## TALK TENT

Through words, film, light and music, explore the minds of some of the brightest thinkers in sustainable food and farming sciences.

Immerse yourself in fascinating ideas at the cutting edge of #FeedingTheWorld; and walk the boundary of science and art with music made by bees and light projections inspired by genetics.

### SATURDAY 23RD JUNE — SUNDAY 24TH JUNE

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>11:00</td>
<td><strong>SHORT CUTS CINEMA</strong> Future Farming Four-minute videos Come and go at will</td>
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<tr>
<td>12:00</td>
<td><strong>STUDENT SPOTLIGHT</strong> Four “Flash Talks” Come and go at will</td>
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<tr>
<td>12:15</td>
<td><strong>FROM MY PERSPECTIVE</strong> Saturday 1 A specialist talks for 20 minutes, then Q&amp;As</td>
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<tr>
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<td>14:15</td>
<td><strong>FROM MY PERSPECTIVE</strong> Saturday 2 A specialist talks for 20 minutes, then Q&amp;As</td>
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<td>15:00</td>
<td><strong>SHORT CUTS CINEMA</strong> Future Farming Four-minute videos Come and go at will</td>
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<td><strong>STUDENT SPOTLIGHT</strong> Four “Flash Talks” Come and go at will</td>
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<tr>
<td>16:15</td>
<td><strong>FROM MY PERSPECTIVE</strong> Saturday 3 A specialist talks for 20 minutes, then Q&amp;As</td>
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<tr>
<td>17:00</td>
<td><strong>SHORT CUTS CINEMA</strong> Future Farming Four-minute videos Come and go at will</td>
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**Gene Hunters**

**THE ASSEMBLATHON:** two minutes to build a genome, and one that resists disease and provides bigger and better crops.

**ENTER THE MATRIX:** discover how networks of knowledge provide clues about unknown genes, and explore pathways between data.

**PHYLO:** match DNA blocks correctly for the top score, as scientists use matching gene sequences to identify species.

- **ZONE 1**
- **ZONE 3**

**Alpha and Omega**

We’ve always needed oils from fish for a healthy diet. As marine sources have dwindled, we’ve looked to crop fields.

- algae in oceans make oils efficiently
- fish eat the algae and we eat the fish
- algal genes in plants can make the oils
- farmed fish demand more oil

Techniques to make “fish oils” on land offer safer, more nutritious food for all.

**ZONE 4**

**7 Billion and counting**

To nine billion by 2050, with a 60% increase in food demand (vs 2010).

- how would you meet that demand?
- and keep the planet green?

Come and share your ideas.

**ZONE 2**

**Rothamsted International**

Our Fellowships forge partnerships in low-to-middle income countries.

- established in 1993
- 204 fellows from 35 nations

Hear about the challenging problems that RI Fellows bring to Rothamsted and how we help.

**ZONE 3**

**Scents and Sensibility**

Organisms use chemical signals to communicate with each other.

- crop and livestock pests produce scents
- learn how we decode these signals
- develop new ways to control pests
- and apply that knowledge in the field

Natural scents can reduce our reliance on synthetic pesticides.

**Health Zone**

**Cereal Killers**

Find out how fungi infect plants, and watch them taking over through our binocular microscope.

- infect a plant with your favourite killer
- test your knowledge against our quiz
- and enjoy a tasty edible fungi as a prize

Learn about the difference between good and bad fungi, and the role of bacteria.

**Zone 4**

**How it all began; the first 75 years**

John Bennet Lawes and Joseph Henry Gilbert, our founders, began to work together in June 1843.

- many 19th century artefacts survive
- personal family records
- historical lab equipment

Rothamsted’s history is rich in detail because so much remains of how the experimental work got underway.

**Heritage Zone**

**Sample House (main campus)**
Wheat doesn’t like it hot
The world is becoming warmer and wheat is not happy about the change. We need to find new ways to grow this staple cereal.

• making crops fit for future climate
• ensuring food production is secure

Learn about “cool wheat” and “scuba rice”, which can survive under water, and explore a day in the life of a plant scientist.

Centenary (main campus)

Preharvest Sprouting
Early maturing wheat can be a serious problem for wheat farmers the world over, including for those in the UK.

• the downside of domestication
• unsuited to Britain’s cool dampness
• grain goes to animal feed not bread

Come and work out which varieties to grow, building on the molecular and gene studies at Rothamsted.

