

**RURAL MUNICIPALITY OF DEER FORKS NO. 232 POLICY REGARDING
THE PREVENTION AND CONTROL OF CLUBROOT**

POLICY NO. 86-2012

1. Definitions

In this Policy:

- a) "officer" means an officer within the meaning of *The Pest Control Act*;
- b) "Municipality" means the Rural Municipality of Deer Forks No. 232;
- c) "Council" means the Council of the Rural Municipality of Deer Forks No. 232.

2. Policy Statement

The Municipality of *Deer Forks No. 232* recognizes that clubroot is a serious problem of cruciferous plants such as canola, mustard, camelina, oilseed radish, taramira and cruciferous vegetables such as arugula, broccoli, Brussels sprouts, cabbage, cauliflower, Chinese cabbage, kale, kohlrabi, radish, rutabaga, turnip and cruciferous weeds (e.g. stinkweed, shepherd's purse, wild mustard).

The Municipality of Deer Forks No. 232 supports the principle to control the spread of clubroot, which has been declared a pest under *The Pest Control Act*.

3. Procedures

- a) *The Saskatchewan Clubroot Management Plan* will be referred to and used as a guide for any control/prevention measures. An updated copy of this document can be obtained by calling the Saskatchewan Agriculture Knowledge Center at 1-866-457-2377.
- b) Clubroot field inspections will be conducted by officer(s) appointed by the Municipality to monitor for clubroot and/or enforce *The Pest Control Act* within the municipality.
- c) Clubroot survey procedures and the reporting form will follow standard protocols as recommended by the Saskatchewan Clubroot Initiative and the Saskatchewan Canola Disease Survey (see Schedule A).
- d) Clubroot confirmation must be obtained through observation of disease symptoms in a susceptible crop (either in the field or through bioassay - plants grown in a soil sample and observed for clubroot symptoms after six weeks) and detection of the pathogen's DNA in a plant or soil sample, obtained by laboratory testing.

Rural Municipality of Deer Forks No. 232 Clubroot Policy

- e) By way of the Municipalities Clubroot Bylaw (Bylaw Number) every owner and/or occupant of land shall notify the Municipality or appointed officer of the Municipality in which the land is located of the presence of clubroot, within 30 days of confirmation (as described above) of the presence of clubroot, and provide the exact location of the disease.
- f) Personal survey information and details of self-reporting clubroot findings is to be considered confidential and kept on file in the office of the Municipality and released only to authorized municipal or provincial government personnel and the person(s) owning, occupying or controlling the land. Disclosure is subject to agreement reached with the landowner(s) and/or occupant(s), in the best interests of the community in accordance with the Saskatchewan Clubroot Management Plan.
- g) When land is verified positive for clubroot, the landowner(s) and/or occupant(s) will be consulted by the appointed municipal officer regarding the methods of control to be applied with a view to the most satisfactory treatment from the standpoint of him/her/them, as well as the community, in accordance with the Saskatchewan Clubroot Management Plan, entering into a written agreement with the Municipality using Form B.
- h) The landowner(s) and/or occupant(s) may be required to take actions as deemed appropriate by the appointed municipal officer by way of an order to destroy, control and prevent the spread of clubroot on any land owned, occupied or controlled by him/her/them, following the best practices for prevention and management and proper sanitations measures outlined in the Saskatchewan Clubroot Management Plan, using Form C.
- i) Adjacent landowners and any individuals or other parties who may be accessing the land must be prohibited from accessing the land or notified by the landowner(s) and/or occupant that clubroot is present on the land so they may limit traffic and/or ensure proper sanitation.

4. Adoption

Reeve

Administrator

Adopted this 4 day of April 2012

Administrator

Important Information:

For More Information on Clubroot

For more information on clubroot please visit www.clubroot.ca or www.agr.gov.sk.ca or contact the Saskatchewan Agriculture Knowledge Centre at 1-866-457-2377.

Bylaws

If the Municipality would like to implement a bylaw regarding clubroot please see the attached Sample Bylaw. If you require assistance with clubroot bylaws please contact SARM at 306-757-3577.

Management and Control Methods

If the Municipality or municipal appointed officer requires assistance devising an effective management plan or requires guidance on sampling techniques or control methods please contact the Saskatchewan Agriculture Knowledge Center at 1-866-457-2377.

Notifying Ratepayers

SARM has drafted a sample letter that could be sent to ratepayers informing them of clubroot and the importance of prevention and management of the disease. Please see the attached Sample Letter to Ratepayers.

