## SAMPLE COLLECTION SHEET FOR RESISTANCE BIOASSAYS

(Please Print)

Name, Address, Phone/Fax Number:

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Email: _____

__ Payment enclosed

__ Other arrangement for payment

Weed _____

Field ID _____

Sampling Date _____

Lab ID _____

**Herbicide(s) To Be Tested (Please Be Specific):**

* Group 1 _____
* Group 2 _____
* Group 3 _____
* Group 8 _____
* Group 9 _____
* Group 25 _____
* Other _____

Herbicide Use History:

2016 _____

2015 _____

2014 _____

2013 _____

## QUALITY AGRICULTURAL RESEARCH SERVICES

*** Laboratory Services:**
- **weed resistance bioassays**

* Field Trials:
- herbicides
- fungicides
- insecticides
- plant growth regulators
- inoculants
- cultivar evaluations
- fertilizers
- agronomic trials
- GLP trials


AG-QUEST, INC.

**Herbicide Resistance Assay Lab**
**#210 South Railway Street**
**Box 144**
**Minto, Manitoba**
**CANADA, R0K 1M0**
**c/o Dr. Haisheng Xie**

**(204) 776-5565 (Phone)**
**(204) 776-2250 (Fax)**
**haisheng.xie@agquest.com (Email)**
**www.agquest.com (Website)**


**HERBICIDE-RESISTANT WEEDS ARE AN INCREASING PROBLEM IN WESTERN CANADA!**

**DOES YOUR FARM HAVE HERBICIDE-RESISTANT WEEDS?**

**AG-QUEST CAN HELP YOU TO IDENTIFY HERBICIDE-RESISTANT WEED POPULATIONS IN YOUR FIELD!**

## HERBICIDE-RESISTANT WEEDS IN WESTERN CANADA

In western Canada, biotypes of the following weeds have become resistant to herbicides:

WILD OATS:
- Group 1 (FOPs, DIMs and/or DEN)
- Group 2 (IMIs, TSA and/or triazolone)
- Group 8 (difenzoquate and triallate)
- Group 25 (flamprop)

GREEN FOXTAIL (WILD MILLET):
- Group 1 (FOPs, DIMs and/or DEN)
- Group 3 (ethafluralin and trifluralin)

CHICKWEED, CLEAVERS, COW COCKLE, HEMPNETTLE, KOCHIA, LAMBSQUARTERS, REDROOT PIGWEED, RUSSIAN THISTLE, SHEPHERD'S-PURSE, SMARTWEED, SOWTHISTLE, STINKWEED, WILD BUCKWHEAT and WILD MUSTARD:
- Group 2 (IMIs, TSA and/or sulfonyureas)

KOCHIA:
- Group 9 (glyphosate)

## SIGNS OF SUSPECTED HERBICIDE-RESISTANT WEEDS IN THE FIELD

- Some weed species on the herbicide label are controlled, but others are not affected.
- Irregular weed patches survive in a field where control is otherwise excellent.
- Poor weed control does not follow any pattern related to herbicide application.
- Herbicide performance begins to diminish over a number of years.
- The field in question has a history of using same group herbicides.

## STEPS TO MINIMIZE THE RISK OF HERBICIDE RESISTANCE

- Monitor fields carefully on a regular basis.
- Use clean crop seeds.
- Clean equipment between fields and between farms.
- Rotate herbicide groups.
- Practice integrated weed management.
- Consult your local Agricultural Representative or Weed Specialist for further information.

## HERBICIDE RESISTANCE ASSAY SERVICES AT AG-QUEST, INC.

Since 1988, Ag-Quest has operated an herbicide resistance assay laboratory and has developed bioassay techniques to determine whether or not a weed seed sample contains herbicide-resistant biotype(s). Currently there are two types of testing methods prescribed in our laboratory: whole-plant assay and soil assay. Soil assay is used for most group 3 & 8 herbicides in green foxtail, yellow foxtail and wild oats. Whole-plant assay is used for all post-emergent herbicides in major annual weeds (wild oats, green foxtail, cleavers, kochia, lamb's-quarters, redroot pigweed, shepherd'smartweed, stinkweed, wild buckwheat and wild mustard etc) as well as is used to determine crop seed lot genetic purity in herbicide-tolerant canola. Within each set of testing, one or more known resistant biotype and one or more known susceptible biotype are included to ensure the reliability of assay results. The test results are derived by comparing the growth and development of the tested weed samples with resistant/susceptible checks and the untreated check. Please contact us at (204) 776-5565 or 776-2250 (fax) for updated information on our services.

## LIMITATION OF RESISTANCE ASSAY

Since the assay results are based on a sample of weed seed sent to our laboratory, the test results will only reflect the herbicide resistance in that particular sample. The seed samples may be a mixture of resistant and susceptible seed sources. Also be aware that samples may or may not be representative of the whole field, depending on sample collecting methods. If a sample is collected from a whole field, the results will reflect the field, whereas if the sample is collected from a few plants, it will reflect only those plants. Thus actual response under field conditions may occasionally vary from the laboratory results. If the sample submitted has poor germination and thus the test result is inconclusive, we will either request a second sample or refund the test cost of the sample in question. Any liability for work contracted to Ag-Quest will be limited to the quoted cost for the work affected. Except for the quoted cost, any other warranty or liability of any kind and recovery of any incidental or consequential damages or claims is specifically excluded.

## SAMPLE REQUIREMENTS

- Weed seeds should be fully mature and dry.
- Fill out sample collect sheet or provide the name, Address/Email address, telephone number, and field identification with the seed samples.*
- Pack seed in envelope (avoid plastic since seeds may become mouldy) together with sample collection sheet.
- Enclose a cheque payable to Ag-Quest for the cost of assay unless you have other payment arrangements.
- Send at last 50 g (2 oz.) of wild oat seeds and at least 25 g (1 oz.) of other weed seeds to:

**AG-QUEST, INC.**
**#210 South Railway Street, Box 144**
**Minto, Manitoba, CANADA, R0K 1M0**

*Assay results and locations (nearest town or R.M.) may be made available to Manitoba Agriculture and University of Manitoba for the purpose of extension and research. Grower and local land description will not be identified without the permission of party paying for the assay:

__ Yes, grower can be identified.
__ No, grower cannot be identified.

## RESISTANCE ASSAY PRICES**

**Whole-Plant Assay**

All weeds …….…. $105.00
HT-canola ……..…..... $195.00

**Soil Assay**

All weeds ……. $105.00

**Volume Discount**

> 10 tests …..... 5% discount
> 50 tests …..... 10% discount
> 100 tests …..... 15% discount

**The prices based on one herbicide test on one sample. One sample tested for 3 herbicides would be 3 tests. Cost does not include GST. Sorry, no credit card. The prices are subjected to change without notice. Please call us at (204) 776-5565 for a current fee schedule.

**Other assays may be available on request. Please contact to make arrangements prior to shipping samples.