Queen Rearing

requirements, options, maintaining diversity

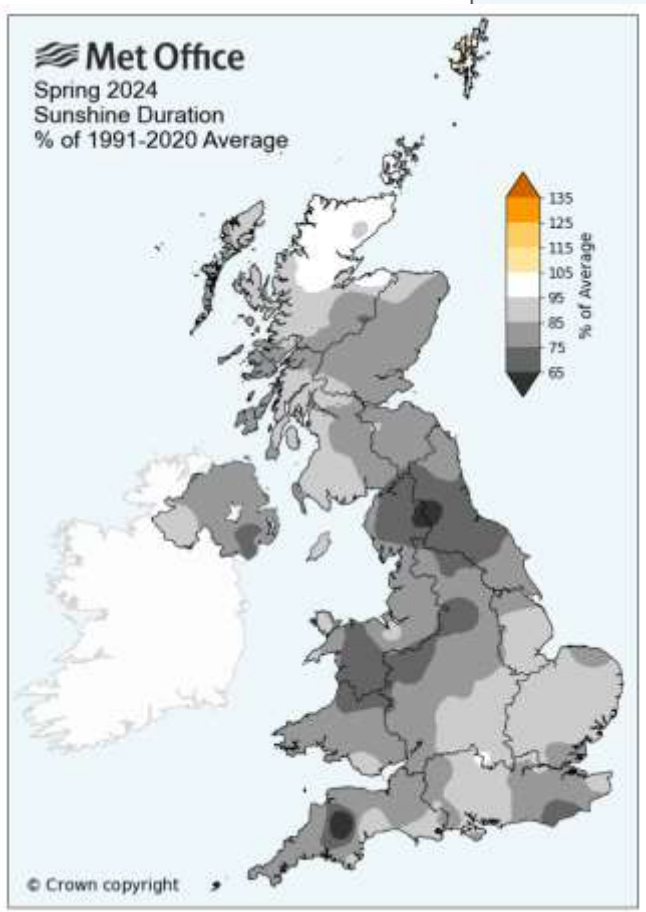
SNHBS Annual Meeting, Perth, 29 Mar 2025

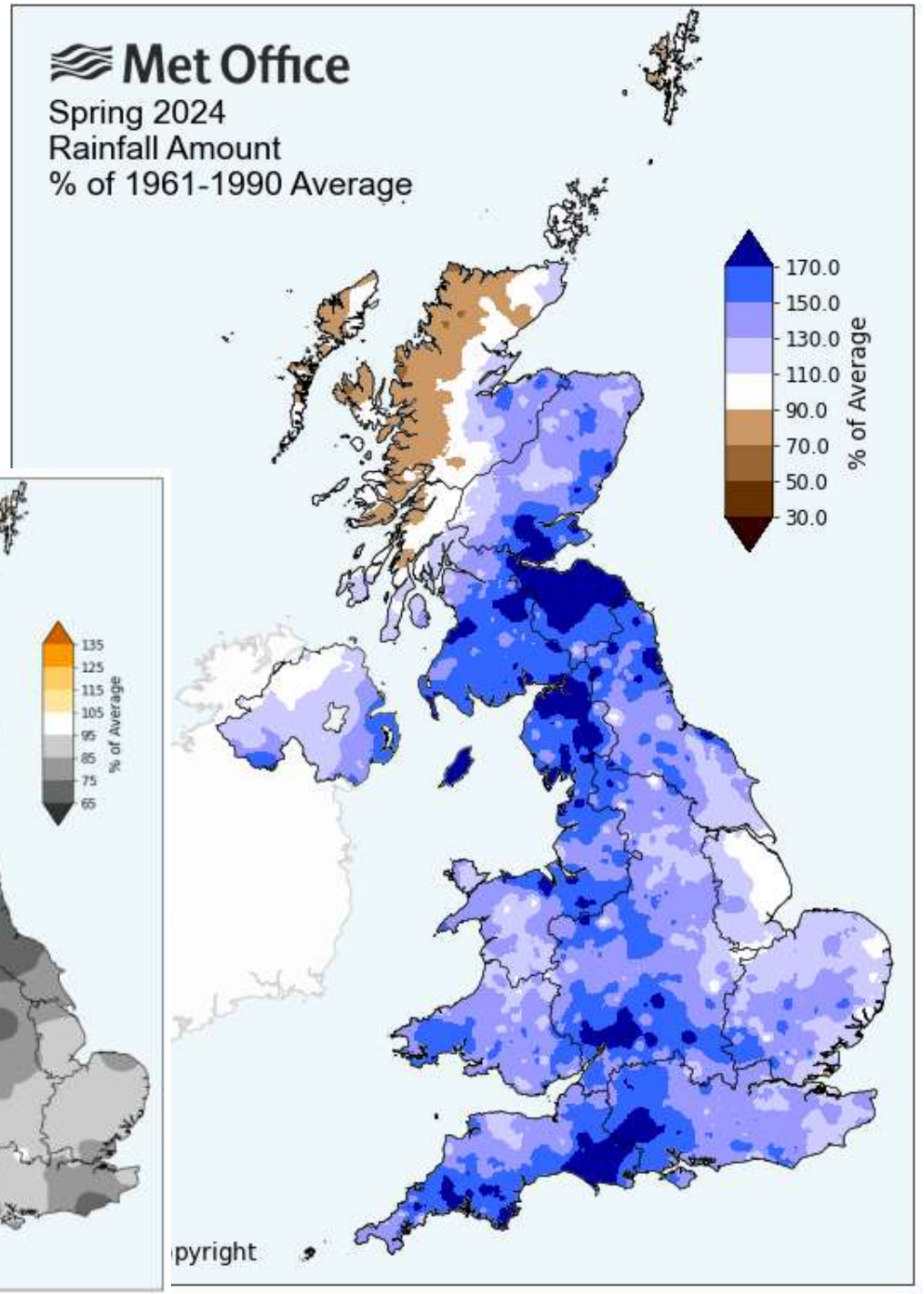
Six weeks from now …….

