed, may be required to consider the case and determine if the required conditions for Contract Registration have been met. (CRC Operating Procedures – see Appendix C)

Contract Registration may be granted as Full Contract Registration or, if further assessment is required, as Interim Contract Registration. Interim Contract Registration may be requested for initial periods of one to three years with possibility of renewal for an additional two years up to a maximum of five years. Renewal of Interim Contract Registration requires the recommendation of the PRCOB and approval by the Variety Registration Office.

### **3.4 Use of Discretion**

It is critical that Evaluation Teams and PRCOB use good judgment when dealing with its Operating Procedures. Under extenuating circumstances, it may be necessary for PRCOB to temporarily disregard its approved procedures. This should not be a common occurrence. The PRCOB should proceed very carefully when deviating from its operating procedures. Any proposed suspension of procedures must be put to a vote with a two-thirds or greater majority required for the motion to carry.

The PRCOB must notify the Variety Registration Office of any candidate cultivars supported where its rules have not been adhered to and include the reasons for the special consideration.

### **3.5 Application for Registration**

Full procedures for registration of crop varieties in Canada are available on the Canadian Food Inspection Agency web site ([www.inspection.gc.ca](http://www.inspection.gc.ca)). Applications for registration of the recommended candidate should be submitted on the *Variety Registration Application Form* available from the Variety Registration Office, or from the Canadian Food Inspection Agency's web site (<http://www.inspection.gc.ca>). The application, along with other required supporting documentation, reference samples and the prescribed fee, must be sent to:

Variety Registration Office  
Canadian Food Inspection Agency  
59 Camelot Drive  
Nepean, ON K1A 0Y9  
Telephone: (613) 225-2342  
Facsimile: (613) 228-6629

## **4 CONDUCT OF CO-OPERATIVE & OTHER REGISTRATION TRIALS**

### **4.1 Definition and Mission**

The PRCOB evaluates candidate cultivars in a series of Co-operative pre-registration trials (Co-ops). A Co-op trial is a multi-location agronomy performance trial supplemented by special tests for pest resistance, end-use quality or other important traits as may be sanctioned by the PRCOB. The official Co-op tests will include the word 'registration' in their names, to clarify the function of these tests. The purpose of the registration trials is to provide data for evaluation by the PRCOB and Evaluation Teams. The data collected will be relevant to the test area of the Co-op trial.

Contributors of Co-op entries are voting members of the PRCOB. These contributors are plant breeders, associate plant breeders recognized by the CSGA or those actively involved in producing cultivars for Canadian producers.

Co-op trials are managed on behalf of the PRCOB by a Test Co-ordinator and Co-operators. Test Co-ordinators are appointed by mutual consensus, from amongst the PRCOB membership and are subject to approval by the PRCOB. The Test Co-ordinator's function includes the generation of test entry lists and randomizations, coordination of the movement of seed for test entries, collation of data from each testing site, data analysis and production of a report for the PRCOB. Reports of Co-op trials are circulated to the membership prior to the annual meeting where tests and the disposition of entries are reviewed. Revised reports are posted in the PRCOB website following the annual meeting. A current list of Test Co-ordinators can be obtained from the PRCOB secretary.

Co-op trials are grown by Test Co-operators who consist of individuals willing and able to provide one or more test sites and the management of said sites. Test Co-operators may be PRCOB voting members, Associate members or simply those willing and able to grow Co-op tests.

The PRCOB reviews, as required, the check cultivars, evaluation methodology, important agronomy traits and their evaluation, disease resistance guidelines and end use quality requirements. Changes to the rules, check varieties, traits evaluated, or methodology of evaluation require majority approval by PRCOB membership and are recorded in the minutes and the operating procedures of the PRCOB. Operating Procedures are to be reviewed at least once every three years. Changes are to be recorded in the minutes and in an updated version of the Operating Procedures. The Varietal Registration Office must be notified of any changes for their review prior to implementation of the changes.

Claims relating to candidate cultivars based on data generated outside of the co-operative testing system must be substantiated (data interpreted) in writing by relevant experts, groups or associations. Procedures leading towards such claims must be sanctioned by such relevant individual or body and accepted by the PRCOB prior to testing for registration.

The over-riding principle is the use of the democratic principle in all PRCOB decisions.

## **4.2 Entries and Locations**

### **4.2.1 Locations**

Locations are determined by the Co-operators. They may be conducted by the private or public sector and are chosen to represent areas of adaptation for the crop.

