

**NATIONAL KARNAL BUNT  
WHEAT GRAIN SURVEY  
PLAN  
2004**

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March 19, 2004**

# Contents

Background.....	1
Purpose.....	1
National Survey Areas.....	2
Crops to be Surveyed.....	2
Grain Samples – Protocols .....	2
National Survey Sampling – Timing.....	3
National Survey Sampling - Intensity.....	3
National Survey Sampling – Packaging and Shipping.....	4
Sample Analysis.....	5
Sampling Processing Centers – Bunted Kernel Analysis.....	5
Reporting.....	6
Primary Contacts.....	7
Regional Coordinators.....	7
Appendices List.....	8
Appendix A - State Karnal Bunt Survey Coordinators.....	9
Appendix B - Sample Information Form.....	17
Appendix C – Confirmation and Response Timeline.....	18
Appendix D – Data Entry.....	21
Appendix E – Bunted Kernel Analysis Centers.....	Later

# National Karnal Bunt Wheat Grain Survey FY-2004

March 19, 2004

## Background:

The National Karnal Bunt Survey was started in 1996 in response to the detection of Karnal bunt disease in the United States. Since then this survey has provided invaluable information in the form of negative occurrence data to support the export of U.S. wheat to all foreign markets. In FY-2002, USDA, APHIS, PPQ explored new survey, detection, and analysis technologies and revised the survey protocols and techniques to take advantage of these advances. PPQ continues to explore new technologies and make changes to future survey protocols as the new technologies become available.

## Purpose:

The sole purpose of the national survey is to provide U.S. certifying officials the ability to issue phytosanitary certificates required by any and all countries to which we export (or may export) wheat.

## National Survey Areas:

The national survey will be conducted in those areas of the United States where Karnal bunt has not been previously detected.

**Eastern Region:** New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, North Carolina, Kentucky, Mississippi, Tennessee, South Carolina, Alabama, Georgia, and Florida.

**Western Region:** Washington, Nevada, Oregon, Idaho, Utah, Montana, Wyoming, Colorado, New Mexico, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Louisiana, Arkansas, Missouri, Iowa, and parts of California, Arizona, and Texas.

## Crops to be surveyed:

Wheat, durum wheat, and triticale from producing counties not sampled during the 2003 harvest year and where Karnal bunt has not been previously detected.

## Grain Samples – Protocols:

The survey will collect representative samples from counties where susceptible host crops are produced according to statistics provided by USDA, National Agricultural Statistics Service (NASS). The number of samples will be based on the average production of each host for a 5-year period 1998-2003. This information may be obtained by using the NASS website ([www.usda.gov/nass](http://www.usda.gov/nass)). From the home page, click on the selection for **Historical Data** then select **Agricultural Statistics Database** and then select menu. From the **Crops CountyDistrict Data Menu** select the information needed to plan, **all counties in/or more states** the survey for

the state. The data should be downloaded onto a disk because of the volume on information produced. The survey does not intend to sample every local elevator. It is an attempt to represent crop production within all production areas. Aggregation point samples provide the best representation of local crop conditions.

The official composite sample size for the bunted kernel analysis is 4 pounds. An additional 250 gram sample should be taken and retained by the state as a reference sample. Samples should be submitted and sealed in sturdy paper bags, or double bagged if not sturdy. This additional sample may be stored in a Nalgene bottle, that has been provided, or any other appropriate container. Once the 4-pound composite sample has been determined free of Karnal bunt, the 250 gram reference sample may be disposed of by the state. If a bunted kernel is found in the 4-pound composite sample, the 250 gram reference sample will be held for additional analysis in instances when the integrity of the original analysis is challenged. When the original positive determination is accepted by the parties involved, the 250 gram reference sample may be disposed of.

If a county has more than one county/local elevator, choose elevators to sample that best represent the entire county. Though each elevator may not receive host material from the entire county, pick those that best represent the county.

If a county is represented in the NASS data but has no county elevator, samples should be taken from the elevators to which the grain is shipped. This may require samples be taken from elevators in adjacent counties or even adjoining states.

