Route permissive for this trail

ROTHAMSTED RESEARCH

Rothamsted Science Trail

Find out how our researchers are transforming agriculture to help feed the world more sustainably on this short self-guided walking tour.

Continue along the main farm road to reach brick outbuildings. Turn left in front of these, then right following a path that emerges at a T junction of access roads lined with lime trees. Turn left along the avenue, reaching a signboard on your right.

A world first when it was built in 2015, the **Field Phenotyping Platform (7)** is clearly visible in the adjacent field. This automated device continuously monitors crops using an array of sensors to measure growth.

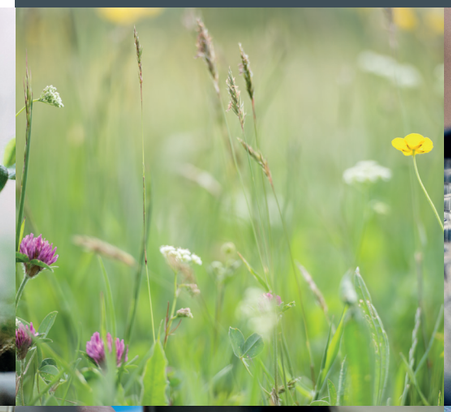
Science Fact: The field phenotyping platform is used mainly to identify useful attributes of different wheat strains (8). Wheat is the world's most widespread grain, and global wheat trade is greater than that of all other crops put together. However, a changing climate, unsustainable farming practices and plant diseases all threaten this vital staple. Only by constantly investigating wheat's complex genome and finding new traits can we hope to safeguard this critical crop.

Continue for another 150m to reach a second signboard.

Across the sports field are two chimney-like insect suction traps (9) that supply regular data for the Rothamsted Insect Survey and, just to the right, a pylon-like structure (10), which is part of the meteorological station.

Science Fact: Many scientists are concerned that insects may be in decline. If true, this could seriously impact wildlife and affect plant pollination. Rothamsted's insect survey (11) has recorded data since the 1960s, so is one of the few studies able to take a long-term view. Recent results suggest that some species may be in trouble, but also that patterns of distribution appear to be changing. It will be vital to monitor these trends as our climate changes so we can take steps to avert future ecological problems.

Continue along the road, turning right at the junction to head back to the start point at the cafeteria and restaurant (open to the public on weekdays).



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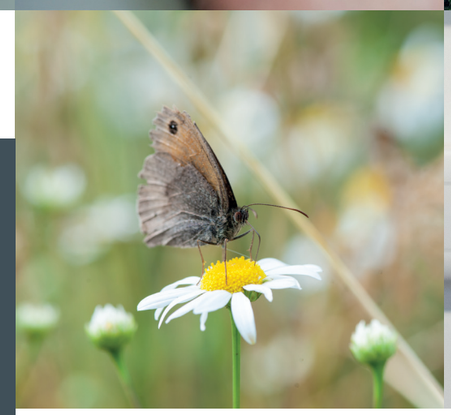

Distance: 4.5 km (3 miles) | **Duration:** 1 hour

Difficulty: Mainly surfaced or gravel paths and roads. When wet, some parts can be muddy. Some kissing gates may be tricky for wheelchair/buggy access.

Start: The car park by the restaurant at Rothamsted Research.

With the restaurant on your right, Walk 30m north to the junction with main site access road. The curved Centenary Building is ahead to your right, with an old cider mill in front.

Dating from 1843, Rothamsted Research is the world's oldest agricultural research institution. The 57-year partnership of founder John Bennet Lawes, the owner of the Rothamsted Estate, and Dr Joseph Henry Gilbert, a chemist, established the principles of crop nutrition and today's scientific agriculture. The current site has an extensive range of modern laboratories and 400 hectares of experimental farmland. Pyrethroid insecticides were first synthesised at Rothamsted in the 1970s, derived from compounds in the pyrethrum daisy, grown here around the old cider-apple mill.

Science Fact: In Rothamsted's laboratories the latest genetic techniques have been used to breed *Camelina* plants that can produce longer-chain omega 3 fatty acids (1). These are important for human health, but until now had mainly come from eating fish. They are also critical for fish farming. If we can grow this oil on land, less marine fish will need to be caught reducing pressure on our over-exploited oceans.

Turn right down the hill to the road junction. The historic early C20th Rothamsted Russell Building (now an agri-tech business centre) is on your left. Turn right along West Common, walking uphill past a row of small houses until, after 200m, you get to a signposted footpath on your right. Follow this behind gardens, bearing left along a field margin until you reach a road leading to Hatching Green. Continue straight to a T junction where you turn right to follow a tree-lined avenue leading to Rothamsted Manor.

On either side of the road are field plots where Rothamsted scientists test out new crops and farming techniques. Across fields to your left you will see the National Willow Collection (2). This contains over 100 different species and was set up after the First World War to ensure future national supplies of basketry materials. Today Rothamsted's scientists are studying these fast-growing trees both to explore their potential as a biofuel and to probe their unique biochemistry for new drugs and industrial products.

Science Fact: Willow bark has been used for centuries as a pain reliever. The active ingredient, salicylic acid, was first isolated in the 1830s and by the end of the century chemists had used this to create the first aspirin tablets. New investigations of willow cells at Rothamsted have revealed a compound that may be effective in fighting cancer.

Continue down the avenue for 700m, then enter the Manor grounds via the metal gates. Follow the path left round in front of the house and continue through a wooden gate with a field to your left and woodland to the right until you reach a signboard for Park Grass.

Park Grass, started in 1856, is the oldest ecological experiment in the world, providing important information on the impact of environmental and climatic changes on plants (3).

Science Fact: Park Grass has shown that some farming practices can severely limit meadow plant diversity. This is a problem because biodiversity in agricultural landscapes can help maintain ecosystem services such as pollination, biological pest control and soil conservation. Rothamsted scientists are looking at new ways to integrate wildflower strips (4) into modern fields to make sure farmers don't lose out on the many benefits wildlife can provide.

Turn right, following the path into the woods, then bear left and continue to a metal gate. Go through and turn right down the track. Pass through another kissing gate and continue until you reach a farm road at a bend.

The narrow band of woodland immediately ahead is Broadbalk Wilderness (5). It was part of the main wheat field until 1882 when, as an experiment, it was fenced off and left. It is now an area of deciduous woodland.

Turn right and follow the road. Where the left-hand hedge ends, there are display boards by a large oak tree.

The Broadbalk field experiment (6) is the oldest continuous arable experiment in the world. Parts of the site have been sown with nothing but wheat every year since 1843. The different strips running up the field receive different fertilizer treatments, impacting crop yields.

Science Fact: By subjecting historic Broadbalk samples to modern DNA analysis, scientists have shown that inappropriate fertilizer use can drain the soil of carbon and alter the genetics of microbes living within it. This knowledge can help us to find ways to conserve our soils, which are vital to all life on earth.