Wyre Forest Study Group

Fruit and Disease in 2025 Wyre Forest Orchards, Hedgerows and Gardens

ROSEMARY WINNALL & DAVID S. INGRAM

Introduction

In the 2024 Review we suggested that the focus for the 2025 Wyre Forest plant disease survey should be diseases of edible fruit trees and shrubs in orchards, orchard hedgerows and gardens. In the event, exceptionally hot, dry weather conditions and personal commitments dictated that for the first year the work plan should be limited to the following:

- *Selecting and visiting appropriate orchards* for survey in 2025 and subsequent years.
- *Recording the effects of weather conditions* on orchard fruit production and disease abundance.
- *Concentrating on the collection of fungal rot diseases* of orchard fruits for later analysis.
- *Listing other plant diseases noted and identified* in orchards, hedgerows and gardens.
- *Proposing a strategy* for disease collecting and identification/verification in 2026.

Orchards Selected for Study in 2025

By the early 2000s orchards in Wyre, once commercially viable, had changed considerably: some had been grubbed out, others had many old dying trees, and a few had become completely overgrown due to lack of management. It seemed as if it was easier to buy apples and pears wrapped in plastic from the supermarket than pick fruit from trees! Grow With Wyre, the Heritage Lottery funded project which ran between 2008 and 2012, changed all this (Winnall, 2023). Orchards were celebrated, many new fruit trees were planted on traditional orchard sites, fruit juicing was established at a local farm, and a mobile fruit pressing machine became available for local hire. Volunteers were trained to prune trees, help with harvesting, and record wildlife. A community orchard was planted in the centre of Bewdley from where locals could help themselves to fruit, and an annual Cherry Fair was reinstated in the town.

In 2025 a few of these small orchards were chosen to visit, to explore and to search for pathogens, as follows:

Unclys Orchards, Ruskin Land (the Guild of St George, with John and Linda Iles); a traditional orchard with a few mature cherry and apple trees now interplanted with a range of young apple, pear and cherry trees through Grow With Wyre grants in 2010; hay taken in the summer, aftermath grazing with sheep. Visits on April 2nd, November 30th and December 12th.

Bowcastle Orchards, Bewdley (Dr Cedric and Thelma Quayle), visited by WFSG members on 26th April; three small traditional orchards, one with mature cherry trees, one with mainly tall old healthy pear trees and another with a mixture of apple, pears and damsons; some new plantings through Grow With Wyre grants in 2010 and Countryside Stewardship; part of the Wyre Forest SSSI, grazed seasonally with cows.

Simon's Orchard, Wyre Forest, by WFSG members on 7th May; owned and managed by Natural England (NE) and named after Simon Walker, a staff member who died prematurely; it used to be a traditional orchard and has a few remaining old cherry trees, but most of the land was planted up with a variety of fruit trees through Grow With Wyre grants in 2010; grazed seasonally by Dexter cattle or sheep.

Ian Wright's Garden and Orchard, Great Witley, visited by Rosemary Winnall with Ian Wright on 9th May, 3rd July and 16th September; about 15 mature apples, plums and damsons; fruit for domestic use.

Cooper's Mill Orchard, Wyre Forest, visited by four WFSG members on a Riverfly Training course on 14th May; small orchard owned and managed by NE; a few mature cherry and apple trees with a few new plantings through Grow With Wyre grants in 2010, grazed seasonally with Dexter cattle.

Haye Farm and Orchard, Ribbesford, (owned by Stuart Norgrove), visited by WFSG members on 4th June and 25th July; regenerative farming with many mature apple, cherry, plum and pear trees with some new plantings through Grow With Wyre grants in 2010; fruit collected by volunteers for juicing and selling in the farm shop; grazed with sheep and Dexter cattle.

Lodgehill Meadows and Orchard Wyre Forest, visited by WFSG on 14th June; a small orchard owned and managed by NE with a few mature apple and pear trees; grazed seasonally with Dexter cattle.

Lower Smite Farm Orchard, Hindlip, owned and managed by Worcestershire Wildlife Trust, visited by a few WFSG members on 26th June to train new wildlife recorders; an orchard of mixed fruit trees managed by volunteers.

Queen Elizabeth II Jubilee Gardens Community Orchard, Bewdley, (Wyre Forest District Council), visited regularly by RW during the summer; apples, plums, pears and damsons planted through Grow With Wyre grants in 2010; picked by local residents for their personal use, grass mowed and removed.