### **4.2.2 Entries**

With the exception of malting barley, six (6) site years of data, along with data for appropriate check cultivars, from sites in the PRCOB jurisdiction are required for entry into Co-op tests. Each entry must be sponsored by a full member of the PRCOB. Requests for entry, along with appropriate data must be submitted to the appropriate Test Co-ordinator, in writing no later than one week prior to the start of annual PRCOB meeting. If an entry does not meet the minimum criteria for quality, disease resistance or agronomic performance a rationale must be presented as to the benefits which will arise from production of the line. Entry is subject to approval by the Breeding and Agronomy Evaluation Team (simple majority). Data must compare an entry with designated co-op test checks.

In the case of malting barley, a minimum of four (4) station years of field data collected over a minimum of two years and a minimum of two years of malting quality data from plots grown under prairie conditions with comparison to the current quality checks are required.

It shall be a condition of acceptance of a candidate cultivar for testing, that the party submitting the candidate cultivar agrees that the testing and evaluation procedures used by the PRCOB are appropriate and that these testing and evaluation procedures, however defined, shall not justify an appeal of a PRCOB decision. It shall also be a condition of acceptance that any regulatory requirements associated with the line have been met prior to entry.

#### **4.2.2.1 Limits on entry numbers**

Every attempt is made to accept all qualified entries. However, resource restrictions may require limits to be imposed. The number of entries in a test is to be agreed to annually by the Test Co-ordinator and the Co-operators, subject to approval by the PRCOB.

#### **4.2.2.2 Security of entries**

Test Co-ordinators and Co-operators will take reasonable precautions to ensure the security of entries and will not distribute seed for purposes other than registration testing without the consent of the owner.

#### **4.2.2.3 Limitation of liability**

It shall be a condition of acceptance of a candidate cultivar for testing that the party submitting the candidate cultivar acknowledges that neither the PRCOB nor its members and agents shall in any way be liable for any error or omission occurring as a result of the testing and evaluation process.

#### **4.2.3 Advancement of Entries within a Co-op test**

Entries will be only advanced to a second (final) year at the request of the candidate sponsor and subject to the approval of the Breeding and Agronomy Evaluation Team (simple majority). A line will only be kept in trials for a year beyond the minimum testing requirement upon agreement of the PRCOB. The owner of a line can withdraw it from the Co-op tests at any time.

#### **4.2.4 Number of years required in Co-op tests prior to registration**

Consideration of a candidate cultivar for registration requires two (2) years of Cooperative test data. Under unusual circumstances, permission for additional testing may be granted by the PRCOB. Under certain conditions, where permission is granted by PRCOB, one year of testing may be sufficient. Acceptance of non Co-op supplemental data also requires ratification by a 2/3 majority of PRCOB members present.

### **4.3 Logistics of the Coop Tests**

#### **4.3.1 Check varieties**

Check cultivars will include widely grown, established cultivars, cultivars with specific superior quality traits or recently registered varieties of superior merit. Changes in check varieties must be approved by the PRCOB and are listed in the annual PRCOB minutes and the operating procedures. Data collected for a check prior to its registration are considered to be check data. Candidate cultivars will be compared to the appropriate check of its class at the time of consideration. Note that this may not be the same check as the one used when the line was entered into test. The candidate will not be compared to other lines in the test for registration recommending purposes.

#### **4.3.2 Fees**

the PRCOB may establish a fee structure and a mechanism for handling the fees to ensure that they are applied to the costs of operating the tests. Such fees are subject to annual review.

#### 4.4 Protocols for data collection in Barley Co-op trials

##### 4.4.1 Barley Agronomy

<b>Trait</b>	<b>Protocol</b>	<b>Required Data</b>
Yield	As many sites as practical limitations will allow. A minimum of at least 3 sites for each of the four major soil zones on the Canadian Prairies is preferred. For the Hulless barley Co-op test the test site numbers may be less than 3 sites for each major soil zone.	Yes
Maturity	As many sites as practical limitations will allow. To be obtained on the basis of physiological maturity, visually, using 50% peduncle color loss within a plot or as a % moisture.	Yes
Heading	To be obtained at sites where maturity cannot be measured using visual assessment, or where such assessment would be highly misleading. Measured from sowing to time of ear emergence on all replicates.	Yes
Height	Taken on one replicate. At least two measurements per plot, taken near the center, measuring the entire plant, excluding awns.	Yes
Lodging	Taken on all three replicates. Taken only where good differential lodging is evident. Rated on a scale of 1 to 9, where 1=no lodging and 9=completely flat.	Yes, where it occurs
1000 K wt	Recommended for all contributors sites.	Yes
Test wt.	Same as 1000 K wt.; except, add dirty test weight for Hulless Barley Co-op trial.	Yes
% Plumps	Using a sample of at least 50g, over an appropriate slotted sieve.	Yes
Disease load	At the discretion of the user, scale must be noted.	No
Forage Quality	By mutual arrangement with professionals having expertise in the quality parameter measured. Measurements must be clearly defined.	Yes