- Colonies will be strong
- Colonies will be well-nourished with diverse spring pollen and copious nectar
- Colonies will be bursting with young workers and brimming with more sealed brood to generate more
- Space for laying might be at a premium

Usually!

- In 2024 colonies were in poor condition here in the east
- high rainfall kept bees from foraging
- Sunshine was much scarcer than normal
- Swarming was suppressed until August





The Phases of the Colony Through the Year

	Months	*Duration per colony*	*Bees' activity*	*Bees' priority*	*Beekeeper activity*	*Honey crop & feeding*
1.Building in spring	Jan-Apr	4 months	Brood production	Worker brood, strength	Checking stores	Feed *if necessary*, do not over-feed
2.Early prep for reproduction	Apr-Jun	1 month	Production of more workers, drone brood, new queen cups	Worker brood, spare bees, drone brood, early prep for swarming	Give space in time. Weekly inspections for swarm preparations	Spring crop possible
3.Swarming Preparation	May-Jun	1 month	Raising Q cells, exploring new homes, slimming down queen	Switch to *total commitment* to swarm	Swarm control by splitting	
4.Active Swarming Phase	May-Jul (sometimes Apr, Aug)	2 weeks	Swarms and casts leave in succession, ~2 or more days apart, until colony is depleted	Swarm when possible and as often as is reasonable	Further control by ensuring only one, good queen cell (or queen) is present	Feed esp if honey removed, flying bees lost &/or raising brood
5.Re-establishing	Jun-Aug	6 weeks	Virgin matures, then mates. Colony rebuilds	Workers save themselves for the hard work ahead, then work hard	Check for adequately mated queen. Also check for brood disease *	Summer honey crop possible
6.Laying down stores for winter	Jul-Sep	2 months	Colony lays down stores	Reserves are packed in on the main summer flow	Check that bees are not superseding the queen	Late summer crop possible
7.Rejuvenating the worker force	Aug-Oct	3 months	After a short gap, colony raises more workers for winter	Late season burst of raising workers for winter	Ensure they have sufficient resources for this task & low *Varroa* numbers	Check sufficient stores for winter, feed

Note: this is the way colonies will proceed through the season when no swarm control measures are applied. How to do this is covered in Week 3. Each colony makes its own timetable, and post-swarming (or post-swarm control) colonies will re-enter the programme to prepare for winter.

