*Reference Manual A-Section 3.2*

# 3.2 PHYTOSANITARY FIELD INSPECTION PROCEDURES

REVISION HISTORY: Version 1.2: Disease Diagnosis in the Field #4., Disease Diagnosis in the Lab #2., Reports, page 5.
Version 1.3: Document formatting update-04.04.2019, change in numbering, no content changes.

## 3.2.1 Equipment Requirements

1. Field maps
2. 10x hand lens
3. Pocket knife/scissors
4. Tape measure
5. Sampling bags or envelopes (paper)
6. Labels
7. Ice chest
8. Hand counter
9. Diagnostic illustrations
10. Report forms

## 3.2.2 Field Inspection Strategy

### 3.2.2.1 Field Overview

Find a point near the field that allows the best opportunity to look the field over. This overview enables:

a. Verification that the field is correctly identified by comparing the map or information provided and the observed field.
b. Identification of special areas or microclimates in the field that appear different enough to warrant special attention when inspected. These would include:

3.2.2.1.1 *Locations in which high moisture levels may be retained such as proximity to:*

Rivers and streams
Drainage areas
Low spots
Weedy areas

3.2.2.1.2 *Areas of the field affected by borders, such as*:

Field edges
Tree lines in the field
Adjacent fields of a similar crop

Presence of buildings or bins

3.2.2.1.3 *Drought stress areas, such as*:
High spots
Light textured soils
Margins or overhead irrigation area

3.2.3 **Establish the Seed Field Inspection Pattern**

3.2.3.1 The seed field inspection pattern should ensure that all parts of the field are adequately and proportionately represented in the plants inspected within the various micro- climates of the field.

3.2.3.2 As long as these requirements are met, the pattern of field inspection can vary.

3.2.3.3 Examples of established inspection patterns are as follows. Other formats may, however, be acceptable.

3.2.3.3.1 **Stagger "X" pattern.** (CDFA Phytosanitary Certification Manual, 1985)
This is used for cereal crops and requires examination of plants along one side of the field, then diagonally in a stagger pattern across rows to the far corner, across the far side, and diagonally back to starting corner (Figure 1). Additional examinations may be necessary for field environments not covered by the inspection pattern.

3.2.3.3.2 **Equidistant passes pattern.** (CDFA Phytosanitary Certification Manual, 1985)
This system is used for crops other than cereals. Table 1 lists the minimum number of field passes (Figure 2) in relation to field size to give a minimum of 95% confidence level in detecting an infection level of 0.1%.

3.2.3.3.3 **Customized field inspection pattern.**
This system allocates appropriate numbers of plants to be inspected in the various environments in a field. An example is shown in Fig 3.

**Table 1.**
**Minimum field passes per acre.**

| Field size (acres) | Minimum # passes |
|---|---|
| 0 - 1 | 6 |
| 1 - 5 | 9 |
| 5 - 10 | 11 |
| 10 - 20 | 13 |
| 20 - 50 | 17 |
| 50 - 100 | 20 |
| 100 - 200 | 24 |
| 200 - 500 | 30 |
| 500 – 1000 | 36 |

