



INTEGRATED
DISEASE
MANAGEMENT

SEEDLING
DISEASES

BLACK ROOT
ROT

VERTICILLIUM
WILT

FUSARIUM WILT

ALTERNARIA

BACTERIAL
BLIGHT

BOLL ROTS

MYCORRHIZAS

OTHER DISEASES
AND DISORDERS

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Assessing Disease On Your Farm

Seedling diseases

Estimate the stand by counting the number of established plants/metre at at least 20 sites across the field. The difference between the estimated stand at 6 weeks after planting and the number of seed/metre sown indicates the level of seedling mortality. Seedling mortality includes the effects of seedling pests such as wireworms and incorporates seed viability.

An alternative method is to estimate stand immediately after emergence and again 6-8 weeks later.

Black root rot

Look for patches or large areas of slow growing cotton (with or without reduced stand). If symptoms are present, then it may be possible to estimate visually the area of the field affected. The incidence of black root rot in the crop can be assessed using the step point method (see glossary) for 10 lots of 10 seedlings, preferably between three to six weeks after sowing. Count the number of seedlings with or without characteristically blackened roots and express as a percentage of the total. Later in the season, the incidence of the internal stem rot (if present) can be assessed in a similar way by splitting or cutting stems at soil level.

Verticillium wilt

The presence or absence of foliar symptoms can be assessed at any time throughout the season but will not be particularly obvious in mid summer. The best time to assess foliar symptoms is after the final irrigation. The presence or absence of vascular symptoms is best assessed immediately after harvest using secateurs. Under Australian conditions with Australian strains of the pathogen all plants with vascular symptoms will also display foliar symptoms.

Disease incidence may be estimated by inspecting 10 plants at a minimum of 20 sites randomly selected across the field. Alternatively, establish a transect across the field and assess for the presence or absence of disease in ten plants in every tenth row.

Fusarium wilt

Establish a transect (pick a route) across the field and assess for the presence of brown discolouration within the stem in 10 plants in every tenth row. Either split stems (by breaking back low branches) if assessing before harvest or cut stems with secateurs if assessing immediately after harvest.

An established transect allows for repeated assessments in subsequent years or whenever cotton is grown in the field.

Alternaria leaf spot

When Alternaria leaf spot is severe and plants are being defoliated then disease severity can be assessed by determining percentage defoliation. Randomly select at least 10 plants (preferably 20-50) and count the total number of nodes with and without mainstem leaves still present. If bolls are affected then the percentage of bolls affected may be determined by counting affected and unaffected bolls on at least ten randomly selected plants.

When disease severity is low it is best assessed by determining the percentage of leaf area affected using a pictorial assessment key. An average of one small lesion on each and every leaf is approximately equivalent to 0.1% leaf area infected. Disease severity may also be quantified by assessing the percentage leaf area affected for the lowest one, two or three mainstem leaves. Alternatively, the lowest mainstem leaf from at least 20 randomly selected plants can be collected and dried in a plant press in newspaper for later assessment.

Bacterial blight in susceptible varieties

Seedlings – disease incidence can be assessed by inspecting at least 20 randomly selected sets of ten plants – carefully checking the undersurface of cotyledons and leaves for the presence or absence of bacterial blight.

Leaf symptoms – disease severity can be assessed on the basis of 'percentage leaf area infected' using a pictorial assessment key. Either assess every leaf on ten randomly selected plants or assess disease severity on the lowest one, two or three mainstem leaves on each of 20 randomly selected plants.

Bolls – The percentage of bolls with blight can be estimated by inspecting all bolls on at least ten randomly selected plants. It is important to peel back the calyx crown when checking each boll.

Boll rots

The incidence of boll rots can be assessed prior to or after defoliation. Counts should not be confined to areas near the tail drain as this may give a misleading result. Count all of the bolls on 10 plants from each of 10 randomly selected sites across the field.