Each elevator normally takes a moisture and/or quality sample from each load arriving at the elevator. If arrangements can be made with the elevator to save all or a portion of these samples by placing them in a barrel, national survey samples may be taken when each barrel approaches capacity. This will represent a sampling of all wheat coming into the elevator. Once national survey samples have been taken, the barrels may be emptied. The objective is to take a 4-pound sample that represents all the wheat in the barrel. This can be done either using a small grain probe or using a disposable plastic cup to dip grain from several locations within the barrel. The probe should be cleaned using an alcohol wipe after the wheat in the barrel has been sampled and a new cup and gloves should be used for each new sample.

If the barrel sample method cannot be used, run the wheat out of one or more grain bins and use disposable 16-oz plastic cups to collect grain from the belt until a 4-pound sample has been collected. Mechanical samplers (diverters) should be used if available for collecting samples from a belt.

The State Karnal Bunt Coordinator will create a list of all elevators to be surveyed in a state with the contact person identified for each location and keep it as a file. At least once during the sampling season, a PPQ representative should visit each elevator participating in survey sampling. The purpose of the visit is to observe the sampling process and to provide information and answer questions concerning the program.

### **National Survey Sampling – Timing**

The ideal time to sample grain for Karnal bunt is immediately after wheat harvest, however, grain samples may be collected at any time. An important element to remember when evaluating the timing of sample collection is that the longer after harvest the samples are collected and analyzed the greater the chance of having to regulate a much larger area if a sample comes up positive, due to grain movement which may have already occurred. Samples can be taken from local elevators before the harvest is complete if the sample taken is representative of the county in which it was taken and meets the minimum requirements in sampling protocol.

### **National Survey Sampling - Intensity:**

During the 2004 wheat harvesting year, samples will be collected in parallel with the wheat harvest and in proportion to wheat production from producing counties not sampled during the 2003 harvest year and where Karnal bunt has not been detected.

The minimum sampling requirement is one 4-pound sample from a selected county with 1,000,000 bushels of production. A 4-pound sample should be taken for every 1,000,000 bushels of production. Each 4-pound sample will represent approximately 1,000,000 bushels of host crop. Samples will be collected at points of aggregation near their production areas (local elevators).

A sample will consist entirely of one species; grain of different susceptible species should not be mixed. To the extent possible, samples should be composites of grain from a production area not larger than a county and each sample should contain grain from a single county. To insure a good representative sample, subsamples, which are represented in the composite sample, should represent at least 10 different producers whenever possible.

When there are several counties within a state where each produces less than 1,000,000 bushels of host crop, the state may want to take samples from each county and combine them into a 4-pound composite sample. If this is done, a 250 gram reserve sample from each county should be held by the state. Once the 4-pound composite sample has been determined free of Karnal bunt, the 250 gram reference samples may be disposed of by the state. If a multi-county composite sample is positive for Karnal bunt, the individual county reference samples will be tested to help determine which county produced the bunted kernel.

Another sampling method that may be used is collecting samples from the storage or transfer bins at county elevators. ***This is not a preferred method as it is much harder to establish the identity of growers represented.*** If samples are to be collected in this manner then samples of host material should be taken from each accessible bin in the elevator. The collector should ask the elevator to run grain onto the belt for a short time and then take a sample of grain from the belt (or any other accessible point). Each bin would represent a composite sample, all bin samples would then be combined, mixed and the official composite 4-pound sample taken.

### **National Survey Sampling – Packaging and Shipping:**

Grain samples should be placed in a new heavy-duty kraft paper bag, as provided. The top of the bag should be rolled down to squeeze out as much air as possible, then the bag stapled shut. Each sample should then be placed in a plastic bag along with a completed copy of the attached information sheet (See Appendix B) and the plastic bag sealed.

Six to eight samples should be packaged in a sturdy box for shipping to an approved laboratory for analysis. Samples should be shipped within 48 hours of being collected. Samples will be shipped via overnight carrier to the Olney processing facility.