1000 + 42

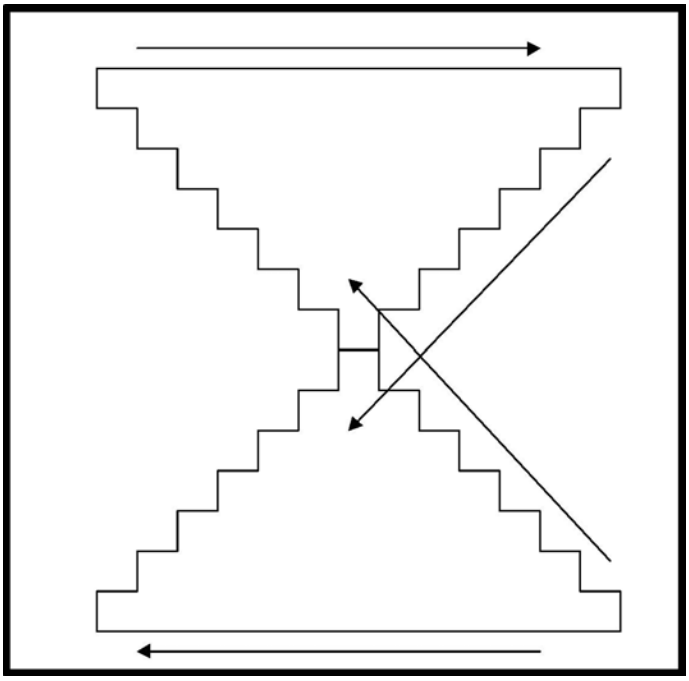


**Figure 1. “X” Field Inspection Pattern**

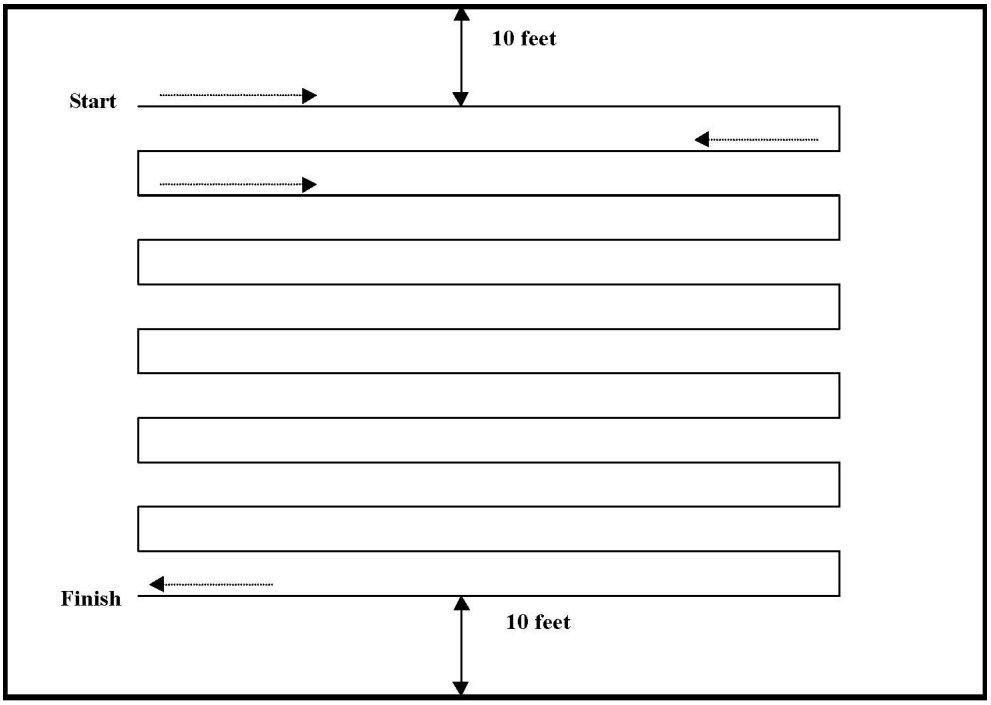
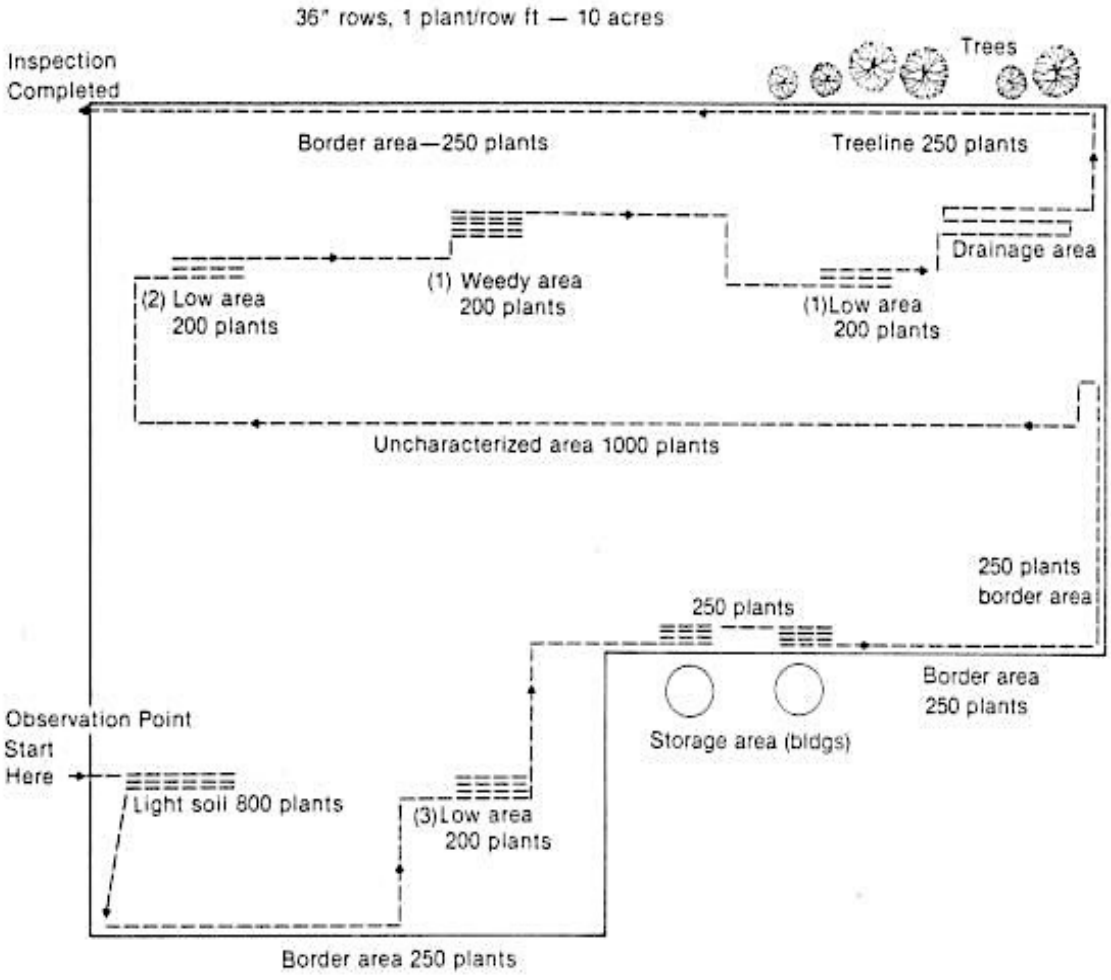