CLUBROOT SURVEY FORM

_____ 1/4S _____ T _____ R _____ West of the _____ Meridian

and/or GPS Coordinates N _____ and W _____

as shown on the diagram attached,

-or- Number, Street: _____ Town/City: _____

Pest Control Officer: _____

Surveyor Name (if different than above): _____

Address: _____

Phone: _____ E-mail: _____

Landowner Name: _____

Date surveyed: _____

Is this survey part of an agreement with the landowner or an order? _____

Tillage Information (if applicable/known):

Fall 20__ : No tillage _____ Cultivation (# of times) _____ Discing (# of times) _____

Other: {(Please Specify) # of times} _____

Spring 20__ : No tillage _____ Cultivation (# of times) _____ Discing (# of times) _____

Other: {(Please Specify) and # of times} _____

Seeding information (if applicable/known):

Crop: _____ Variety: _____ Source: Certified _____ Common _____

Seeding date: (if available) _____ Seeding rate: (lbs./ac. or kg/ha) _____

Total rainfall (if available): June _____ July _____ Irrigated: Yes ___ No ___

Rotation Information (if applicable/known):

(please list canola variety used in previous years if known): _____

20__ : Wheat _____ Barley _____ Canola _____ Field pea, lentil, dry bean _____

Oats _____ Rye _____ Potato _____ Forage grasses _____ Forage legumes _____

Other (please specify) _____

20__ : Wheat _____ Barley _____ Canola _____ Field pea, lentil, dry bean _____

Oats _____ Rye _____ Potato _____ Forage grasses _____ Forage legumes _____

Other (please specify) _____

History of cabbage or brassica crops other than canola grown on the field: _____

(could include indication of a previous home garden)

All survey information is considered confidential and is to be kept on file in the office of the municipality and released only to authorized municipal or provincial government personnel and the person owning, occupying or controlling the land surveyed. Disclosure is subject to the agreement reached or orders issued in the event of a positive clubroot finding, as outlined in the clubroot policy of the municipality.

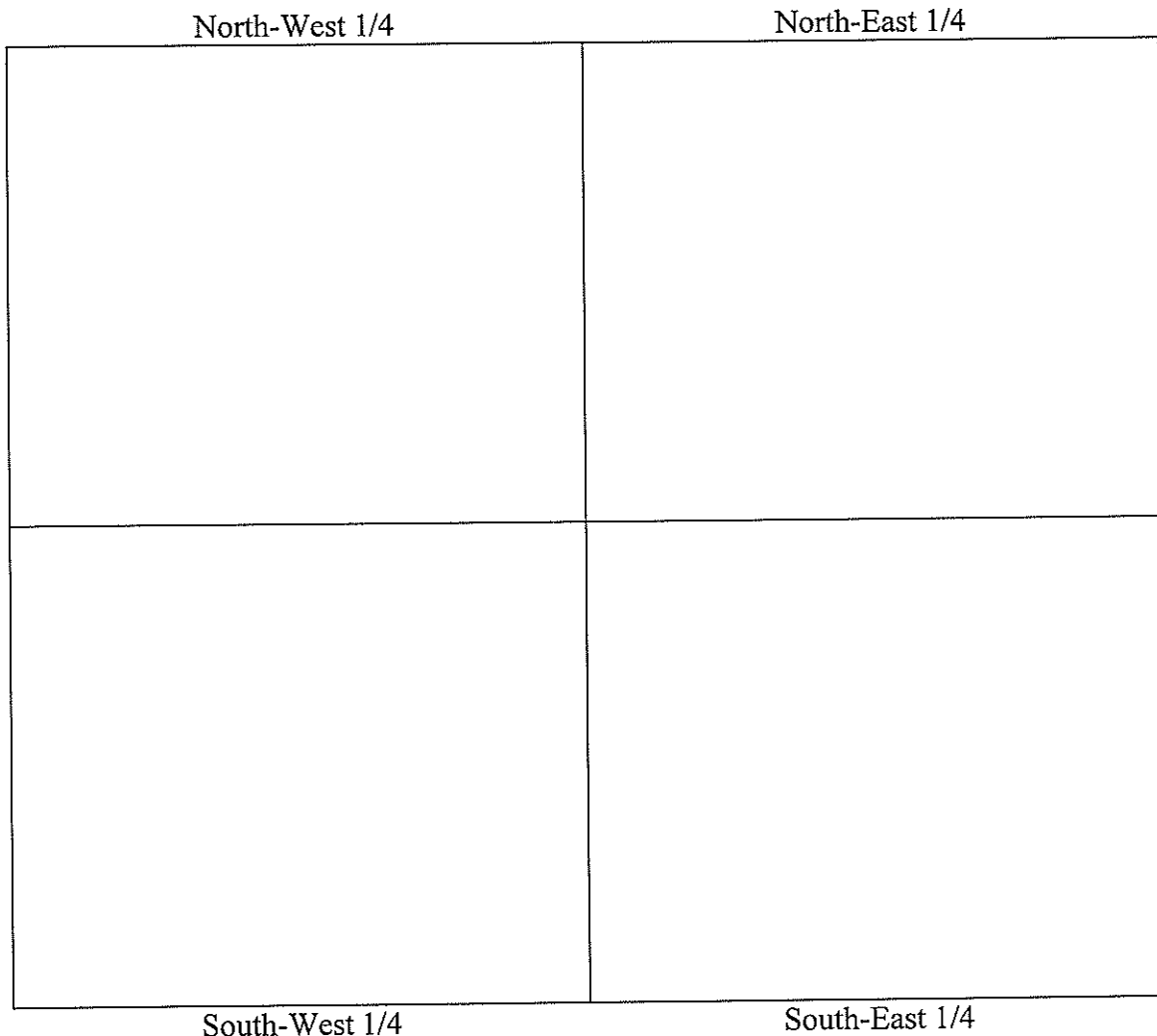
Field Traffic: Is there occasional traffic on to the field, i.e. oil pumping rigs, power installations, recreational vehicles (ATVs), etc.? _____