Wyre Forest Study Group



Figure 1. Worrall's Grove Orchard, 3rd September 2025, Note the abundance of fruit on the Pear trees. R. Winnall

Worrall's Grove Orchard, Arley, (Figure 1), visited by RW and WFSG members on 25th August and 3rd September; SSSI orchard managed from 2025 by owners of Worrall's Grove Farm Guest House; a large mature traditional orchard with enormous pear trees, plus apples, cherries, plums, walnuts and damsons; invading bracken and bramble being cut back, and grazing to be arranged.

Hillfield Orchards, Bewdley, on south edge of Bewdley (privately owned); large numbers of apples, pears, walnuts, damsons, cherries; neighbours invited (including RW) by new owners to pick apples for juicing, cider making and jam making on 20th September; grazed with four sheep.

Bewdley Weather Conditions and Consequences During 2025

The 2025 weather for the Bewdley area had significant consequences for orchard fruit yields and disease occurrence. What follows are RW's edited records and recollections for the Bewdley area, supplemented with information from the UK Met Office website. Additional records and recollections were recorded by Graham Hill in the WFSG Newsletters for August (issue 67) and September (issue 68) and Mike Averill who keeps weather records linked to Worcestershire's Odonata.

General

Although 2025 included several significant effects of storms and flooding in various parts of the country, according to the UK Met Office website, the year overall was the sunniest UK year on record, and the Bewdley spring and summer the warmest and driest since records began. As a result, during the year 2025, the WFSG enjoyed many excellent field meetings with innumerable opportunities for recording. However, particularly high temperatures sometimes made recording difficult and even resulted in 'sunstroke' being added to risk assessments!

Detail

January began with some very cold nights, with the temperatures sometimes falling to -6°C in Bewdley. However, during the rest of the winter there were relatively few frosts and little snow. By the end of April, temperatures had become unseasonably high, with 24°C being recorded on the 29th. The following month, May, included a mixture of high daytime temperatures, up to 27°C, especially in the first half of the month, although on some nights it was very cold with the thermometer occasionally falling below zero.

During June, July and August, record-breaking high daytime temperatures were recorded, and minimum night temperatures were consistently higher than normal. By the middle of June daytime temperatures up to 31°C were experienced, peaking on the 30th June at 32°C. July was also especially sunny and hot, with three days when the temperature reached over 30°C, a record of 33°C on the 11th, and the highest in the UK of 38°C just a few miles away at Astwood Bank near Redditch. August included storms (*e.g.* Floris) and heatwaves, with 32°C again being recorded in the middle of the month. Throughout these hot months, rainfall was exceptionally low and a drought was declared in some areas of the UK.

Although early damsons and apples were plentiful and relatively large on their trees in the Wyre area, the effects of the heat and drought on the landscape overall was dramatic: grass began to turn brown and die back (Figure 2), grain, root and vegetable crops were seriously stressed, small brooks dried up (Figure 3) and by the end of August many trees had lost their leaves. Livestock farmers became especially concerned since there was a serious lack of food for grazing animals. Winter feed had to be given early and where farmers could not afford extra feed, animals were in danger of dying.

Finally, however, in September the rain returned

Wyre Forest Study Group



Figure 2. Worrall's Grove Orchard, 25th August 2025. R. Winnall



Figure 3. Dry stream bed, Rudd's bridge, Susan Limbrey and Rosemary Winnall, 2nd July 2025. Graham Hill

and while this was too late for many of the grain and other crops to recover fully, the grass began to grow again, easing the situation for livestock farmers, and the hedgerows started to colour up with hips, haws, damsons and crabs. In the orchards, the already plentiful cultivated apples and other tree fruits began to increase further in size and as autumn advanced, to ripen into an exceptionally sweet, richly coloured, early and bumper crop (Figure 4).



Figure 4. Worrall's Grove Orchard, 25th August 2025, showing the abundance of ripe pears fallen from the tree whose base is just visible. R. Winnall

Why was the 2025 harvest of edible fruits in the Wyre Forest so exceptional, as indeed it was over most of the UK?