#### 4.4.2 Barley Diseases

Disease	2 & 6-Row Hulled Co-op Test	2 & 6 Row Hulless Co-op Test	Forage Barley Co-op Test
<b><u>Barley Yellow Dwarf</u></b> (seedling & field)	+	+	+
<b><u>Common Root Rot</u></b>	+	+	+
<b><u>Net Blotch (Net form)</u></b> (seedling)	+	+	+
Natural infection (field*)	+	+	+
<b><u>Net blotch (Spot form)</u></b> Natural infection (field*)	+	+	+
<b><u>Stem Rust</u></b> Mixture (field*)	+	+	+
<b><u>Scald</u></b> Natural infection (field*)	+	+	+
<b><u>Septoria 1988 (seedling)</u></b> <b><u>Spot Blotch</u></b> Natural infection (field*)	+	+	+
<b><u>Smuts</u></b> U. nuda	+	+	+
U. hordei mixture	+	+	+
U. nigra mixture	+	+	+
<b><u>Fusarium Head Blight</u></b> Natural infection (field*)	+	+	+

\*Isolates and evaluation procedures are in the disease testing protocol of the DET minutes which are part of the PRCOB minutes.

#### 4.4.3 Malt Barley Quality

1. Quality data will be generated on harvested samples from at least 3 Co-op test sites per year, which are selected, based on acceptable protein levels and kernel characteristics.
2. Quality tests will be coordinated by the GRL with testing to be performed by GRL and industry.
3. Data on quality to be collected in the second (2) year of Co-op testing in a manner similar to the first year.
4. A third (3) year of Co-op testing will only be required if satisfactory data was not obtained in the first two (2) years of Co-op testing.
5. Collaborative tests, which are supplementary to the Co-op test, will be coordinated by the Brewing and Malting Barley Research Institute with quality tests to be performed by industry and the GRL.
6. Collaborative testing of an entry can begin during its second (2) year of Co-op testing.
7. Collaborative samples will not be brewed on a routine basis. Emphasis is placed on malting which should accommodate all first year Co-op entries which showed malting potential, and second year lines which continued to show malting potential in second year Co-op testing and first year Collaborative testing,
8. The second (2) year of Collaborative testing will be carried out in a manner similar to the first year.
9. Candidate cultivars will be proposed for full registration (except in special cases where interim registration may be used) on the basis of: 6 station years of malting quality data on acceptable samples collected in Co-op test years 1 and 2 (3 or more if necessary); plus data from Collaborative tests year 1 and 2 (more if necessary).
10. Malt barley varieties accepted for commercial use in the USA do not necessarily require Collaborative testing.
11. At the time of recommending candidate cultivars for interim registration, the minutes of the appropriate Evaluation Team (on Barley Quality) will note specific requirements for potential recommendation for full registration.

Quality Trait	2-Row Malt Coops & Collabs	6-Row Malt Coops & Collabs
Kernel plumpness (% > 6/64")	+	+
1000 K wt. (grams)	+	+
Barley protein (% dry matter)	+	+
Barley peeling (% by weight)	OP	OP
Germinative Energy, 4 ml (%)	+	+
Germinative Energy, 8 ml (%)	+	+
Fine Extract (%)	+	+
β-Glucan (ppm)	+	+
Viscosity (cps)	+	+
Malt Protein	+	+
Soluble Protein (%)	+	+
Ratio S/T (%)	+	+
Diastatic Power (°L)	+	+
Alpha-Amylase (du)	+	+
Malt peeling (% by weight)	+	+
Friability (%)	OP	OP