Comments (please attach additional sheets if required): _____

TYPE OF SAMPLE(S) COLLECTED (circle one or both):

SOIL		PLANTS	
Number of samples:		Number of samples:	

DIAGRAM SHOWING LOCATION OF FIELD ENTRANCE and/or SAMPLES:
(may be supplemented with map printed from GIS software)



All survey information is considered confidential and is to be kept on file in the office of the municipality and released only to authorized municipal or provincial government personnel and the person owning, occupying or controlling the land surveyed. Disclosure is subject to the agreement reached or orders issued in the event of a positive clubroot finding, as outlined in the clubroot policy of the municipality.

CLUBROOT SURVEY PROTOCOL

Introduction: Clubroot is a soil-borne disease caused by a microbe, *Plasmodiophora brassicae*. Clubroot affects the roots of cruciferous field crops such as canola, mustard, camelina, oilseed radish and taramira. It also affects cruciferous vegetables such as arugula, broccoli, Brussels sprouts, cabbage, cauliflower, Chinese cabbage, kale, kohlrabi, radish, rutabaga and turnip, as well as cruciferous weeds (e.g. stinkweed, shepherd's purse, wild mustard).

Symptoms: Invasion of host roots leads to the formation of clubroot galls. These deformed roots have a reduced ability to absorb water and nutrients leading to stunting, wilting, yellowing, premature ripening and shrivelling of seeds. The cause of these above-ground symptoms can be confirmed by digging up suspect plants to check roots for gall formation. Clubroot affects canola yield and quality to a similar degree as other diseases affecting water and nutrient uptake, and its impact depends on soil conditions and the growth stage of the crop when infection occurs. Early infection of seedlings can result in significant yield losses. Spore germination of *Plasmodiophora*, infection and disease development are favoured by warm soils, high soil moisture and low soil pH.

Equipment and Materials Needed:

Clubroot survey sheets (Form A)	Hand trowel	Disposable booties and gloves
Clipboard and pen	Pocket knife	Garbage bags
GPS unit or maps	Pail of five per cent bleach for soaking/cleaning tools	Five per cent bleach solution in misting bottle
Paper bags or boxes		

Plant Sample Survey Procedure:

1. As clubroot may take six to eight weeks to develop, symptoms are most detectable later in the growing season (late July or August).
2. Records must be kept for all fields visited using *Form A* clubroot survey sheets.
3. Do not drive into field or access, but park on the road whenever possible. Surveyors can walk into infested fields but must follow human sanitation procedures.
4. If survey personnel enter a field in any potentially infested regions, whether it is known to have clubroot or not, they are to follow these procedures:
 - Wear disposable footwear that can be removed immediately after leaving the field. Another option is to use rubber boots or other footwear that can be sterilized (misted) with a disinfectant solution (five per cent bleach) upon leaving the field.
 - Dispose of the disposable footwear in a sterile fashion. Sealing in a garbage bag and burning is preferred. Do not reuse disposable footwear.
 - Clean and disinfect any tools that may have been in contact with soil in the field.
5. Observe 20 plants at each of five sites in the field, for a total of 100 plants. Keep each of these five sites at least 20 metres from each other and at least 20 metres from the field edge.
6. If patches of premature ripening are observed, particularly in field entrance or corners of field, dig or pull up plants, shake off excess soil and inspect roots for the presence of galls. If clubroot is suspected, cut off stems and collect root samples.
7. Air-dry root samples in paper envelopes/boxes/bags and send them to the Ministry of Agriculture's Crop Protection Laboratory at 346 McDonald Street, Regina SK, S4N 6P6, telephone (306) 787-8130. You may mail, courier or drop off samples in person. There is a \$20 fee for visual inspection.
8. If the visual diagnosis is positive, root samples will be forwarded to a laboratory on behalf of the municipality for DNA testing. Cost of the DNA testing will depend on the current fee set by the credited laboratory (approximately \$100).

Soil Sample Survey Procedure:

1. Soil samples can be collected at any time but soil should be dried after collection.
2. Records must be kept for all fields visited using *Form A* clubroot survey sheets.
3. Do not drive into field or access, but park on the road whenever possible. Surveyors can walk into infested fields but must follow human sanitation procedures.
4. If survey personnel enter a field in any potentially infested regions, whether it is known to have clubroot or not, they are to follow these procedures:
 - Wear disposable footwear that can be removed immediately after leaving the field. Another option is to use rubber boots or other footwear that can be sterilized (misted) with a disinfectant solution (five per cent bleach) upon leaving the field.
 - Dispose of the disposable footwear in a sterile fashion. Sealing in a garbage bag and burning is preferred. Do not reuse disposable footwear.
 - Clean and disinfect any tools that may have been in contact with soil in the field.
5. Soil samples should be comprised of a mixture of small scoops (approximately one cup each) of soil taken at each of 5 sites visited in one field. Because clubroot is most likely to arrive on soil attached to vehicles and field equipment, IF the entrance to the field is evident, these 5 sites should be located in the vicinity of this approach. Clear away residue from the soil surface, and scoop approximately 1 cup of the top 5-10 cm of soil at each site (total 1 litre from all 5 sites combined). Keep each of these five sites at least 20 metres from each other and at least 20 metres from the field edge.
6. Air-dry soil samples in paper boxes and send them to a laboratory for DNA testing. Cost of the DNA testing will depend on the current fee set by the credited laboratory (approximately \$100).
 - For a list of laboratories providing clubroot testing, please visit: www.clubroot.ca (click on Identify Clubroot) or contact the Crop Protection Laboratory in Regina.

CLUBROOT AGREEMENT

Agreement No. _____

Date of Agreement _____, 20 _____

Agreement between

Owner, Occupant or Operator

-and- Pest Control Officer

(Name)

(Name)

(Address)

(Address)

No. _____

(Municipality)

I, the above-mentioned owner or occupant, having this day conferred with the above-mentioned pest control officer, hereby acknowledge the presence of clubroot, on the land located at (if different from above):

