

# Changes of Frangipani (*Plumeria rubra*) from October to January in Kinmen

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## Summary

Internet data shows that frangipani grown in subtropical regions blooms from May to September every year, while frangipani in tropical regions can bloom all year round.



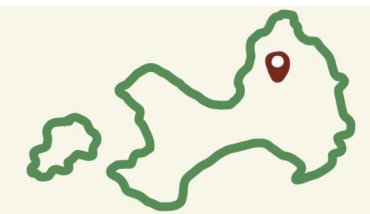
The frangipani needs sufficient insolation to blossom, blooms that grow during periods of full insolation have a longer flowering period.

The suitable growth temperature of frangipani is  $23^{\circ}\text{C}$  –  $30^{\circ}\text{C}$  and when the temperature is lower than  $15^{\circ}\text{C}$ , it will enter the dormant period and stop growing.

Kinmen has a subtropical climate. In summer, the temperature is sometimes as high as  $36^{\circ}\text{C}$ , and it is easily affected by typhoons, which often cause sudden changes in the climate. In winter, Kinmen is affected by the northeast monsoon and Kinmen is not blocked by mountains, so the wind speed is strong.

After observing and comparing the common frangipani flowers in the online data with the local climate in Kinmen, we finally get :

- (1) Due to the difference in the amount of insolation and wind speed, the flowering period and leaf growth period of the local frangipani in Kinmen are different from internet data. Therefore, it is known that the length of insolation has a great influence on the growth and blossom of frangipani in Kinmen.
- (2) The flowering period of the frangipani in Kinmen is longer than the internet data and the leaves are easily affected by strong winds.

Kinmen Geographical Location		Observe the position of the frangipani trees
		

## Research purposes

There is a frangipani tree in the middle of our home square that has been in blossom for more than ten years. When I was very young, my father told me that the frangipani tree also known as the "j í si á ng(means lucky) tree", by planting it can bring good luck and wealth. Therefore, the frangipani tree is very common in Taiwan.

Every year when the frangipani blossom, we can see many people posting information about frangipani on the Internet. So we want to observe the frangipani in Kinmen to find out the difference with the Internet information. Whether the flowering period and growth of the frangipani tree are different from the information on the Internet.

## Research method

We use phones to take pictures for frangipani trees every week, from October 2022 to January 2023, and finally compare and observe the photos.





## Discussion

1. In the reference materials, the flowering period of the frangipani is from May to September, but the frangipani blossom in our photo has not fall completely until October 16.

We speculate that it maybe due to the temperature or insolation.



2022.10.02



2022.10.09



2022.10.16



2022.10.23

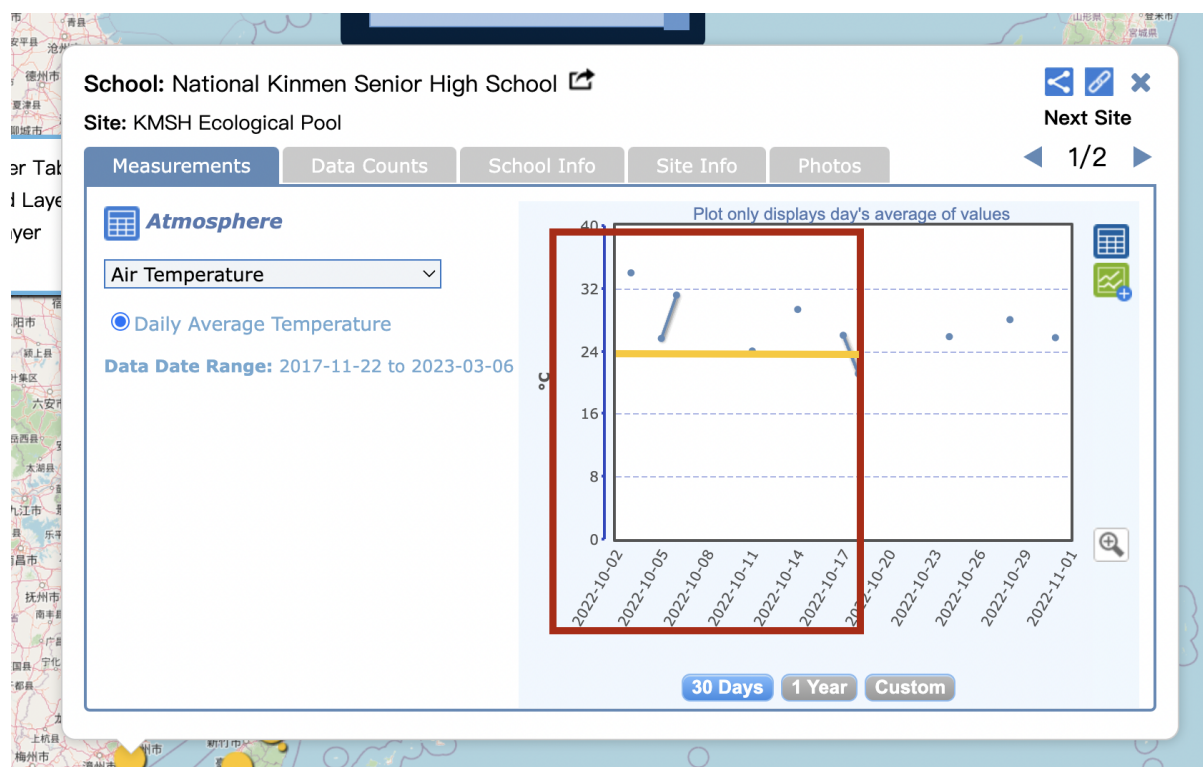
(1) The suitable growth temperature of frangipani is:  $23^{\circ}\text{C} \sim 30^{\circ}\text{C}$