It is tempting to imagine that the hot summer was solely responsible for the edible fruit bonanza, despite the drought, but this is probably only part of a story which began in 2024. The growing season that year was exceptionally cloudy and wet, leading to much reduced and lower quality fruit harvests. Ironically, however, such growing conditions meant that fruit trees were less stressed by drought than usual and were therefore in good health by late summer when they began to produce flower buds ready for the spring of 2025. This, as we have seen, turned out to be dry, sunny and relatively warm, resulting in an abundance of flowers to be pollinated by insects, thereby setting more fruit than normal. As good fortune would have it, the wet weather of 2024 probably re-charged the ground water levels sufficiently to allow the developing fruit to survive the drought and accumulate, rapidly, higher than normal levels of sugars when the still warm September rains came.

The same sequence of weather conditions also resulted in 2025 being what is called a 'mast year', with an abundance of coloured berries in the autumn hedgerows (Figure 5), of nuts on woodland trees, especially oak (acorns) and beech (masts), and the magnificent autumn colours generally. Finally, lest we forget, the 2025 fruit crop brought with it an abundance of plant diseases too, especially fruit rots of various kinds (Figure 6).



Figure 5. An abundance of Hawthorn berries (*Crataegus monogyna*), Worrall's Grove Orchard, 25th August 2025. R. Winnall

Wyre Forest Study Group



Figure 6. Captain Tom cooking apple, Uncllys Orchard, 30th September 2025. An abundant crop of apple Brown Rot (*Monilinia fructigena*). R. Winnall

Orchard Diseases in 2025.

Although Blossom Rot (*Monilinia laxa*) and Blossom Shoot Wilt (*M. laxa*; Figures 7a and 7b) were occasionally recorded in the late spring and Pear Rust (*Gymnosporangium sabinae*; Figures 8a and 8b.), Apple Scab (*Venturia inaequalis*; Figure 9), Pear Powdery Mildew and the parasitic plant Mistletoe (*Viscum album*; Figures 10a and 10b) later in the season, the principal orchard diseases recorded as the summer advanced and especially in the autumn, were Fruit Rots (Figures 11- 16).



Figure 7a. Blossom Rot on Malus, RW's garden, 19th May 2025. R. Winnall



Figure 7b. Fruit Wilt on Pyrus, Bowcastle Old Orchard, 26th April 2025. R. Winnall





Figures 8a and b. Pear Rust (*Gymnosporangium sabinae*); telia on upper (left) and lower (right) surfaces of leaves. Bewdley garden, 3rd July 2025 and 14th September 2025. R. Winnall



Figure 9. Apple Scab (*Venturia inaequalis*) on *Malus*, Uncllys Orchard, 30th November 2025. R. Winnall





Figure 10. Mistletoe (*Viscum album*), Worrall's Grove Orchard: Figure 10a left, high in the crown of Apple 25th August 2025 female; Figure 10b right, close-up of female plant on Apple 3rd September 2025. R. Winnall

Wyre Forest Study Group

Fruit Brown Rot

The most common fruit rot, Brown Rot, is caused by one of two species of the fungal genus, *Monilinia*. The first, *M. laxa*, is usually the cause of Blossom Rot and Shoot Wilt (Figures 7a and 7b) in the spring and may sometimes also cause Brown Rot later in the season. The second, *M. fructigena*, is, however, the principal cause of Brown Rot throughout the year (Figures 11, 12a and 12b). The two species also have different host ranges, *M. laxa* being most common on stone fruits such as plum and cherry, while *M. fructigena* is most common on pome fruits, notably apples and pears, but sometimes infects stone fruits too.



Figure 11. Brown Rot of apple (*Monilinea fructigena*); advanced stage with sporulating pustules clearly visible on the two centre apples. Worrall's Grove orchard, 3rd September 2025. R. Winnall



Figure 12. Brown Rot, including sporulating pustules, on Damson (Figure 12a left, Ian's orchard 16th September 2025) and Plum (Figure 12b right, Jubilee Gardens, Bewdley 10th August 2025), the latter with a mummified fruit close-by. The causal fungus in both cases may be either *Monilinia laxa* or *M. fructigena.* R. Winnall

A wide range of ornamental relatives of both stone and pome fruits may also be affected by the appropriate species of *Monilinia*.