_____ 1/4S _____ T _____ R _____ West of the _____ Meridian

and/or GPS Coordinates N _____ and W _____

as shown on the diagram attached,

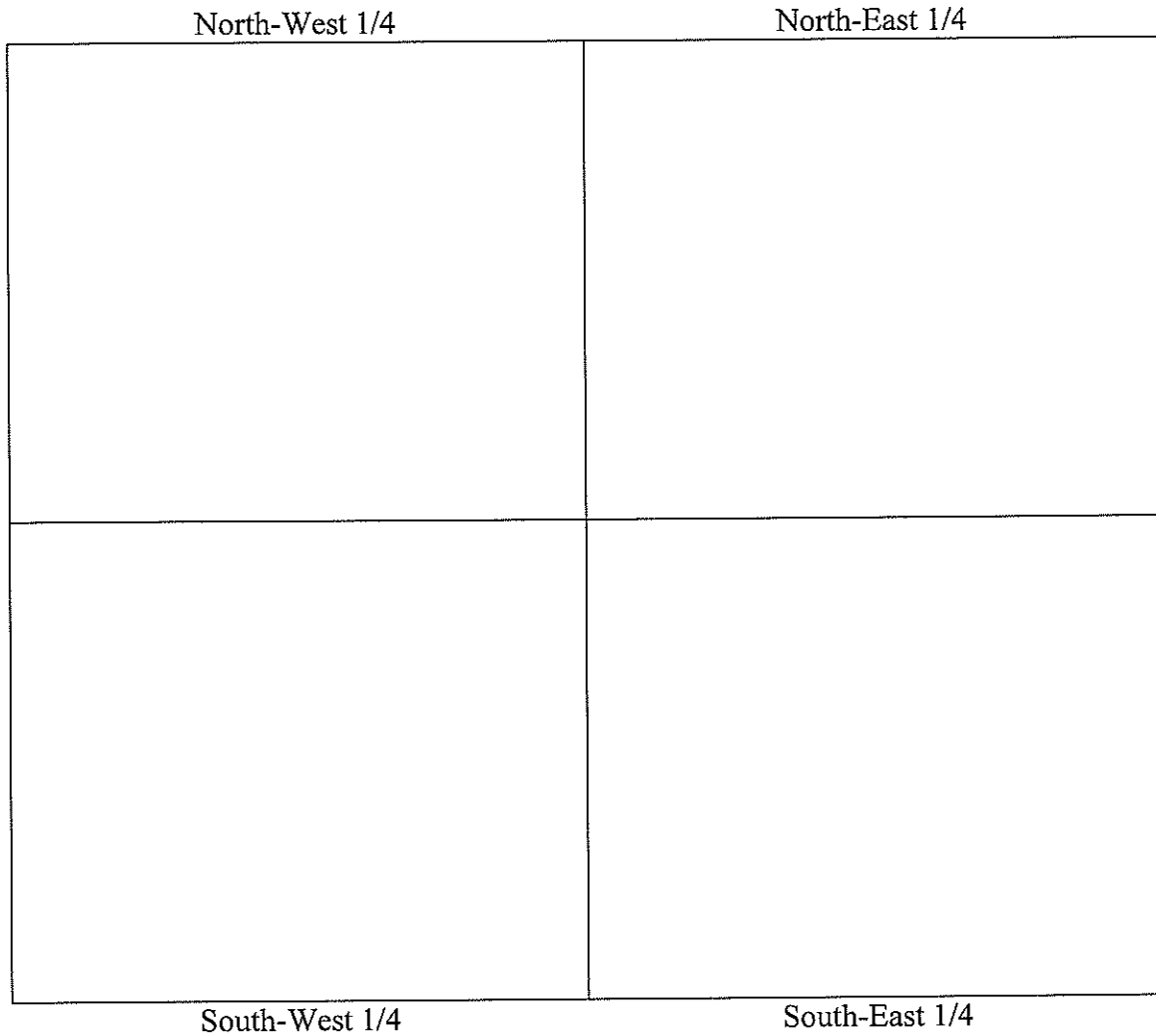
-or- Number, Street: _____ Town/City: _____

AND hereby agree to do the following work (specify work to be done):

(Signed) _____
(Owner and Occupant)

(Signed) _____
(Pest Control Officer)

DIAGRAM SHOWING LOCATION OF CLUBROOT
(may be supplemented with map printed from GIS software)



Section _____ Township _____ Range _____ West of _____ Meridian

GPS coordinates: N _____ W _____

(These locations are approximations only and do not necessarily indicate all clubroot present.)

Note: This agreement to be made in triplicate. The original copy is for the owner/occupant, and copies 2 and 3 are to be submitted to the municipality.

Copy 1: Owner/Occupant

Copy 2: Municipality

Copy 3: Government of Saskatchewan

CLUBROOT ORDER

Order No. _____

Date of Issue _____, 20 _____

To: _____ Address: _____

Telephone: _____

It has come to my attention that clubroot, a declared pest under *The Pest Control Act*:
(please check one box)

has been confirmed on your land described as (if different from above):

_____ 1/4S _____ T _____ R _____ West of the _____ Meridian.

-or-

Number, Street: _____ Town/City: _____

and/or GPS Coordinates N _____ and W _____

and as shown on the diagram attached.

