



The IPM Network – Crop observations in cereals

Creating connections to advance IPM.

This guidance provides instructions on how to gather IPMNET in-field observation data. By collecting observations in a consistent way, you will be able to make meaningful comparisons within and between fields across the IPM network.

In-field assessments: [GS73-75 \[Grain content milky\]](#)

Late June – Early July

Why should you take part?

- Sharing your observations will enable you to compare your field with others across the network and data collected in the Defra Pest and Disease Survey.
- The observations requested allow evaluation of your IPM strategy, giving quantitative feedback for assessing what did or did not work.
- Receive a summary report, benchmarking your crop observations across the network. To receive a full IPMNET Report, you need to [become a member of IPMNET](#) (for free) and return the [IPMNET Journal](#) based on the same field(s).

[IPM NET – Knowledge sharing network to improve the effectiveness of IPM](#)

IPMNET membership is free during 2023-24 season, funded as part of the Defra Pilot IPM Network.

What is involved?

- Select one or more suitable *wheat or barley** field(s).
- Walk along two tramlines, at five points on each tramline gather the requested observations and images, and collect one tiller from each location.
- Remove the leaves from each plant and take photos. [Please provide 10 images of each flag, Leaf 2 & Leaf 3].
- Complete the survey form and return it to IPMNET along with all images.

[Please click here to share pest and disease information about your field\(s\).](#)

What do I need to take part?

- A camera, or a phone camera
- A blank A4 piece of paper or card
- Online survey form (this doesn't require internet access for completion)
 - OR the printable survey form (Supporting resource 4) and pen- information and photos can be uploaded into the online form later.

Supporting resources

Details of useful links and resources can be found at the end of this guidance, and includes:

- Links to further guidance on making crop observations
- AHDB encyclopaedia of cereal diseases
- Printable assessment form

*IPMNET submissions for wheat will be analysed alongside Pest and Disease Survey regional and national averages. Barley IPMNET submissions will be analysed with similar submissions.

1: Select one or more wheat/ barley field(s)

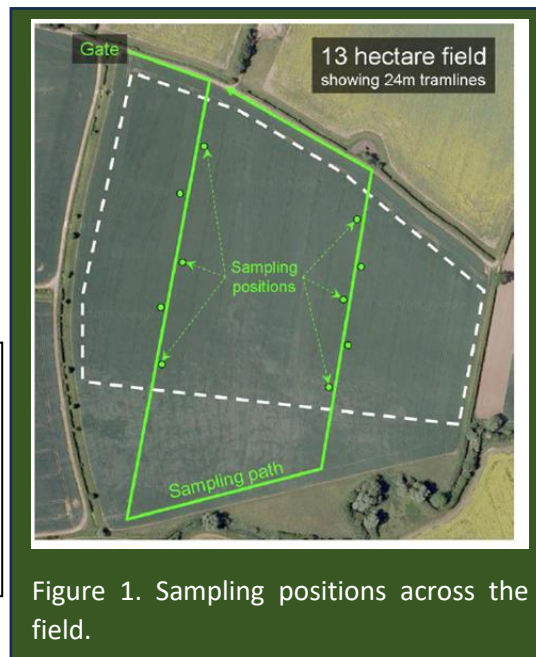
These should be the same fields selected for review in the IPMNET Journal, if participating.

2: Select representative sampling locations in the field

- Select two typical tramlines running through the crop. You will be recording observations at 5 locations per tramline (10 in total; see figure 1).
- Walk approximately a sixth of the tramline length along the first tramline, then step away from the tramline into the crop 3-4 paces.

Why is this important?

Observations are needed from multiple locations in the crop to ensure the data represents the whole field. A small amount of information from many locations is more useful than lots of information from one location.



As you travel the field, look around and consider the following:

- At each sampling point, note the presence/absence of:
 - [Take-all](#) – check for obviously blackened roots.
 - [BYDV](#) – check for patches of plants showing stunted growth and/or discoloured leaves, shades of yellow, red, or purple from tip to base.
 - [Black grass](#) – Check for black grass plants visible above the canopy.
 - Lodging – estimate the proportion of plants affected by lodging.
- NOTE: This is to help determine how much of the field is affected. We do not need scores per sampling location, just one score per field (look to supporting resource 2).

OPTIONAL: If you are able to identify any stem-based diseases such as eyespot or fusarium foot rot, please make a note of these.

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3: Collect a randomly sampled plant from each location

- **Without close inspection**, choose one plant and gently uproot it.
- Identify a primary tiller and **keep hold of this tiller**, you'll need it later (Figure 2).
- Repeat the above steps for the next four evenly spaced points along the first tramline, alternating the side of the tramline sampled from. Walk along the second tramline and sample from a further five locations. You should now be carrying 10 wheat tillers.