The two species of *Monilinia* are indistinguishable to the naked eye, except when cultured in the laboratory, in which case *M. laxa* produces lobed colonies with black rings, whereas the colonies of *M. fructigena* are smooth edged and peach coloured in the centre. Examination of sporulating mycelium with a microscope reveals that the asexual conidia of *M. fructigena* are larger than those of *M. laxa*.

Infection is usually initiated by non-motile asexual spores (conidia) entering through wounds, usually caused by birds Figure 13, insects (notably wasps and Codling Moth [*Cydia pomonella*]), other fungi (notably Apple Scab, [*Venturia inaequalis*]; see Figure 9) and physical damage resulting from abrasion caused by fruits rubbing together or against branches, or impact resulting from fruit falling to the ground.





Figure 13. Brown Rot of apple showing point of entry created by pecking birds. Figure 13a top, Ian's Orchard, 16th September 2025, Figure 13b bottom, Worrall's Grove orchard, 3rd September 2025. R. Winnall

Wyre Forest Study Group

The infections on apple are characterised by their dark brown to black colouration and firm texture. A distinctive characteristic of infected fruit is the production of concentric rings of buff-coloured pustules rich in spores, which may then infect other fruit (Figure 13). As they age, fruits often fall and are pecked for food by birds or chewed by, for example, wasps and small mammals, who then may spread infection by feeding on healthy fruit (Figure 14). Others remain on the tree to become mummified (Figure 15).



Figure 14. A Brown Rotted apple partially eaten by a small mammal or bird. Jubilee Gardens, 24th August 2025. R. Winnall





Figure 15. Mummified fruit of Apple infected by Brown Rot (*Monilinia fructigena*): Figure 15a top, in the year in which the fruit were formed and infected, Ian's orchard 16th September 2025; Figure 15b bottom, during spring of the year following infection, Old Orchard, Bowcastle, 26th April 2025. R. Winnall

The mummified fruit may remain on trees over winter, producing spores and new infections in the spring, or may cause *small* canker-like infections where they touch the bark of adjacent branches which may then also produce infective conidia during the following season. [Note, these small cankers should not be confused with the large cankers caused by *Neonectria ditissima*.]

Fruit Soft Rots

Another very common rot of apples and other fruits requires mention. Unlike Brown Rot, it is pale buff-brown or greenish in colour, has a sharp-edged margin, causes the tissues to become so soft that one can easily push a finger deep into the centre and scoop out the entire area of rotted flesh. The cause is a species of the fungal genus *Penicillium*, usually *Penicillium expansum* (Figure 16), that may infect before harvest but usually infects after harvest.



Figure 16. Soft Rot of Plum, possibly caused by *Penicillium expansum*. Jubilee Gardens, Bewdley, 19th August 2025. R. Winnall

Apple cultivars and many soft fruits are susceptible, but the disease most frequently occurs on stored Bramley's Seedling apple fruits. Examples of this rot were not recorded during the WFSG visits, probably because stored fruits were not examined.

Infection is, as in Brown Rots, caused by non-motile spores (conidia) entering wounds caused by physical damage, especially during harvest, or insect and small animal damage occurring after harvest, or even as secondary invaders of harvested fruit weakened by other infections. Soon after infection, the lesions become covered with white pustules which rapidly turn bluish as the asexual spores (conidia) of the invading *Penicillium* develop in chains on branched structures which, when viewed using a microscope, look like the fingers of a hand. In commercial orchards the disease survives from year to year on mummified

Wyre Forest Study Group

fruits or fruit fragments left uncleared from packaging or storage areas.

It is interesting to speculate why the symptoms of these two diseases - Brown Rot and Soft Rot - are so very different. When doing so, it should be borne in mind that the two diseases are very different, ecologically, physiologically and biochemically, with potentially very complex explanations for the different forms of their rots being possible. However, one simple explanation, often suggested as part of a more complex explanation, is that the enzymes produced by the fungi to degrade the gum-like pectins that bind the apple cell walls together (and, incidentally, cause fruit jams to set) may be inhibited in the case of *Monilinia* species by the dark, oxidised phenolic substances that are produced when apples and other fruit tissues are damaged by invasive organisms (or simply cut with a knife). The infected tissues may therefore become dark but remain intact and firm since the cells, although dead, remain firmly bound together by the pectins. *Penicillium expansum*, in contrast, may produce inhibitors that prevent the oxidation of phenolic compounds, allowing the tissues to remain pale in colour and at the same time enabling the fungal enzymes to degrade the pectins binding the cells together, causing the tissues to break up and become soft.