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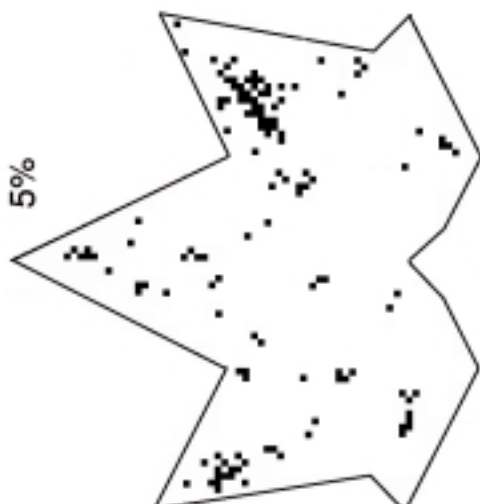
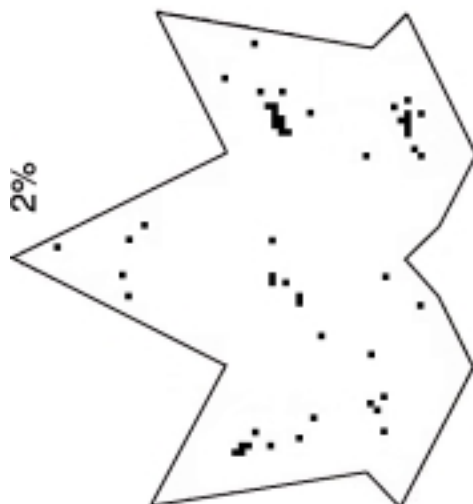
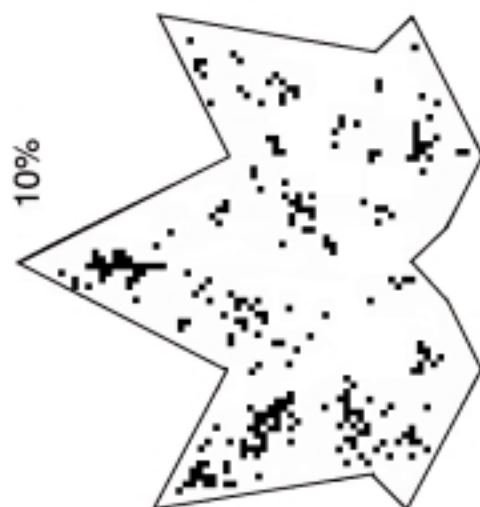
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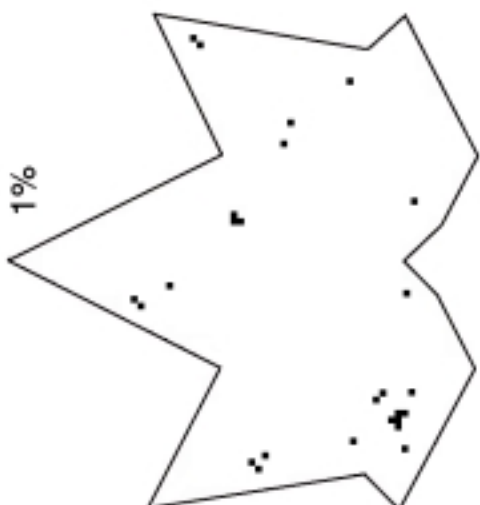
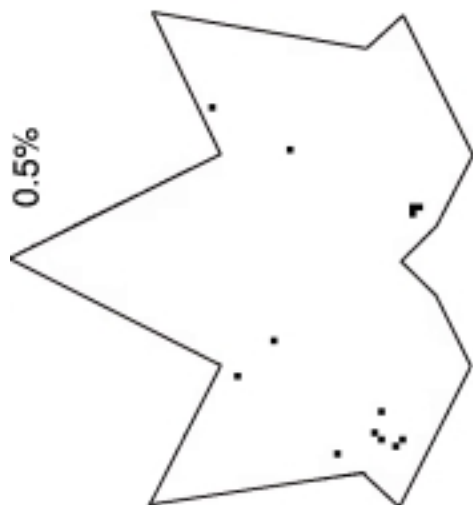
ASSESSING
DISEASE