From 10/2 to 10/16, 14 of the 15 days were maintained at this suitable temperature. After 10/16, there were very few days in Kinmen that exceeded  $23^{\circ}\text{C}$ .

Because the temperature in the past few days has been maintained at the temperature suitable for the growth of frangipani, so there is no obvious difference between the frangipani trees these days.



## National Kinmen Senior High School October 2022 Temperature Table



The figure above shows that the temperature will be above 24°C from October 2, 2022 to October 17, 2022.

## Kinmen temperature table from October 1, 2022 to October 16, 2022

氣溫(°C)	最高氣溫(°C)	最高氣溫時間(LST)	最低氣溫(°C)	最低氣溫時間(LST)
Temperature	T Max	T Max Time	T Min	T Min Time
27.5	33.8	2022-10-01 12:10	24.2	2022-10-01 05:40
27.5	34.1	2022-10-02 13:27	24.4	2022-10-02 04:35
27.9	32.8	2022-10-03 13:41	25.7	2022-10-03 05:49
27.6	34.5	2022-10-04 11:42	25.0	2022-10-04 03:09
26.3	29.9	2022-10-05 13:45	24.5	2022-10-05 11:59
26.1	31.9	2022-10-06 12:04	23.7	2022-10-06 04:47
26.8	32.5	2022-10-07 12:40	24.0	2022-10-07 23:01
25.6	31.2	2022-10-08 14:16	22.4	2022-10-08 06:03
25.8	33.0	2022-10-09 13:32	22.2	2022-10-09 05:19
23.4	28.8	2022-10-10 13:09	20.6	2022-10-10 22:44
21.7	26.5	2022-10-11 12:55	19.3	2022-10-11 05:48
22.8	28.1	2022-10-12 13:02	19.5	2022-10-12 04:37
24.6	30.1	2022-10-13 13:58	21.9	2022-10-13 03:01
24.7	30.7	2022-10-14 12:45	21.1	2022-10-14 05:41
26.0	32.2	2022-10-15 11:53	22.5	2022-10-15 03:57
27.0	31.7	2022-10-16 10:36	24.7	2022-10-16 01:15

(2) Frangipani needs more than 8 to 10 hours of insolation per day during the growth period. The more sufficient time, the longer time and more lush the flowers can bloom.

By querying the sufficient data of historical meteorological data, during the period from May 2022 to September 2022, most of the sufficient in Kinmen have reached the required insolation hours for frangipani, and there are also a few insolation in Kinmen in early October. It can reach 8-10 hours a day.

Conclusion:

Because insolation achieves the growth required of frangipani many days. That is one of the reasons why the frangipani flowering period lasts longer in Kinmen.

2. In the photo of 2022/12/09, the leaves of frangipani obviously dropped a lot



We checked the weather for the past few days from 11/27 to 12/9, and found that the average wind speed was 7.9m/s on 11/30, and the maximum gust reached 20m/s. So we think it's because of the wind that's causing the leaves to drop a lot.

**Kinmen wind speed on November 30, 2022**

風速(m/s)	風向(360degree)	最大陣風(m/s)	最大陣風風向(360degree)	最大陣風風速時間(LST)
1.7	30	6.4	170	2022-11-17 12:45
3.6	40	11.2	80	2022-11-18 14:20
3.0	30	8.8	80	2022-11-19 14:42
3.8	40	12.5	60	2022-11-20 16:38
4.0	50	12.1	60	2022-11-21 20:10
2.1	40	7.9	20	2022-11-22 02:42
3.8	50	13.5	50	2022-11-23 20:20
3.6	40	10.4	20	2022-11-24 00:27
2.3	40	8.6	10	2022-11-25 00:17
2.9	60	10.8	60	2022-11-26 17:44
2.2	30	9.0	20	2022-11-27 02:33
1.5	360	5.6	60	2022-11-28 00:47
1.7	160	5.2	160	2022-11-29 15:03
7.9	50	20.6	50	2022-11-30 08:44

## Conclusion

The flowering period of frangipani will vary with the insolation . Because Kinmen has sufficient insolation from July to early October, the flowering period of frangipani will be longer. However, in winter, the frangipani flowers in Kinmen will drop their leaves faster because of the strong wind.

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