USDA, APHIS, PPQ  
Karnal Bunt Project  
220 East Main Street  
Olney, TX 76374

Other laboratories may request APHIS approval for screening survey samples and KB analysis. If additional laboratories are approved by APHIS, Appendix D will be updated and regional Coordinators notified. **Beginning with the FY-2004 survey, PPQ will no longer provide resources to states for processing samples, except for those states with regulated areas. PPQ will continue to approve laboratories, but not fund their operation.**

An account has been established with United Parcel Service (UPS) for use by cooperators and federal personnel when shipping National Karnal Bunt Survey samples for analysis. The primary administrative contact, for obtaining specific information concerning use of the account, is Ms. Jennifer Fuller. Alternate contacts are: Mr. Bobby Guerra or Ms. Linda Stokes. They can be contacted by phone at (940) 564-4192 or fax at (940) 564-4180

### **Sample Analysis:**

National survey samples submitted to Olney, TX will be analyzed using an optical sorter. The application of this technology has been developed by the USDA ARS. The high speed optical sorter will remove suspect bunted kernels from samples. The optical sorter can process a 4-pound sample in less than a minute and typically will reduce the number of kernels that need to be examined to about 8% of the original sample. This reduction allows the staff to focus time and attention on truly potential positives, rather than the time consuming initial sorting process. The suspect kernels will then be visually examined by trained personnel. This technology will significantly reduce the processing time for samples.

Any other APHIS approved laboratories will probably use grain inspection machines (Figure D-2 of Appendix D of the Karnal Bunt Manual) and visual examinations by trained personnel to analyze samples for bunted kernels.

### **Sample processing centers: Bunted Kernel Analysis:**

A sample processing center is located in Olney, Texas. Samples will be processed as they arrive and the results provided to the submitting state.

Those states preferring to perform the analysis on their own samples are welcome to do so; the standard for sample analysis will be the bunted kernel examination, although spore analysis is approved as a screening procedure only. All facilities must be approved by APHIS prior to analyzing Karnal bunt samples.

### **Reports:**

**Sampling plan reporting:** Prior to the survey season, each Regional Coordinator should provide the Karnal Bunt Headquarters staff with the following information:

1. A list of states participating in the survey and those not participating,
2. The location where each state plans to have their sample analysis done,
3. The number of proposed samples by state,
4. The estimated date to begin sampling,
5. The estimated date sampling will be completed, and
6. The number of counties in each state participating in the survey
7. KB Coordinator for each state including email and contact telephone numbers.
8. Preference of NAPIS data entry by Olney National Survey Lab or by State themselves.

### **Results reporting:**

A. **Negative Samples** – The laboratory conducting the sample analysis will report negative sample findings to the State Karnal Bunt Coordinator of the submitting state. The report will be forwarded at the end of each week via e-mail or FAX to the State Karnal Bunt Coordinator with a copy sent by FAX to Headquarters (301-734-8584). Once the State Karnal Bunt Coordinator notifies the laboratory conducting the analysis that the harvest season for the state is complete, the laboratory will issue a summary report for that state within 10 days of the last samples received for analysis. A copy of this report will also be sent by FAX to Headquarters at the above listed phone number.

The SPHD will provide the testing results to the State Survey Coordinator or data entry person for entry into NAPIS. The State survey CAPS coordinator may enter their own data into NAPIS or allow the Olney lab to forward the results to NAPIS. However, this must be decided and communicated prior to harvest season.

B. **Suspect Positive Samples** – The laboratory prepares the bunted kernel specimen and appropriate microscope slide with teliospores and sends them by overnight courier to the PPQ National Identifier (Dr. Mary Palm) or to personnel designated by the National Identifier. The specimen should include a copy of the original National Karnal Bunt Wheat Grain Survey –

2004 form (See Appendix B) which was submitted with the original grain sample and the phone number of the State Plant Health Director.