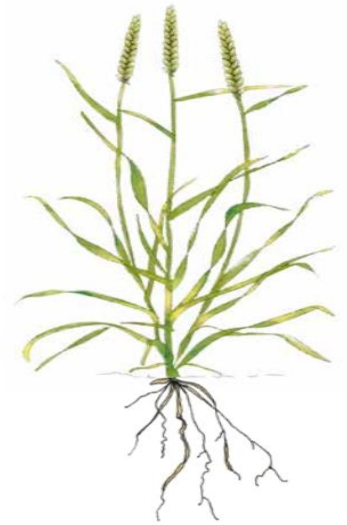


Figure 2. A cereal primary tiller and side shoots.

4: Top-down and across field photographs

- Please provide one photo per field (*You do not need to do this at each sampling location*):
 1. the crop looking vertically down, covering as wide an area as possible, holding an a4 piece of paper close to the crop, and
 2. one photo looking across the field.

Why is this important?

The top-down image is to estimate crop density, which is a useful metric in understanding crop performance and response to various invertebrate pests and diseases. A4 is used as a size reference. The photo across the field helps to corroborate assessment data.



Figure 3. A. Positioning of A4 paper above the crop for the crop density photo and B. a photo looking across the entire field.

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5: Photographing leaves

Take all 10 tillers back to a sheltered location, and for each tiller, remove all the leaves and place flat on a bright surface, such as a sheet of plain A4 paper. The leaves must be placed in order from Flag leaf to Leaf 2, Leaf 3. Where a leaf is missing, please make this clear.

Take a photo of all leaves together, as in Figure 4. You should have 10 photos, one for each tiller you sampled.

Why is this important?

We will use your photos to assess the proportion of each leaf effected by disease. This will provide us with a quantitative measure of disease for comparison.



Figure 4 foliar disease photo.

6: Complete the overall field assessment

- Looking across the field and considering what you saw at each sampling point please complete the assessment of Take-all, BYDV, Black-grass and Lodging in the printed and/or the online survey form.

What happens next?

The images of the leaves will be used to determine foliar disease levels which combined with the observations you make will be added to the IPMNET database. A summary report will be issued at the end of the season. To receive a full report, additional information on crop agronomy and performance is required, detailed in the IPM Journal for IPMNET Members.

Contact us

To receive further information regarding IPM NET, please contact us at:



IPMNET@adas.co.uk

RSK ADAS Ltd, 172 Chester Road, Helsby, Cheshire UK WA6 0AR





Development of the IPM NET pilot year has been funded by Defra.



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Supporting resource 1

Pictures & further information (e.g. link to AHDB page) of pest for observation:

Observation	Image	Further information
Take-all		AHDB: The encyclopaedia of cereal diseases
BYDV		AHDB: Viruses in cereals and oilseed rape
Black-grass		AHDB: The encyclopaedia of arable weeds Agricology: Black-grass: what's the problem, what's the solution?
Lodging		AHDB: Lodging in Cereals


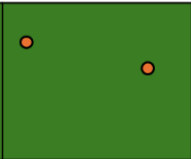
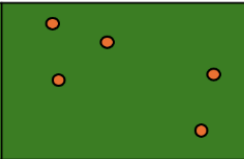
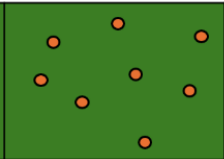
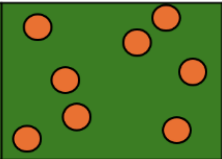
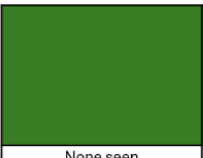
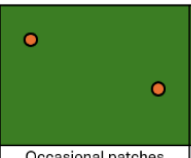
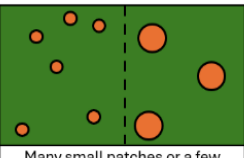
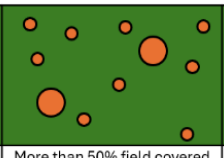
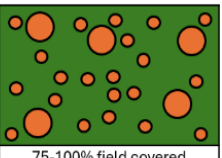
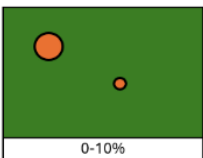
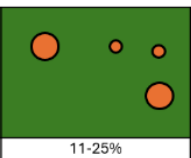
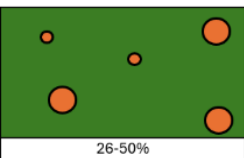
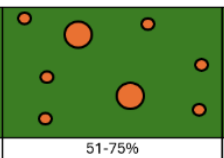
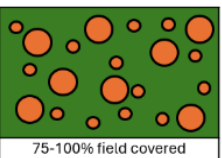
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Please refer to the [encyclopaedia of cereal diseases](#) for more information on foliar or stem-based disease.