Green - colonies in building and storing mode. Give space as required, this will reduce the swarming urge but colonies may still try to do so in spring and early summer.

Red - colonies have switched to swarming mode and extra space will not deter them. Swarms must be stopped by leaving only one queen cell in queenless splits and keeping it that way.

Grey - with new queens in residence, swarming attempts are less likely although the split with the original queen may try again. Colonies are focussed on preparing for winter. Strong colonies may have a brood break (to clean up?) then produce some fresh workers and weaker colonies are likely to keep raising brood and workers to gain strength.

A colony's requirements to initiate swarming

- Well nourished (this can v quickly improve in the right conditions)
- A surplus of young workers (needed to feed Q cells as well as to stock the swarm(s))
- Stores to take with them when they swarm
- Ideally drones 'they made earlier'
- Time to build extra queen cups and prepare them by polishing
- Being in a season a couple of months prior to the end of foraging to allow virgins to lay and for colonies to rebuild and restock stores for winter (May to July mostly)

What other triggers encourage swarm preps?

- A shortage of laying and/or storage space (relieved by new comb, by adding supers early, swapping stores for foundation)
- Many bees at home (people say!)
- Preventing queen footprint pheromone from being laid down on comb with eggs and young larvae

What helps a colony build high quality Q cells?

starting and finishing queen cells can be separated in high throughput queen rearing operations

- A super-abundance of young workers
- A reduction in the worker brood they need to feed
- Excellent nutrition of the colonies

Suggestions for the novice queen rearer

- Only wanting a smallish number of queen cells?
- Use colonies already trying to swarm!
- Remove the marked queen to a nuc with a frame or two of bees
- Remove any sealed queen cells that day
- Return in a week and remove all queen cells
- Insert:
  - A frame of eggs and young larvae cut back as in the Miller method, *or*
  - A frame of grafts, produced from one or several mother stocks
- The bees' passion to raise queen cells will be undimmed
- They have no option but your introduced material at that point
- Their need to feed worker and drone brood is dramatically reducing so they can give maximum nutrition to queen cells

Grafts?!

- It is quite easy for most people to do grafting
- Use a headband magnifier (please!)
- Practice lifting larvae without poking them around (fine sable 00 or 000 paint brush is a favourite
- Can use a humidified box to store grafts in brown cups until ready
- Join a SNHBS Queen Rearing Workshop for practical experience

Want to repeat queen rearing later in the season?

- Try the Wilkinson and Brown Queenright Queen Rearing method
- A part of the brood nest is lifted above a queen excluder
- The queen remains below to rebuild the nest
- The lack of the footprint pheromone encourages the conversion of worker larvae into queen cells upstairs, esp when presented in cups
- Pay attention to the need for the colony to feel prosperous
- Queen breeders also use queenless stocks to generate new queen cells

Genetic considerations

- Are your bees in an area with many colonies?
  - No need to worry about inbreeding, there will be many drone producing stocks around
  - You can be as selective as you wish but the results of selection will only be partial
- Are you trying to achieve isolation from stocks other than your own?
  - Inbreeding becomes crucial; starting with stocks already inbred makes this much worse
  - Essential to mix genetics with other reliable sources to keep long-term sustainability

Natural QCs

- Staggered ages
- Hard to predict maturity and emergence of cells
- Risk of damage from handling and chilling
- Risk of over-using a single stock
- Risk of breeding for swarminess

QCs from grafting

- Defined ages, known start
- Good prediction of maturity and emergence of cells
- Low risk of damage from handling and chilling 1-2 days pre-emergence
- Known parentage of each graft – can use several in one run
- Risk of breeding for swarminess
- Can be repeated at will

Look out for SNHBS Queen Rearing Workshop 2025!

- Whitmuir Farm, Lamancha (between Edinburgh and Peebles)
- Sunday 29th June 2025
- Hands-on and discussion sessions: grafting and cell raising; mini-nucs; queen finding, marking, manipulating and reintroducing
- Priority booking for SNHBS members
- Booking will open early April, we'll let you know
- Cost about £50 for the day, yet to be agreed. To cover costs and for SNHBS funds.