Slides should be packed carefully in small cardboard boxes so they do not break during shipping and handling and sent by overnight mail. The package should be labeled “urgent” and “fragile.”

The Project Director in Olney, TX (or in the case of states analyzing their own samples, the State Plant Regulatory Official, SPRO) notifies the submitter, the State Plant Health Director (SPHD) from the state where the sample originated, the National Identifier, and the Karnal Bunt Senior Program Manager (Bob Spaide, 301-252-9452 or 410-798-9042) in Riverdale, MD that a suspect bunted kernel is being sent for confirmation.

The National Identifier notifies the Karnal Bunt Senior Program Manager, the Project Director in Olney (or in the case of states analyzing their own samples, the State Plant Regulatory Official, SPRO), and the SPHD in the state that submitted the sample to advise them that the sample is positive or negative for *Tilletia indica*. The SPHD will provide the testing results to the State Survey Coordinator or data entry person for entry into NAPIS.

**See Appendix C for detailed time line for submitting suspect positive specimen(s).**

### **Primary Contacts:**

Matt Royer  
Acting Senior Program Advisor  
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### **Regional Coordinators:**

#### **Eastern Region**

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#### **Western Region**

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## **Appendices**

**Appendix A – State Karnal Bunt Survey Coordinators**

**Appendix B – Sample Information Form**

**Appendix C – Confirmation and Response Timeline**

**Appendix D- Data Entry into NAPIS**

**Appendix E - Bunted Kernel Analysis Centers**

*(This information will be provided as approved laboratories, other than the Olney, TX facility, are listed by APHIS)*

## State Karnal Bunt Coordinators

## Appendix A

NAME STATE ADDRESS	Telephone FAX E-mail (FTS)
AL William H. Moore Jr. USDA APHIS PPQ 4121 Carmichael Road, Suite 203 Montgomery, AL 36106	(334) 396-9464 (334) 396-5767 william.h.moore@aphis.usda.gov
AR Thomas E. Hill USDA APHIS PPQ 1200 Cherry Brook Drive, Suite 100 Little Rock, AR 72211	(501) 324-5258 (501) 324-5230 thomas.e.hill@aphis.usda.gov
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Cliff Ramos CDFA, Plant Pest Detection 1220 N. Street, Suite A-330 Sacramento, CA 95814	(916) 654-1211 (916) 654-0555 cramos@cdfa.ca.gov
CO Patrick W. McPherren USDA APHIS PPQ 3950 N. Lewiston, Suite 330 Aurora, CO 80011-1555	(303) 371-3355 (303) 371-4774 patrick.w.mcpferren@aphis.usda.gov
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FL	Tim Schubert FDACS/DPI P.O. Box 147100 Gainesville, FL 32614-7100	(352) 372-3505 X 143 (352) 372-0737 schubet@doacs.state.fl.us
GA	Robert Grant USDA APHIS PPQ 5645 Riggins Mill Road Dry Branch, GA 31020	(912) 752-1734 (912) 752-1734 robert.d.grant@aphis.usda.gov
IA	Mark Hollister USDA APHIS PPQ 6000 Fleur Drive Des Moines International Airport Des Moines, IA 50321-2871	(515) 285-7044 (515) 285-7524 mark.g.hollister@aphis.usda.gov
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	Stan Smith Illinois Department of Agriculture 9511 Harrison, Room A169 CMS North Suburban Des Plaines, IL 60018	(847) 294-4343 (847) 294-4350 sesmith@mc.net@i@gw

IN	Gary Simon USDA APHIS PPQ 120 Professional Court, Suite D Lafayette, IN 47905	(765) 446-1263 (765) 446-8274 <a href="mailto:gary.w.simon@aphis.usda.gov">gary.w.simon@aphis.usda.gov</a>
KS	Tom Sim Plant Protection and Weed Control Program Kansas Department of Agriculture P.O. Box 19282 Topeka, KS 66619-0282	(785) 862-2180 (785) 862-2182 <a href="mailto:tsim@kda.state.ks.us">tsim@kda.state.ks.us</a>
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**Sample Information Form**