Other Fruit Rots

Another group of fungi that cause soft, grey coloured rots of fruits in the UK, especially strawberries, raspberries, grapes and occasionally sweet eating apples in store, are *Botrytis* species, especially *B. cinerea*. These fungi do not, however, have a significant effect on orchard fruits such as apple, pear and plums and were not recorded during WFSG orchard visits.

A final problem for apple growers worth mentioning here may be Bitter Pit. This is not a disease, but rather a 'disorder', in which affected fruits develop small, sunken pits on the surface, with browning and drying out of a small area of the flesh beneath them, which also develops a bitter taste. The condition results from low levels of calcium in the fruit, especially during very dry weather, when the uptake of this mineral from the soil is prevented. Damaged fruits are not saleable but may be rendered edible for amateur growers by peeling them. In severe cases, however, discoloured and dry, bitter spots of tissue may be scattered throughout entire fruits which are consequently inedible for all. A reason why the condition was not recorded during WFSG visits may simply be that the symptoms only become visible very late in the season.

Other diseases collected during 2025

Several other diseases were recorded and collected during the 2025 season, a few from orchards but most from non-fruit hosts in other habitats.

See illustrations Figures 17 to 25.



Figure 17. Aecia of Spindle Rust (possibly *Melampsora euonymi-capraearum*) on Spindle (*Euonymus europaeus*). Grimley, 8th May 2025. Recorded and image by Gary Farmer



Figure 18. Urediniospores of Creeping Thistle Rust (*Puccinia punctiformis*) on the underside of a leaf of *Cirsium arvense*. Old Orchard, Bowcastle, 26th April 2025. R. Winnall



Figure 19. *Puccinia menthae* rust on Water Mint (*Mentha aquatica*). Longdon Wood, 25th October 2025. R. Winnall

Wyre Forest Study Group



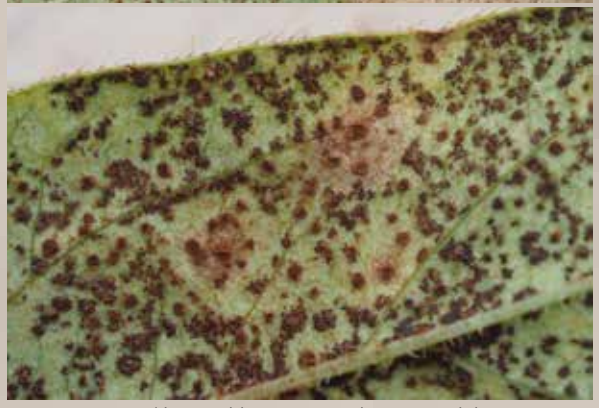
Figure 20. Possibly *Uromyces pisi-sativi* Rust on Broom (*Cytisus sp.*). Great Witley, 3rd July 2025. R. Winnall





Figures 21a and b. Possibly *Puccinia nitida* Rust on Fool's Parsley (*Aethusa cynapium*). Great Witley, 9th May 2025. R. Winnall





Figures 22a and b. Possibly *Puccinia polygoni-amphibii* Rust on Amphibious Bistort (*Persicaria amphibia*). Great Witley, 3rd July 2025. R. Winnall





Figures 23a and 23b. Possibly *Puccinia menthae* rust on Common Calamint (*Clinopodium ascendens*). Great Witley, 3rd July 2025. R. Winnall

Wyre Forest Study Group



Figures 24a and b. Possibly *Uromyces appendiculatus* rust on French Bean (*Phaseolus vulgaris*). Great Witley, 16th September 2025. R. Winnall



Figures 25a and b. Possibly *Puccinia vincae* Periwinkle Rust on Greater Periwinkle (*Vinca major*). Great Witley, 16th September 2025. R. Winnall

Outline Plans for 2026

The year 2026 is likely to be busy for most members of the WFSG and RW and DSI, so possible plans for the year are listed only in outline here.

• When possible, complete the identifications and verifications from 2025.

• Revisit one or two of the orchards and encourage recording of lichens and bryophytes.

• Record pathogens of non-fruits noted by chance and encourage others to do so.

Further Reading

Ingram, D.S. and Robertson, N.F. (1999) *Plant Disease: A Natural History* Harper Collins, London.

