

La Niña & Qfly in the GSPFA

Weather outlook

Climate outlook for the Greater Sunraysia Pest Free Area (GSPFA) from November 2020 to February 2021:

- A La Niña event is underway and affecting south eastern Australia
- The last La Niña event occurred in 2010 to 2012
- La Niña typically increases the likelihood of above average rainfall across much of Australia during spring and early summer
- Weather patterns forecast for the three months from November 2020 to January 2021 show greater than 75 to 80 per cent chance of rainfall being higher than the normal amount of rain received in this period (50mm to 100mm)
- Maximum temperatures have an even chance (45 to 55 per cent) and minimum temperatures have a high chance (greater than 80 per cent) of being higher than the medians of 30°C to 33°C (maxima) and 15°C to 18°C (minima)
- Nights are likely (greater than 75 per cent chance) to be warmer than average across Australia during November to January

This outlook is based on: www.bom.gov.au/climate/ahead/outlooks/ - [moreMaps](#) – accessed 16 October 2020

*La Niña = more rain + warmer nights for November 2020
through summer 2020/2021*

Effects of La Niña on Queensland fruit fly

- **Increased soil moisture** – Qfly spend their pupal stage in the ground under their host plants. They are prone to desiccation under normal soil moisture contents prevalent in non-irrigated soils of the GSPFA. Higher soil moisture levels will improve the survivability of Qfly pupae and, therefore, adults.
- **Higher relative humidity** (fewer days of low relative humidity) – Qfly adults are prone to desiccation, but conditions within most tree canopies are generally sufficiently humid for Qfly survival to remain high, even in relatively dry periods.

However, higher humidity during La Niña may ensure the survival of more adult Qfly and allow them more freedom to fly from tree to tree in search of fruit to sting. Higher relative humidity may promote the spread of propagule Qfly populations further out into other orchards and home gardens.

Higher relative humidity will improve the attractancy of male-targeting fruit fly traps, as volatiles emitted from the traps will spread out from the trap further into the surrounding landscape. This, with improved flight capability of the flies, may attract flies from further afield.

- **Fewer hours of sunshine** (more cloudy days, lower fruit sugars) – No effect, beneficial or otherwise, on Qfly.
- **More and quicker-growing weed growth** – Increased weed growth can aid in adult eclosion (i.e. emergence from pupae in the soil) by offering protective refuge for soft, weak, newly emerged Qfly adults to harden off and fly in search of feed and water. Weeds are especially important as

refuges in new and deciduous orchards without full canopy coverage. Weeds will become severe if constant rainfall and heavy soils restrict inter-row weed control (too wet to drive slasher). Weeds also act as a significant refuge for mature flies.

The more weed growth under fruit trees, the less likely mature Qfly larvae and pupae (prior to pupation in the soil underneath the host plant) are to be found by insect-eating birds, insects, reptiles and amphibians.

- **Proliferation of fungal, bacterial and yeast growth** – La Niña, with its increased rain, night-time warmth and humidity, promotes microbial growth on orchard and home garden plants as well as weeds. Qfly adults feed on these sources of protein, and more sources of protein improve the survivability of Qfly adults.

Increased microbial growth in the field may impact the efficacy of baits and protein-based (sometimes referred to as female-targeting) fruit fly traps. Naturally occurring protein sources could overwhelm baits and traps, making them harder to find. Also, flies will feed on the easier-to-find naturally occurring protein sources and may not be attracted to baits and traps as they will be too well fed naturally.

- **More rain** – Baiting programs are affected by frequent rain periods. To be effective against Qfly, baits must be reapplied after every rainfall because they are washed off targeted plants and into the soil where they are ineffective.

More rain may also lead to more fruit remaining on-tree. There will be less fruit drop due to low humidity and low rainfall. This may promote more, larger and juicier fruit (although of lower sugar levels than normally seen when there are more hours of actual sunshine). This, in turn, could lead to higher infestation rates – both number of infested fruit/ha and the number of larvae/fruit.

Home garden and orchard monitoring of fruit fly presence and severity may be reduced when there are more days of rain. This should not be allowed to happen as under these more benign weather conditions, as described above, fruit fly populations can increase very rapidly. Fruit flies may become out of control if not monitored at least weekly even if it is raining. Monitoring means:

- Using traps to check for the presence and, if present, the severity of the local Qfly population
 - Checking around your home or orchard for feral and other fruit fly hosts plants with fruit on them that should be managed by removal or protection
 - Checking ripe and ripening fruit for signs of fruit fly infestation – abnormal colouring in spots on the fruit, soft patches in the fruit, sting marks and/or eggs and/or larvae in the fruit.
- **Increased and longer-lasting flowering** – More benign weather conditions will promote flowering. This leads to an increased availability of naturally occurring carbohydrates (i.e. nectar from flowers), allowing improved survival of Qfly adults, especially soon after adult eclosion.
 - **More bees and bee activity** (more and longer-lasting flowering, better fruit set, more fruit) – More benign climatic conditions will promote bee survival and activity, meaning there will be more fruit set and, hence, more fruit available for larger populations of Qfly. Unless fruit fly management programs are set up, and applied in a timely and efficient manner, Qfly populations could explode enormously with more Qfly and more fruit.

- **Shorter fruit fly life cycles** (more fruit fly generations per season) – Warmer night temperatures facilitate egg, larval, pupal and adult maturation closer to the 22-day lifecycle Qfly exhibits under constant ideal conditions in the laboratory. This means that, at any one time during the coming season, there could be more young, healthy mature Qfly on the landscape laying more eggs than normal during the season.
- **More Qfly in the summer** – With more rain during the summer of 2020/2021, there will be increased soil moisture leading into autumn/winter, and possibly warmer soil conditions and ground surface temperatures. Adding to that the higher number of Qfly expected at the time, means Qfly survival into winter, and then into next spring, in very high numbers is highly probable.

La Niña = more Qfly problems in 2020/2021, and more problems in both home gardens and commercial orchards in 2021/2022, unless timely and adequate Qfly management options are in place.

This information was compiled by Andrew Jessup of Janren Consulting for the October 2020 Greater Sunraysia Pest Free Area grower newsletter.



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