-or-

are present in soil adhering to your machine described as:

(description of machine, including serial number and, if applicable, licence plate)

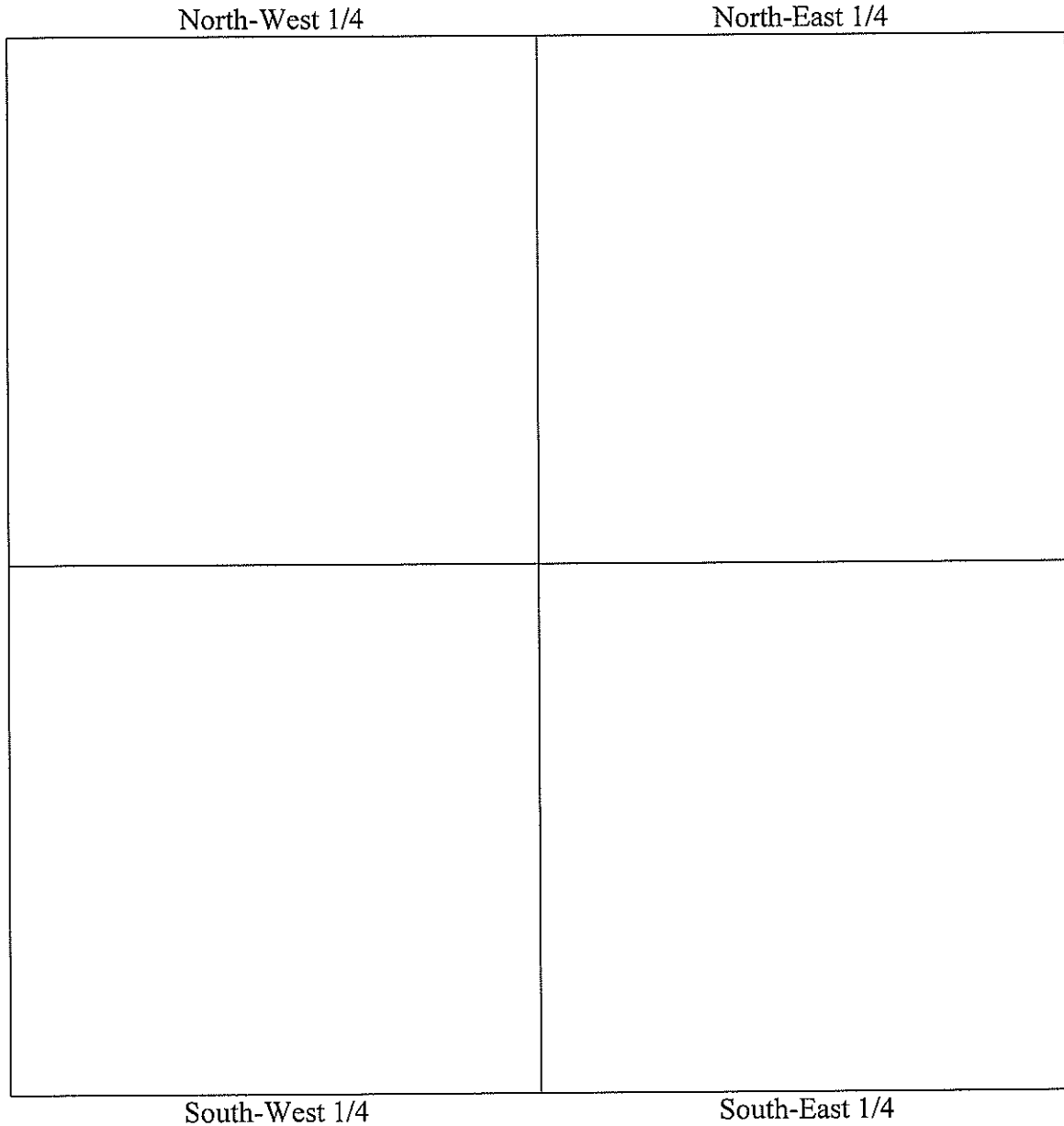
In accordance with the Clubroot Bylaw for the municipality, you are hereby notified:

(Detail instructions including methods to be used to destroy clubroot or clean machine and setting out any prohibitions or other measures the Pest Control Officer considers necessary or appropriate).

(Pest Control Officer)

Municipality of _____ No. _____

DIAGRAM SHOWING LOCATION OF CLUBROOT
(may be supplemented with map printed from GIS software)



Section _____ Township _____ Range _____ West of _____ Meridian

GPS coordinates: N _____ W _____

(These locations are approximations only and do not necessarily indicate all clubroot present.)

Note: This order is to be made in triplicate. The original copy is for the person to whom it is served, and copies 2 and 3 are to be submitted to the municipality.

Copy 1: Owner/Occupant/Person in charge of a machine Copy 2: Municipality Copy 3: Government of Saskatchewan