**Appendix B**

<b>NATIONAL KARNAL BUNT WHEAT GRAIN SURVEY - 2004</b>
STATE
NAME OF ELEVATOR
ELEVATOR LOCATION
COUNTY AND STATE
TYPE OF GRAIN (HARD RED WHEAT, DURUM WHEAT, TRITICALE, SOFT WHITE WHEAT, ETC.)
DATE SAMPLE WAS TAKEN
NAME AND TELEPHONE NUMBER OF PERSON TAKING SAMPLE
STATE SURVEY SAMPLE IDENTIFICATION NUMBER

Each State Karnal Bunt Survey Coordinator should establish and assign State Survey Sample Identification Numbers for their state. The sample number will consist of the two letter state abbreviation plus a sequential three digit number beginning with 100.

Original form should be completed on site as sample is taken. When possible, a copy should be left with the elevator operator. Additional copies should be made for the State Plant Health Director's file and a copy for the State Plant Regulatory Official. The original form should go forward with the sample.

## Confirmation and Response Timeline

## Appendix C

The purpose of this Appendix is to provide a timeline for the confirmation process and response when Karnal bunt is confirmed from samples found during the National Karnal Bunt Survey.

The National KB Survey collects composite samples of wheat grain at country elevators throughout the United States. Four pound samples are drawn at each location participating in the National Survey. The samples, with proper labeling and documentation, are sent by overnight courier service as 4 pound samples to the National Karnal Bunt Survey analysis laboratory in Olney, Texas. States wishing to analyze their own samples may do so but must request APHIS to approve the facility.

The following procedure is to be followed in the event a suspect bunted kernel is found in a National Survey sample. Because of the ramifications of a positive National Survey detection from these samples, normal identification authority can be used as a tentative identification in determining a positive find, but no action will be taken without final verification from the National Identifier (Plant Pathology, i.e., Mary Palm or person designated by the National Identifier).

The following are not sequential, but concurrent actions by day:

### **Day 1: The National Survey analysis laboratory detects a bunted kernel suspected to be *Tilletia indica***

- A. Sample analyzed for bunted kernels and a suspect positive is found.
- B. The laboratory prepares the bunted kernel specimen and appropriate microscope slide with teliospores and sends them by overnight courier to the PPQ National Identifier (Dr. Mary Palm) or to personnel designated by the National Identifier. Included with the specimen is a copy of the original *National Karnal Bunt Wheat Grain Survey – 2004* form (See Appendix B) which was submitted with the original grain sample and phone number of the State Plant Health Director.

Slides should be packed carefully in small cardboard boxes so they do not break during shipping and handling and sent by overnight mail. The package should be labeled “urgent” and “fragile.”

***(If the event occurs on Friday, arrangements will be made to deliver the slides to the National Identifier or personnel authorized by the National Identifier for confirmation on Saturday. The National Identifier or other personnel authorized by the National Identifier will be notified by Karnal Bunt Senior Program Manager or other authorized person and overtime for the National Identifier will be authorized under the Karnal bunt accounting code to perform weekend identification.)***

- C. The Project Director in Olney, TX (or in the case of states analyzing their own samples, the State Plant Regulatory Official, SPRO) notifies the submitter, the State Plant Health Director (SPHD) from the state where the sample originated, the National Identifier, and the Karnal Bunt Senior Program Manager in Riverdale, MD (Matt Royer) that a suspect bunted kernel is being sent for verification.
- D. The Karnal Bunt Senior Program Manager notifies the Assistant Deputy Administrator of Pest Detection and Management Programs, the National Survey Coordinator, the Deputy Administrator, the Undersecretary MRP, Legislative and Public Affairs (LPA), and APHIS Emergency Programs Administrative Support of the suspect find.
- E. The SPHD in the originating state notifies the Regional representative and the State Plant Health Regulatory Official (SPRO) in that state.
- F. The Regional representative will alert Rapid Response Team (RRT) members to stand by for possible deployment to the area of the tentative detection.