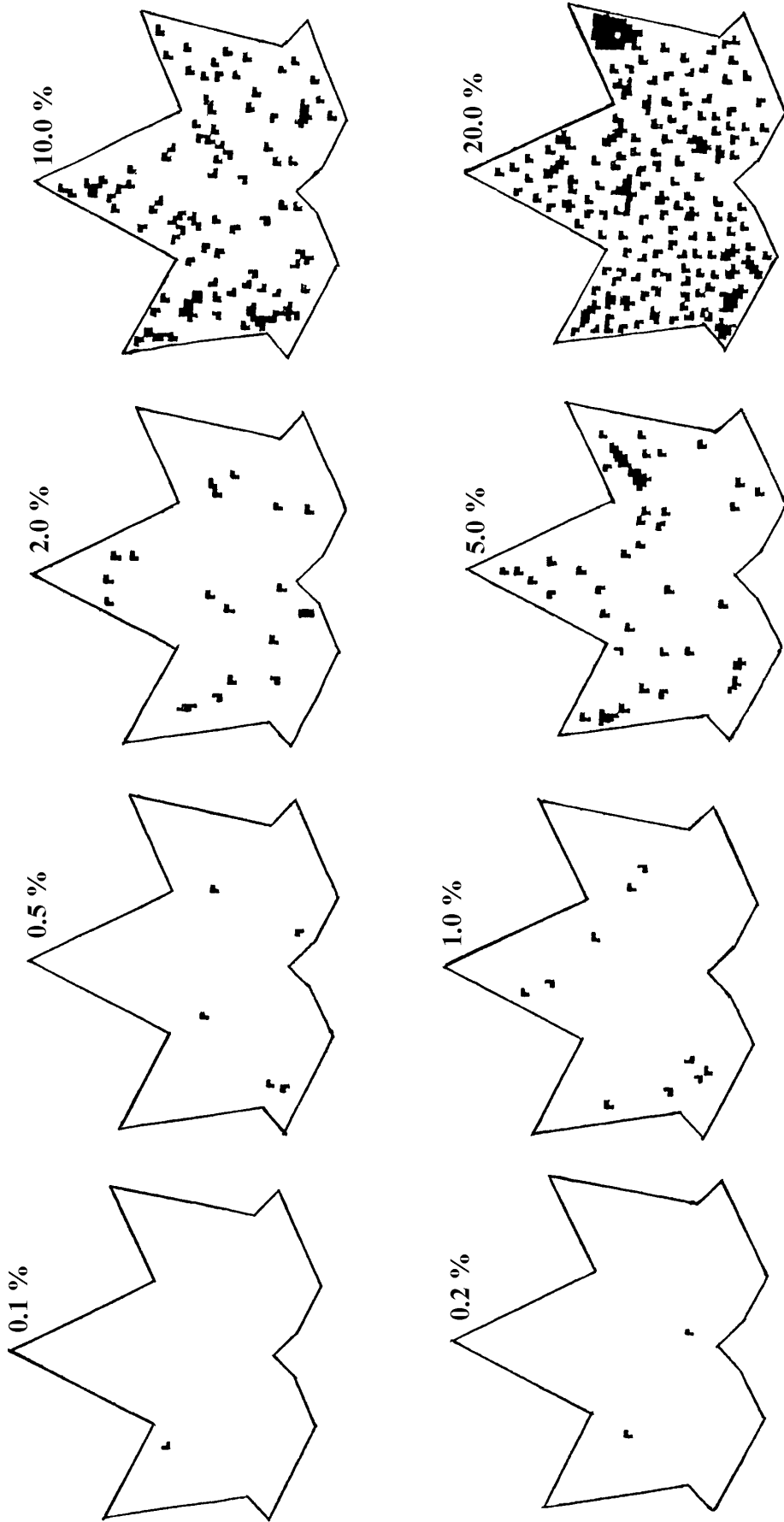
GLOSSARY

APPENDICES



Pictorial Assessment Key for Foliar
Diseases - Bacterial blight





Pictorial Assessment Key for Foliar Diseases - Alternaria leaf spot