Centenary (main campus)

Spraying for yield
We make wheat stronger and more productive to provide food security in even drought-stricken lands.

• sugar sprays tweak gene function
• more sugars are pulled into the plant

Hear about the science underlying such encouraging results, and have a go at treating wheat plants yourself.

Centenary (main campus)

Origin of modern Wheat
Discover wheat’s 500,000 year history, begun by two grasses, and continued with increasing assistance from humans to meet growing demand.

• explore the ancestral gene pool
• become a modern wheat breeder
• discover four wheats in your shopping

Wheat is one of our most important food crops; hear “how” and “why”.

Centenary (main campus)

Changing Architecture of Wheat
The Green Revolution of the 1960s and 1970s averted famines in many countries.

• credit dwarf genes and short stems
• more grain and weather robust
• but grain yields have stagnated

We are developing new dwarfing genes that cannot be generated by traditional breeding techniques. Come and see the very latest varieties.

Centenary (main campus)

Looking back to the future
Could “Heritage” wheats from the early 19th century help us to develop healthier bread, better feed and more whiskey?

• dietary fibre is the key
• white bread needs more fibre
• animal feed and whiskey need less

Let us show you how we do it.

Centenary (main campus)

NEW SCIENCE FROM OLD DATA
Experiments started 175 years ago to investigate fertilisers still support modern research.

• follow the build-up of pollutants
• discover how pathogens evolved
• why we know so much about fertilisers

Look up the weather on your birthday using our electronic archive (e-RA) and find out just how much data is there.

Jenkinson (main campus)

Journey to the Centre of the Earth: The First 23 cm
Millions of microbes fill just one teaspoon of soil and their diversity vastly exceeds that of tropical rain forest canopies.

• examine them at first feel
• play our BLAST game

Wonder at the number of bacteria.

Jenkinson (main campus)

Soil Life in Action
How well do you know your earthworms and their ways?

• you can look, feel and learn
• how worms manage farmland
• visit the rhizotrons, really

See how earthworms shape the ground beneath our feet, and how the different types perform.

Jenkinson (main campus)

Satellites in Agriculture
Sustainable farming needs precise data, and only radar can see through clouds.

• interpreting patterns
• rating productivity

Run your own data queries with our international team.

The Pav (sports field)

Spraying for yield

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The Pav (sports field)
THE POP-UP CHEMISTRY LAB

Just when you thought you knew about chemicals, up they pop to surprise you some more.
• life as a trainee analyst
• take the popcorn challenge
• test your pipetting skills
• the super-fast processor
For extra hands-on fun, this is the place to be.

The Hub (main campus)

HIDDEN HUNGER

When diets lack vital nutrients, malnutrition ensues. Poor soils are often the main culprit.
• over 2 billion people at risk
• in the UK, and elsewhere
• busting the “super-food” myths
Let our “X-ray gun” test how nutritious (or not) your food is.

The Hub (main campus)

LIFE OF P

Every living cell needs phosphorus. Fertilisers feed soils, feed crops, feed us. But the element is finite.
• links to “The Philosopher’s Stone”
• revisiting our founding fathers
• make your own fertiliser
From animal bones to vast ore mines across the globe, from North America to Australia (the long way), and back again. Check that!

The Hub (main campus)

TREE OF TRADE OFFS

Balancing the pros and cons, what would you like the future of British agriculture to look like?
• More food, greener pastures
• healthy diets, cheap produce
• profitable farming
Explore the issues, and hang a leaf on our tree of trade-offs to air your view.

The Hub (main campus)

INSECT FRIENDS WITH BENEFITS

Bees and ladybirds are heroes but many other insects also pollinate crops and eat pests.
• flights in the “bumble-arium”
• lasers to detect friend or foe
It’s not all about field margins; gather ideas to benefit insects in your garden.

Marquee (sports field)

INSECT MIGRATIONS, PULSATIONS & TECHNICAL CREATIONS

We are the Rothamsted Insect Survey, at your service.
• handle live moths
• meet Persie, our giant aphid
Gain fresh insight into the fascinating world of insects.

Marquee (sports field)

THE REAL BEEF... ABOUT MEAT

“Wasteful” and “risky” are regularly used to damn meat production as unfit. But there is an alternative.
• sustainable livestock farming
• grazing land unfit for crops
• eating plants, recycling nutrients
Our “livestock research farm” is a world first. See for yourself.