**Day 2: National Identifier receives sample and makes determination:**

- A. The National Identifier notifies the Karnal Bunt Senior Program Manager, the Project Director in Olney (or in the case of states analyzing their own samples, the State Plant Regulatory Official, SPRO), and the SPHD in the state that submitted the sample to advise them that the sample is positive or negative for *Tilletia indica*. (If negative, call off the RRT alert).
- B. If the determination is positive, the Karnal Bunt Senior Program Manager notifies the Assistant Deputy Administrator of PDMP, the National Survey Coordinator, the Deputy Administrator, the Undersecretary MRP, APHIS Emergency Programs Administrative Support, Investigative and Enforcement Services (IES), Legislative and Public Affairs (LPA), President of the National Plant Board, and NASDA contact of the positive find as a result of the National Survey.
- C. If the detection is in a new state, the previously prepared Decision Memorandum to the Secretary requesting a Declaration of Extraordinary Emergency is expedited by the PDMP Staff.
- D. SPHD notifies the Region and the SPRO in the origin state and requests a minimum of two PPQ Officers (from within state or RRT) and the area's IES Investigator to arrange travel to affected elevator.
- E. The SPHD or his designee and state cooperators travel to the facility in preparation to evaluate the status of grain represented by the sample and issue an Emergency Action Notice if appropriate.

**Day 3: Initial contact with facility and confirmation notifications**

- A. An investigation begins to determine extent of infection in elevator or site and initiation of the trace forward and trace back investigation.
- B. A State Plant Regulatory Official (SPRO) letter is electronically communicated to the states and President of National Association of State Departments of Agriculture (NASDA) with pertinent information
- C. The staff PDMP will schedule a conference call with NASDA, the President of NPB (and designees), and appropriate Federal agencies, states and industry to provide status of situation.
- D. First RRT appropriate local PPQ personnel and/or RRT report for duty to SPHD.

Regional plans for implementing a program must be prepared in advance of detecting KB. It is understood that the SPHD, should an outbreak occur in their state, will be responsible for the day-to-day operations of the program onsite for the season. An alternative is for a Regional Director designee to assume management of the day-to-day activities onsite for the season. The need for fulltime dedication of a manager is to ensure program continuity and decision making.

In advance of the next crop year Regional offices should develop a schedule (May-September) of personnel by name for TDY assignment to the program location. This roster will serve as the core for rotating personnel through the program.

**Day 4: Additional local PPQ personnel and/or RRT report for duty to SPHD.**

### Data can be entered into NAPIS by the following:

- 1) The National Survey Lab in Olney, TX-primarily where samples are processed.
- 2) States that choose to process their own samples.
- 3) States that submit samples to Olney for analysis but prefer to enter their own data.  
The data will be forwarded to the state from the Olney National Survey Lab.

### Type of data entered:

- 1) Four pound samples that represent a selected county with 1,000,000 bushels of production or more. (A 4lb sample should be taken for every 1,000,000 bushels of production.)
- 2) Four pound samples that represent several counties which have a combined total of 1,000,000 bushels of production or more. This is only done if each individual county has less than 1,000,000 bushels of production.

### How to enter data:

In order to maintain consistency in data, samples should be entered based on county.

For example:

Three samples are processed for a state (ST). Three possible scenarios are:

A) Sample ST100 was drawn from one county in **one** location therefore it is entered once.

B) Sample ST102 was drawn from one county with **several** locations. This sample is a composite however it should be entered once. It is drawn in accordance with National Survey protocol.

C) Sample ST101 was drawn from four counties from several locations. This sample would be entered four times under each individual county. This is done so that each county receives credit for participating. *In an instance where wheat is harvested in one state and stored in another, the county where the wheat was harvest is entered. If grain from one state is stored at an elevator in a neighboring state, then data entered will be for the state of origin. Indicate in the remarks section that each sample entry represents a composite with entries for the counties, and indicate their names.*

Any question should be referred to:

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