+ = Required  
 OP = Optional  
 - = Not required

#### 4.4.4 Feed Barley Quality

Quality trait	6- & 2-Row Co-ops	Hulless Barley Co-ops
Clean test weight (kg/hl)	+	+
Dirty test weight (kg/hl)	-	+
1000 k wt. (grams)	+	+
Plumpness	+ (% > 6/64")	+ (> 5.5/64")
Thin (% < 5/64")	+	+
Barley protein (% dry matter)	OP	OP
ADF (% dry matter)	OP	OP
NDF (% dry matter)	OP	OP
TDN (% dry matter)	OP	OP
Adhering hulls (% retention)	-	OP
β-Glucan (% dry matter)	-	OP
Acid Extract Viscosity (cps)	-	OP

+ = Required

OP = Optional

- = Not required

#### 4.4.5 Forage Barley Quality

1. Cooperators to include originator and at least one other institution or third party.
2. Data to be collected from a minimum of 6 sites over two years of acceptable replicated (three or four reps) data. The C.V. for forage dry matter yield must be less than 20%.
3. Harvest of plots to occur at early dough stage.
4. Disease evaluation team to evaluate entries, especially for leaf disease reactions, for one or two years.

Quality Trait	Minimum Reps/Sites	Minimum Sites/Yrs
Plant height	2	2
Lodging	All	All
Heading date	2	All
Whole plant (% dry matter) (Minimum. 300 g fresh weight)	All	All
Forage yield (dry matter grams)	All	All
ADF (% dry matter)	1	2
NDF (% dry matter)	1	2
Protein (% dry matter)	1	2

#### 4.4.6 Barley Quality for Food or Other Uses

Guidelines for evaluating barley lines for food purposes:

- a) At this point the following parameters will continue to be tested in the Western Hulless Barley Cooperative Registration Trials: kernel plumpness, hull retention, dirty and clean test weight, thousand kernel weight, beta-glucan content, and acid extract viscosity.
- b) For evaluation of quality of barley lines bred for specific end uses and /or traits additional tests outside of the Coop trials will be required. These tests will depend on the intended end use of the barley
- c) It is up to the proponent to provide data for the appropriate traits in comparison with appropriate checks to convince the ETBQ to support the request.

- d) The comparison must be made with at least one Coop HB check of the same starch type. If appropriate checks are not available (e.g. high amylose barley), the new line should be grown at least at two different environments.

#### 4.4.7 Advisory Groups for the ETBQ

The ETBQ may nominate, from its members, Leaders of Advisory Groups on quality factors for which the ETBQ lacks adequate expertise (i.e. feed barley quality, food barley quality, etc.). Leaders will bring comments and recommendations of Advisory Groups to the ETBQ for consideration by the full team. These Groups can be established and dismantled by a majority vote of the ETBQ.

### 4.5 Protocols for data collection in Oat Co-op trials

#### 4.5.1 Oat Agronomy

Trait	Protocol	Required Data
Yield	As many sites as practical limitations will allow. A minimum of at least 3 sites for each of the four major soil zones on the Canadian Prairies is preferred. Hulless oats require a minimum of 3 sites from 3 of the major soil zones.	Yes
Maturity	As many sites as practical limitations. To be obtained on the basis of physiological maturity, visually, using 50% peduncle color loss within a plot or as a % moisture.	Yes
Heading	To be obtained at sites where maturity cannot be measured using visual assessment, or where such assessment would be highly misleading. Measured from sowing to time of panicle emergence on all replicates.	Yes
Height	Taken on one replicate. At least two measurements per plot, taken near the center, measuring the entire plant.	Yes
Lodging	Taken on all three replicates. Taken only where good differential lodging is evident. Rated on a scale of 1 to 9, where 1=no lodging and 9=completely flat.	Yes, Where it occurs
1000 K wt	Recommended for all contributors sites.	Yes
Test wt.	Same as 1000 K wt. Dirty test weight required for the Hulless Oat Co-op for determination of % hull retention).	Yes
% Plumps	Using a sample of at least 50g, over an appropriate slotted sieve.	Yes
Disease load	At the discretion of the user, scale must be noted.	No

#### 4.5.2 Oat Diseases

Disease	Oat Co-op Test
<b>Crown Rust</b>	
(seedling and field)	+
<b>Fusarium head blight</b>	
(field*)	+
<b>Smuts</b>	
mixture	+
<b>Stem Rust</b>	
(seedling and field*)	+
<b>Barley Yellow Dwarf</b>	
(seedling and field*)	+

Isolates and evaluation procedures are in the disease testing protocol of the DET minutes which are part of the PRCOB minutes.

