

Applied GCSE Science

Outline of Day Visit Programmes at Sparsholt

1. Milk and Microbiology

The day usually consists of a morning laboratory based practical and an afternoon at Garston's Dairy unit.

Investigate the Quality and Price of Sparsholt Milk.

- ◊ Test Sparsholt milk for bacteria types/numbers
- ◊ Practise aseptic techniques
- ◊ Carry out a serial dilution of a milk sample
- ◊ Inoculate agar plates
- ◊ Calculate the bacterial cell count of milk
- ◊ Consider the effect of antibiotics



Note: Sealed plates are usually taken back to school for incubation and colony counts.

Investigate Dairy Farming – intensive farming

- ◊ See milking in action – try for yourselves!
- ◊ Lactation cycle – why do cows produce milk?
- ◊ Antibacterial procedures and equipment for clean milk
- ◊ Treatment of milk – heat exchange, refrigeration
- ◊ Use of micro organisms – for silage production
- ◊ Outcomes of milk production – meet the calves!



Availability – All Year Round Fee – £50

2. Selective Breeding – for Milk

The day usually consists of 2 short sessions at Garston's Dairy Unit and a laboratory based practical

Investigate Artificial Insemination (AI) at the Dairy (am)

- ◊ Demonstration of (AI) by experienced farm staff
- ◊ Health & quality of dairy cows – visit stock
- ◊ Important characteristics of breeding stock
- ◊ Outcomes of different genetic crosses – visit dairy & beef calves (availability varies with season)

Investigate the effect of Selection on Milk Yields (pm)

- ◊ Modern Milking – see milking, try for yourselves!
- ◊ Computer milk records and prices can be viewed.

Investigate the Quality and Price of Sparsholt Milk.

Lab based practical similar to that offered for Milk and Microbiology programme.

Availability – All Year Round Fee – £50



3. Selective Breeding

The day usually consists of 2 sessions, one at Garston's Dairy and the other at the fish hatchery.

Investigate Artificial Insemination (AI) at the Dairy

- ◊ Demonstration of (AI) by experienced farm staff
- ◊ Health & quality of dairy cows – visit stock
- ◊ Important characteristics of breeding stock
- ◊ Outcomes of different genetic crosses – visit dairy & beef calves (availability varies with season)

Investigate Artificial Fish Breeding Systems

- ◊ Investigate selection characteristics & sexual maturity in trout
- ◊ Extraction of eggs and milt from stock – try this!
- ◊ Egg incubation and monitoring of aquatic systems
- ◊ Use of hormones to produce all female fish stock – why?
- ◊ Genetic changes – producing triploid sterile stock – why?

Note: Selective breeding of fish can be investigated in Dec/Jan (spawning time) or pig breeding at all times of the year.

Availability – December/January Fee – £50



CONTACT - Sparsholt Schools' Centre

Phone: 01962 797201

email: schoolscentre@sparsholt.ac.uk

4. Monitoring Living Organisms

is a morning session based at the fish hatchery:

Introduction to trout production systems

- ◊ Investigate growth rates – catch & weigh/grade stock
- ◊ Consider farming techniques eg. breeding methods
- ◊ Investigate the effect of the hatchery on water quality – test the water at various stages of use eg. borehole, tanks & return (waste) water. Collect water samples.

The afternoon is a choice of:

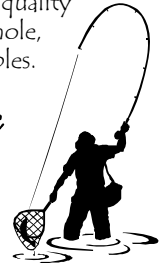
Or Field/ Laboratory Water Analysis

Investigate water quality eg levels of dissolved

Or Use of Biological Indicator Species

Hatchery waste water is returned via a reed bed and lake system. Groups can sample the invertebrate populations of each to assess density and diversity which give an indication of water and habitat quality. The use of ID Keys, microscopes, food chains and food webs can be included.

Availability – Summer Term, Sept, early Oct Fee – £50



5. Machinery Forces & Efficiency

The day can be a full or ½ day option. The full day usually consists of 2 sessions. One is based at the engineering section and the other allows various farm areas to be visited eg. Dairy.

Investigate Energy Transfers and Efficiencies

- ◊ Practical examples of transmission, power output & efficiency can be investigated with specialist engineering staff
- ◊ Power transmissions by friction, gears and fluids
- ◊ Tractor power output and efficiency
- ◊ Many other devices can be investigated at Sparsholt, your preferences can be discussed prior to a visit

Practical use of Modern Farm Machinery

- ◊ Assess the impact of mechanisation on the modern farm.
- ◊ Where and how are different devices used?
- ◊ Investigate advantages & disadvantages of devices.
- ◊ Consider how efficiency can be improved?

Availability – All Year Round Fee – £50



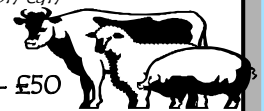
6. Intensive Farming Activities

Groups can select their preferred options from a wide range of farming areas including: dairy/beef farming, pig breeding, sheep farming (extensive/non-intensive), soils and fertilisers and many more.

- ◊ Practical activities including visits to livestock areas
- ◊ Investigate inputs, outputs, costs and alternatives
- ◊ What methods are sustainable?
- ◊ Selection of breeding stock
- ◊ Soil types and uses – how can soil be improved?

Note: A laboratory based soil investigation can be arranged to determine pH, nitrates, organic content, particle size etc.

Availability – All Year Round Fee – £50



Sparsholt Schools' Centre, Sparsholt College, Winchester, Hampshire, SO21 2NF.

Phone: 01962 797201

email: schoolscentre@sparsholt.ac.uk