Supporting resource 2

Estimations of total area affected by take-all, BYDV and black-grass can be based on the images below.

Please select the most accurate description of your field relating to take-all and BYDV, Black-grass and lodging.

Impact of: Take-all or BYDV					
	None seen	A scattering of plants	Occasional patches (<5m, or <1% whole field)	Many small patches (1 – 10% field)	Many large areas affected (>10% field)
Impact of: Black-grass					
	None seen	Occasional patches	Many small patches or a few large patches	More than 50% field covered	75-100% field covered
Impact of: Lodging					
	0-10%	11-25%	26-50%	51-75%	75-100% field covered

Supporting resource 3

If you would like to gain more insight into your IPM approach, receive a free bespoke field report and attend an end-of-season conference with likeminded farmers and advisors, visit the [IPM NET webpage](#) and follow the three steps below:

3. Download the IPM NET Membership Journal, Welcome pack and Data Privacy policy at the top of the page.
4. In your Membership Journal please complete Section 1 and 2.
5. Once completed, save the document and send it to us at IPMNET@adas.co.uk.

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Supporting resource 4 – printable version of the survey

Use the printable form to gather information about your field(s). When ready, enter the information and upload your pictures in the online form to send to IPMNET.

1: Field details

Location (postcode or what 3 words): _____

Crop (delete as appropriate): Winter wheat / Winter barley

Crop growth stage (GS between 73-75 required): _____

2: Gather samples to photograph

- Select two typical tramlines running through the crop. You will be collecting samples at 5 locations per tramline (10 in total; see figure 1 in the guidelines).
- Walk approximately a sixth of the tramline length along the first tramline, then step away from the tramline into the crop 3-4 paces.

As you travel the field, look around and consider the following:

- BYDV – check for patches of plants showing stunted growth and/or discoloured leaves, shades of yellow, red, or purple from tip to base.
- Black grass – Check for black grass plants visible above the canopy.
- Lodging – estimate the proportion of plants affected by lodging.

3: Collect a randomly sampled plant from each location

- **Without close inspection**, choose one plant and gently uproot it.
- Identify a primary tiller and **keep hold of this tiller**, you'll need it later.
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4: Top-down and across field photographs

- Please provide two photos per field (*You do not need to do this at each sampling location*):
 - the crop looking vertically down, covering as wide an area as possible, holding an A4 piece of paper close to the crop, and
 - one photo looking across the field.

5: Foliar diseases: Photographing leaves

- Take all 10 sample tillers back to a sheltered location, and for each tiller, remove all the leaves and place flat on a bright surface, such as a sheet of plain A4 paper. The leaves must be placed in order from Flag leaf to Leaf 2, Leaf 3. Where a leaf is missing, please make this clear.
- Take a photo of all leaves together, as in Figure 4. You should have 10 photos, one for each tiller you sampled.

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6: Complete the overall field assessment

- Looking across the field and considering what you saw at each sampling point please complete the assessments in the printable and/or the online survey form.
- Please circle the most appropriate description for take-all, BYDV, blackgrass, lodging and stem-based diseases across the whole field.

Take-all	None seen	A scattering of plants	Occasional patches (<5m, or <1% whole field)	Many small patches (1 – 10% field)	Many large areas affected (>10% field)
BYDV	None seen	A scattering of plants	Occasional patches (<5m, or <1% whole field)	Many small patches (1 – 10% field)	Many large areas affected (>10% field)
Black grass	None seen	Occasional patches	Many small patches or a few large patches	More than 50% field covered	75-100% field covered
OPTIONAL: Sharp eyespot	None seen	A scattering of plants	Occasional patches (<5m, or <1% whole field)	Many small patches (1 – 10% field)	Many large areas affected (>10% field)
OPTIONAL: True eyespot	None seen	A scattering of plants	Occasional patches (<5m, or <1% whole field)	Many small patches (1 – 10% field)	Many large areas affected (>10% field)
OPTIONAL: Fusarium foot rot	None seen	A scattering of plants	Occasional patches (<5m, or <1% whole field)	Many small patches (1 – 10% field)	Many large areas affected (>10% field)

What percentage of the field is affected by lodging? _____

Any other additional notes?

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