Marquee (sports field)

WE’RE ALL GASSY

Greenhouse gases are warming the planet. So, what are we going to do about it?
• try out “molecular aerobics”
• are you blowing methane, too?
• test the burping cow
• Will the worm, green crusader
Learn what we’re doing to make cattle more climate friendly.

Marquee (sports field)

USING NATURE FOR SUSTAINABLE LIVESTOCK

Here’s a mini-demo of our latest work for greener livestock.
• grazing sheep, plant diversity
• discover Nature’s services
See how we can work better with Nature to reduce our impact.

Garden Plots (sports field)

HOW TO GROW BETTER CROPS

We have a mini version of our new Long-Term Experiment in Suffolk.
• soils, rotations, fertilisers
• different combinations
• cereals, beans and beet
There are different ways of planting and feeding crops.

Garden Plots (sports field)

INSECT ZONE

MYSTERIES OF FLIGHT

Ever wondered how and why insects migrate...butterflies, moths, beetles, ladybirds and more.
• vertical-looking radar
• detecting flight at 1200m
• tracking back-packing bees
Listen to music inspired by bees caught on radar.

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Marquee (sports field)
We would like to thank our partners and sponsors whose generous encouragement and support have helped us to stage this weekend of fun and learning, free and open to all.

SAFETY
- Laboratories and farms are potentially hazardous places.
- Cars, shuttle buses and patrol vehicles will also be using the roads on site.
- Parents and carers are responsible for the supervision of their children at all times.
- Please do not cross into taped off areas and follow instructions from Festival Stewards.

GETTING AROUND

WALKING The main site is compact and suitable for walking; an enjoyable walk to Rothamsted Manor takes 15-20 minutes.

ASSISTED Shuttle buses also provide access around the estate, with stops marked on the maps. One bus has wheelchair access.

CHILDREN Any lost child will be brought to reception in Centenary (see, EMERGENCY). As a precautionary measure, pick up an ID wristband for your child when you register at Festival HQ. Children under 13 must be accompanied by an adult (someone over 18).

FESTIVAL HQ Situated within the Conference Centre, this is the main registration and information point, for advice, schedules, guides, children’s ID wristbands and extra programmes.

FESTIVAL STEWARDS Staff and helpers wear #FeedingTheWorld T-shirts.

FRIENDS OF ROTHAMSTED Organisations with links to Rothamsted have stalls on the Sports Field.

FIRST AID Visit St John Ambulance, opposite the Tennis Courts; or, go to Centenary; or, call Emergency.

INFORMATION: Visit Festival HQ; or, talk to a Festival Steward; or, go to our online page https://www.rothamsted.ac.uk/events/rothamsted-festival-ideas; or, email comms@rothamsted.ac.uk.

EMERGENCY
- Health & Safety is being co-ordinated from reception in Centenary.
- Call 01582 938 222 // 01582 763 133; or, from an internal phone, 2222.
- If no response, dial 999 (location: Rothamsted Research, West Common, Harpenden AL5 2JQ).
- In the event of FIRE, press the nearest call point and evacuate the area.

LESS ABLE VISITORS Most exhibits are accessible; Festival Stewards can provide specific advice. Parking and toilets are available (see maps).

LOST PROPERTY Claim and report missing items at Festival HQ; or, email comms@rothamsted.ac.uk.

PARKING Please drive as directed and adhere to speed limits. Traffic is mostly one-way, but not always or everywhere; enter via the A1081 (St Albans Road) and leave by the Hatching Green exit. There are several parking areas marked on the maps.

REFRESHMENTS Local vendors of the Food Court on the Sports Field will be serving wood-fired pizza, Mediterranean food, buttermilk chicken and chips, coffee and cakes, vegetarian salads and tarts, crepes and, of course, ice cream. Local beers, with Rothamsted Heritage Labels, are available from Farr Brew. There are also freshly-made sandwiches and wraps, sweet treats and hot and cold drinks available in Lewis Hall. Cream Teas are available at Rothamsted Manor.

SMOKING Smoking is NOT permitted inside any building or marquee or near any farm building, on coaches/trailers or where food and drink are being sold.

TOILETS There are toilets within many buildings, and portable toilets have also been placed around the site. Locations are highlighted on the maps.
Please spend 10 minutes to tell us about your Festival experiences by completing a short survey at www.rothamsted.ac.uk/festivalfeedback. Thank you.