#### 4.5.3 Food Oat Quality

Below are the traits which the oat quality committee uses in assessing cultivars for food oats. Parameters are assessed under conditions that reflect the required quality traits for food oats. Results are evaluated with respect to controls and must be equal to or better than the appropriate check cultivars assessed by the same procedures of this test.

1. Hull Colour – white to yellow preferred, but coloured oats will not be excluded.
2. Groat Colour – white to cream.
3. Plumpness – for uniformity and elimination of thin and double oats. Measured as % by weight remaining on 5.5/64 X 3/4 inch slotted screen/sieve.
4. Thin Oats –measured as % by weight passing through a 5/64 X 3/4 inch slotted screen/sieve.
5. Test Weight –Kg/hl
6. Kernel Weight –g per 1000 kernels
7. % Groat – acceptable methods include Lab Codema, NIR, hand dehulling, Lab Impact Dehuller
8. % Breakage – visual score 1-9 during dehulling (Lab Codema dehuller).  
Hulless oats on combine harvested samples.
9. Commercial Laboratory Assessment of Milling.
10. % groat Protein (Nx6.25)
11. % groat Oil – Comparable to the values for the check cultivars.
12. % groat  $\beta$ -Glucan
13. % groat Total Dietary Fiber

## Required Quality Traits for Food Oats

Quality Trait	Recommended Target Values
Hull Colour	White to yellow preferred
Groat Colour	White to cream
Plumpness	>50% - over 5.5/64" X 3/4" slotted screen
Thin Oats	Max. 2% - through 5/64" X 3/4" slotted screen
Test Weight	48.6Kg/hl (38# Winchester bushel)
Kernel Weight	>30g /1000
% Groats	Target 75%
Total Dietary Fiber <sup>1</sup> , minimum:	>10% db
Oil <sup>2</sup> , maximum:	<7.5%db
Protein <sup>3</sup> , minimum:	>13%db
β-glucan <sup>4</sup> , minimum:	>4db

<sup>1</sup>AOAC 991.43

<sup>2</sup>AOAC 996.06

<sup>3</sup>AACC 46-30 /\*corresponds to AOAC 992.23

<sup>4</sup>AOAC 995.16

**Note: Specifications for the oat TDF, oil, protein, β-glucan are based on a groat, dry weight basis. These are derived from the U.S. Code of Federal Regulations 21: 101.81 (April 1, 2000 edition, pg. 138.)**

**Note: In the case of hullless oats in the test, data must be converted to a groat basis, using values for % hull for all hulled cultivars.**

#### **4.6 Check Varieties 2010 Tests**

##### **4.6.1 Western Co-operative 6-row Barley and Collaborative\* Registration Tests**

AC Ranger  
\*Tradition  
\*Lacey  
\*CDC Mayfair  
Vivar  
\*Celebration  
\*(malt checks only)

##### **4.6.2 Western Co-operative 2-row Barley and Collaborative\* Registration Tests**

\*AC Metcalfe  
\*CDC Copeland  
Xena  
\*(malt checks only)

##### **4.6.3 Western Co-operative Hulless Barley Registration Test**

AC Metcalfe  
CDC McGwire  
CDC Rattan  
Millhouse  
Tyto

##### **4.6.4 Western Co-operative Forage Barley Registration Test**

AC Ranger  
Vivar  
Virden

##### **4.6.5 Western Co-operative Oat Registration Test**

AC Morgan  
CDC Dancer  
Leggett

##### **4.6.6 Western Co-operative Hulless Oat Registration Test**

AC Gwen  
Paul  
Gehl  
CDC Dancer  
Leggett

## **APPENDIX A: Data Release Policy**

Operating Procedures used by the PRCOB will be available at the PRCOB portion of the PGDC website or from the Chair or Secretary.

The PRCOB minutes will be available on the PRCOB website to all members. Included in this report will be the voting results (Evaluation Team and PRCOB votes) for each candidate cultivar considered. The report will include minutes of the Evaluation Teams.

Reports of the PRCOB will be available to all members of the PRCOB. General access and availability of these reports will be posted on the password protected area of the PRCOB website after PRCOB voting and approval. A disclaimer indicating the restricted distribution of the report and limitations of the data will be included on the first page of each document.

Developers, owners and marketing institutions may use the data for their lines without request for permission. Comparisons may only be made with check cultivars in the trials in which the candidate was evaluated.

Data for candidates supported for registration may be used in "provincial government variety guides" without request for permission.