**Figure 2 - Equidistant Pass Pattern**

**Figure 3. Example of field inspection by customized pattern**




This is an example of how a field inspection map might look. Notice that the inspector has shown the field shape, areas inspected, number of plants inspected in each area, code for each special area (example, low areas 1, 2, 3) and inspection pattern.

3.2.4 **Disease Diagnosis in the Field**

3.2.4.1 The presence or absence of diseases relevant to the inspection requirements is first determined by visual examination of plants in the field. Descriptions of signs and symptoms are provided in this manual for the individual diseases of the major seed crops. Other established aids to identification may also be used.

3.2.4.2 Inspections have to be made at crop growth stage when signs or symptoms of a disease are likely to be present. Appropriate inspection times for particular pests or diseases are indicated in this manual.

3.2.4.3 An appropriate number of plant samples, representative of diseases in the field, should be taken for laboratory confirmation of the visual diagnosis. More extensive samplingshould be carried out when visual symptoms are insufficient to ensure to accurate diagnosis. Samples of suspected disease tissue should be kept flat in paper envelopes or towels in a plastic bag in ice chest. All samples should be correctly labeled to indicate date, time, locations, crop, and plant part.

3.2.4.4 Diseases caused by regulated pathogens must be sampled, as described above, and confirmed by appropriate laboratory analysis under the supervision of a trained plant pathologist. Accredited entities may use internal diagnostic capabilities or a qualified 3rd- party lab, such as National Plant Diagnostic Network Laboratory.

3.2.5 **Disease Diagnosis in the Laboratory**

3.2.5.1 Accredited Entities using a 3rd-party lab for field sample diagnosis must have an agreement in writing acknowledging that the lab agrees to diagnose samples for the National Seed Health System.

3.2.5.2 Samples should be processed systematically in a laboratory facility with demonstrated proficiency in diagnosing plant diseases. Accredited entities using internal diagnostic labs must have appropriate facilities, plant pathology expertise, and training procedures, which will be evaluated during accreditation audits.

3.2.6 **Reports**

Inspection reports should be made on a standard form similar to the example provided below. Accredited entities are encouraged to seek input from state plant regulatory officials in the development of appropriate report forms.

# PHYTOSANITARY GROWING SEASON INSPECTION REPORT

Crop _____ _____
Accredited Entity

PLEASE PRINT

_____ _____
Company Name Variety

_____ _____
Company Contact Official Field # Acres

_____
Address TYPE OF FIELD:
Increase/Production

_____
Telephone Number

_____ _____
Contract Grower Phone County

Growth Stage & Date: _____ _____ _____
1st Insp. 2nd Insp. 3rd Insp.

## INSPECTION DATA

**(Refer to list of plant diseases/pests on separate p a g e s )**

| Code | Severity (Optional) Low, Moderate, High L, M, H | Lab Sample Submitted Yes | No | Lab Confirmation Field Diagnosis Confirmed Yes/No | Additional Pathogens Identified Code | Lab Sample Number |
|---|---|---|---|---|---|---|
| ____ | _____ | [ ] | [ ] | [ ] | _____ | _____ |
| ____ | _____ | [ ] | [ ] | [ ] | _____ | _____ |
| ____ | _____ | [ ] | [ ] | [ ] | _____ | _____ |
| ____ | _____ | [ ] | [ ] | [ ] | _____ | _____ |
| ____ | _____ | [ ] | [ ] | [ ] | _____ | _____ |
| ____ | _____ | [ ] | [ ] | [ ] | _____ | _____ |
| ____ | _____ | [ ] | [ ] | [ ] | _____ | _____ |
| ____ | _____ | [ ] | [ ] | [ ] | _____ | _____ |

☐ **No Other Diseases Noted.**

**I inspected these fields during active growth and determined the above diseases/pests were found as indicated.**

## Remarks

**INSPECTOR**_____ **ID NUMBER:**_____ **DATE:**_____

**LAB MANAGER_(If sample submitted)**_____ **ID NUMBER:**_____ **DATE:**_____