Ingram, D.S. (2021) *A case for the conservation of plant pathogens*. Plant Pathology, Vol. 71, 98-110 (available on-line at DOI: 10.1111/ppa.13448.)

Ingram, D. S. & Winnall, R.A. (2019) *Native Plant Pathogens in the Wyre Forest: a proposed survey.* Wyre Forest Study Group Review 20, 10-17 http://wyreforest.net/wp-content/uploads/Flora_Articles/Plant-Pathogens-Copy-2019.pdf.

Ingram, D.S. and Winnall, R.A. (2020). *Practical Plant Pathology for Beginners* Wyre Forest Study Group Review, 21, 12-20. https://wyreforest.net/wp-content/uploads/Plant_Pathogen_articles/12-20-Plant-pathogens-for-beginners-Copy.pdf.

Ingram, D. S. & Winnall, R.A. (2024) *Diseases of Fruit in Orchards, Hedgrows and Gardens*. Wyre Forest Study Group Review 25, 70-80.

Met Office, https://www.metoffice.gov.uk.

National Trust, https://www.nationaltrust.org.uk.

Plant Parasites of Europe, Website, https://bladmineerders.nl

Royal Horticultural Society website: https://www.rhs.org.uk

Skydmore, D., *Why are Plant Diseases so Important for Biodiversity?* (2023) Wyre Forest Study Group Review 24, 60-63.

Smart, M.J. & Winnall, R.A. 2006. *The Biodiversity of three traditional orchards within the Wyre Forest SSSI in Worcestershire: a survey by the Wyre Forest Study Group* English Nature Research Report No. 707.

Wyre Forest Study Group

Taylor, C., *WFSG Plant Pathogens* Group (2021) Wyre Forest Study Group Review 22, 17-19. https://wyreforest.net/wp-content/uploads/Plant_Pathogen_articles/17-19-Plant-pathogen-group-Taylor-Copy_optimize.pdf

Termorshuizen, A. J. & Swertz, C.A. (2011) *Roesten van Nederland*, Termorshuizen.

Welsh Rust Group Guides (2015 - 21) to *Rusts, Smuts and Related Fungi, Powdery Mildews, Downy Mildews and White Blister Rusts and White Moulds*. All available for download from: https://www.aber.ac.uk/waxcap/downloads

Wilson, M. & Henderson, D. M. (1996) *British Rust Fungi* Cambridge University Press, Cambridge.

Winnall, R.A. *Orchards in and around the Wyre Forest – Reflections (2023)* Wyre Forest Study Group Review 24, 10-13.

Winnall, R.A., *Plant Pathogen Records 2022* (2022) Wyre Forest Study Group Review 23 62-65. https://wyreforest.net/wp-content/uploads/2024/04/62-65-R-Winnall-Plant-Pathogen-Records-2022-Copy.pdf

Winnall, RA. and Ingram, D.S. (2020). *Plant Pathogens recorded in 2020 by Members of the Wyre Forest Study Group*. Wyre Forest Study Group Review, 21, 6-9. https://wyreforest.net/wp-content/uploads/Plant_Pathogen_articles/6-9-Plant-pathogen-records-Copy.pdf

Winnall, R.A., Taylor, C.M. and Ingram, D.S. (2021). *A Proposed 2021 Plant Pathogen Survey Strategy for Greater Wyre* Wyre Forest Study Group Review 22, 10-11. http://wyreforest.net/wp-content/uploads/Plant_Pathogen_articles/A-Proposed-2021-Plant-Pathogen-Survey-.pdf

Winnall, R.A., Taylor, C.M. and Ingram, D.S. (2021). *Plant Pathogens Recorded in Greater Wyre During 2021 and Outline Proposals for Surveying During 2022*. Wyre Forest Study Group Review 22, 8-16. http://wyreforest.net/wp-content/uploads/Plant_Pathogen_articles/8-16-Plant-pathogens-2021-Winnall-et-al-Copy_optimize.pdf

Winnall, R.A, Taylor, C.M. and Ingram, D.S. (2022). *Life Cycles of the Rusts*, Wyre Forest Study Group Review 23, 87-100. http://wyreforest.net/wp-content/uploads/2024/04/87-100-Winnall-Taylor-Ingram-Life-Cycles-of-the-Rusts-



Cherry trees, Heightington. 9th April 2017. R. Winnall