### *Disclaimer to be published with the PRCOB minutes:*

The data contained in this document is the copyright property of the Prairie Recommending Committee for Oat and Barley (PRCOB). The information contained herein may not be reproduced, published or disseminated in any form other than in its entirety, without the express written consent of the PRCOB Chair.

The data contained in this document are collected from several sources. The PRCOB does not guarantee the veracity of subsets of these data.

The members/experts of the PRCOB evaluate the merit of genotypes/cultivars using a pool of performance parameters collected over several years and multiple locations. Any subset of these data cannot be considered a reliable indication of overall merit.

Requests for permission to use portions of this document must be forwarded, in writing, to the PRCOB Chair.

### ***Guidelines to Chair in granting permission to use portions of the PRCOB data:***

- a) Permission to use data subsets will be refused in situations where, in the considered opinion of the Chair, the data will be presented in a misleading manner.
- b) The data for the checks is considered public domain and a request for use will be approved unless it conflicts with point (a).
- c) The use of data specific to entries may be approved with the express written consent of the relevant breeder/sponsor.
- d) The Chair, in granting permission to use the data, will consider and respect information that is proprietary.

## APPENDIX B: Conflict of Interest Guidelines

The PRCOB has as one of its mandates, the responsibility “to advise on the performance of lines in test and make recommendations to the Variety Registration Office of the Plant Products Division, Canadian Food Inspection Agency.” The process is based on participation of the pool of expertise contained in the membership of the PRCOB and is carried out in a democratic and transparent manner. It is recognized that this in itself incurs a degree of conflict of interest but this is accepted as a desirable element of involving the most knowledgeable professionals. Thus it is not a conflict of interest for a sponsor to vote for their own candidate cultivar. While members are expected to vote impartially, abstaining from a vote is appropriate only when sound ethical judgment indicates a ‘Conflict of Interest’.

According to Dr. Michael McDonald, Director of the Centre for Applied Ethics at the University of British Columbia, a Conflict of Interest arises when an individual acting in an official capacity (public official, employee, professional, etc.) has private or personal interests sufficient to appear to influence the objective exercise of their duties. Conflicts of Interest interfere with professional responsibilities by clouding objective, professional judgment.

There are three key elements in defining a Conflict of Interest:

- Private or personal interest: The pursuit of private or personal interests does not create a conflict of interest unless it occurs during the exercise of official capacity.
- Exercise of official capacity: Duties and obligations that are part of an office or official capacity must prevail over private or personal interests.
- Responsibility to use objective professional judgment: Professionals are expected to provide sound, objective and independent advice. Factors that interfere (or appear likely to interfere) with professional objectivity are a matter of legitimate concern to those who rely on this advice.

In addition to *actual* Conflicts of Interest, *apparent* and *potential* conflicts should be avoided.

- Apparent Conflict of Interest: a situation in which a reasonable person would believe that the professional’s judgment is likely to be compromised.
- Potential Conflict of Interest: a situation that could develop into an actual conflict of interest.

The key in discovering a personal Conflict of Interest is to determine if the situation is likely to interfere, or appears to interfere, with the independent judgment expected in performing your official duties. Trust is the core issue. Conflicts of Interest involve an abuse (actual or potential) of the trust that people have in professionals. In addition to direct damage to particular clients and employers, Conflicts of Interest injure the entire profession by reducing the confidence that people have in professionals.

An excellent diagnostic tool is the “trust test”: *Would relevant others (employer, clients, colleagues, general public) trust my judgment if they knew I was in this situation?*

When a personal Conflict of Interest is recognized, the ethical responses are:

- Reveal your private interest to the relevant parties.
- Remove yourself from the decision making process or advice-giving role.

## **APPENDIX C: Contract registration – Operating Procedures and Data Requirements**

### **1. Contract Registration Committee**

The Contract Registration Committee (CRC) will consist of three (3) individuals appointed by the PRCOB, one from each of the following disciplines or areas of specialization:

- oat or barley breeder
- a pertinent quality expert
- a pertinent pathology expert

Appointments will be made as required. A Chair of the CRC will be chosen from among its members. In cases where confidentiality of data is important, the owner of the proposed candidate may request an alternate member to be appointed by the remaining members of the CRC. Members of the CRC will act to protect the confidentiality of data where required.

### **2. Eligibility requirements for testing under Contract Registration**

Before a cultivar will be considered suitable for testing under Contract Registration procedures, the owner/sponsor (or designate) must provide the rationale for Contract Registration. A written document, addressing the following points, must be received by the PRCOB at least one week prior to the PRCOB annual meeting.

- The candidate cultivar possesses unique biochemical or biophysical characteristics specific to a defined end-market and could cause industry harm if produced outside of a closed system.
- An end user/purchaser exists for the contract registered crop.
- A closed system for the production of the candidate is achievable.
- The closed system provides assurance that “off-grade” production shall not enter the normal marketing system for the commodity crop.

Upon the endorsement that testing of the cultivar under Contract Registration procedures is appropriate; the Variety Registration Office will be informed of the decision and any additional data requirements prescribed by the CRC.

Owners/sponsors of candidates being tested under Contract Registration procedures are urged to contact the Varietal Registration Office for details on the required Quality Assurance Manual, which must be complete before registration is granted.

### **3. Decisions on acceptability for testing under Contract Registration**

Upon receipt of appropriate documentation and/or data summaries from the owner/sponsor of a candidate, the CRC will inform the owner/sponsor of the date and time of the CRC meeting where they will be allowed to address the committee. Following the meeting, the CRC will have up to ten (10) days to rule on the suitability of the candidate for testing under Contract Registration procedures, prescribe additional data requirements over the minimum specifications, or make a recommendation on the request for Contract Registration. The CRC may seek external advice, recognizing that confidentiality may be of extreme importance. A simple majority vote will constitute the decision of the CRC. Votes will be cast in two categories: Support and Object.

The owner/sponsor of the cultivar may contest a CRC decision in two general areas:

- If the candidate is deemed ineligible for testing under Contract Registration procedures.
- If the CRC objects to the Contract Registration of the cultivar.

Appeals will be referred to a PRCOB Appeal Committee and conducted as outlined in the PRCOB Operating Procedures. Costs incurred in convening any extra-ordinary meeting of the Executive shall be borne by the owner/appellant.

#### **4. Conduct of Trials & Minimum Data Requirements**

The following are minimum data requirements for Contract Registration of a candidate cultivar. The CRC may set additional requirements within ten (10) days following the meeting called to determine the suitability of the candidate for Contract Registration procedures.

It is a condition that, upon acceptance of a candidate for testing under Contract Registration procedures, the owner/sponsor agrees that the testing and evaluation protocols defined by the CRC are appropriate and that these protocols, however defined, will not justify an appeal.

a) A minimum of two (2) years of testing is required.

b) Testing must be conducted in the region where production is intended to take place. The geographic region(s) may vary in area from all of western Canada to a smaller region within a province.

c) Testing will provide comparisons with the appropriate checks, as currently used in regular registration (co-operative) testing, or as determined by the CRC.

d) Agronomic data must be collected but will be used for descriptive purposes only. No minimum levels of performance are required for agronomic traits. A minimum of eight (8) station-years of agronomic data are required, with a minimum of three (3) station years in each of two (2) calendar years. A minimum of three (3) of the eight station-years of data shall be conducted by an individual or organization that is independent from the candidate proposer, with a minimum of one (1) station year in each of the calendar years tested. The independent test organization must be disclosed to the CRC prior to conducting trials for approval.

e) An independent third party PRCOB member will be identified by the CRC to inspect all field trials.

f) Disease evaluation will take place in each of two (2) years of testing and shall be conducted under the auspices of the Disease Evaluation Team. Candidates must meet minimum disease resistance requirements in place for traditional cultivars (general registration), unless the owner of the candidate can demonstrate that susceptibility to a particular disease will not endanger production of traditional cultivars in, or adjacent to, the geographic region(s) identified for contract production.

g) Agronomic performance and disease reaction data will not be considered confidential.

h) Grain quality and the trait deemed to cause potential harm will be evaluated each year of testing, relative to the appropriate check cultivars for the crop kind. These data will be evaluated by the CRC in consultation with appropriate grain quality experts if deemed appropriate or necessary. The CRC will respect the confidential nature of the data in soliciting expert advice. The purpose of this evaluation is to confirm that the candidate has the quality claimed by the owner/sponsor and that such quality requires production within a closed, contract system.

i) All costs for data collection for Contract Registration shall be borne by the owner/sponsor of the candidate cultivar.

k) Recommendations in support of contract registration will be made by the CRC and forwarded to the Variety Registration Office who will examine the request and rule on the applicability of the candidate for Contract Registration.