

Premature Budding on Garden Mums

Premature budding or early flowering of garden mums could be a major headache for many growers. Last season, I received numerous phone calls and e-mails in regards to plants finishing short or flowering too early. Both are result of premature budding that occurs when plants initiate flower buds prematurely due to stressful weather and growing conditions before reaching reproductive stage.

Occasionally only terminal buds will initiate too early and in most cases plants will finish satisfactory if kept moist and well fertilized. When all terminal and lateral flower buds initiate too early, plants will not always perform well unless flower buds are removed and plants are allowed to regrow under optimum conditions.



In most cases: low temperatures, short days and lack of adequate water and fertilizer in early stages are the main causes of premature budding.

Northern states will experience cold temperatures until the end of June (Figure 1) and several consecutive cool nights below 50F will have greater influence on flowering than the day length. Small plants moved or planted outside too early and to cold temperatures will flower prematurely and finish short. Garden mums exposed planted too early in April or May will sometimes finish smaller than the one planted in June and grown under optimum weather conditions. In some cases plants that budded too early had to be cut back and finished 2-3 weeks later than originally scheduled.

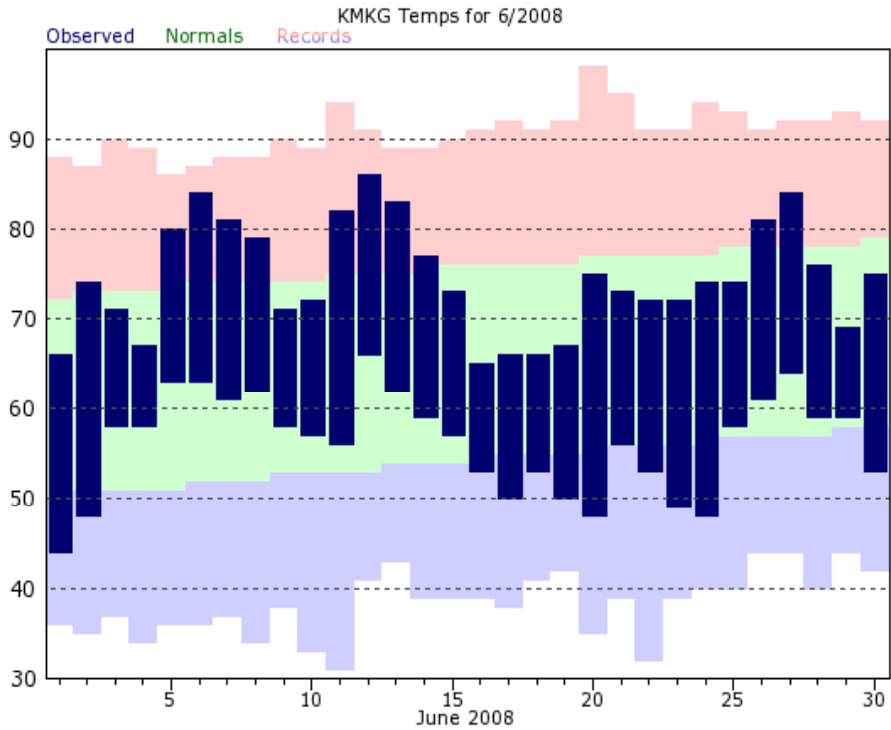


Figure 1. Grand Rapids, Michigan - Monthly Climate Plot for June 2008.
Source: NOAA’s National Weather Service

Garden mums are short day plants and some varieties will initiate flower buds with less than 10.5 hours of darkness under black cloth conditions. A low light intensity in rooting areas combined with short days and lack of night interruption will cause premature budding in the South. The longest day in South Florida is only 13.5 hours and this is very close to what garden mums need for flower initiation.

	April	May	June	July	August	Sept
Naples, Florida	11:12	10:34	10:14	10:23	10:57	11:42
Charlotte, North Carolina	10:54	9:58	9:29	9:42	10:32	11:37
Long Island, New York	10:41	8:55	8:55	9:12	10:13	11:33
Kalamazoo, Michigan	10:36	8:44	8:44	9:03	10:08	11:32

**Duration of darkness in different states
on the 15th of each month in 2008 (Source: US Naval Observatory)**

Growers can minimize premature budding related to cold temperatures and short days by maintaining adequate water and fertilization. At the same time water stress and low fertility alone will reduce number of leaves, restrict branching and vegetative growth. Plants will appear hard and go into a reproductive mode before reaching proper size.

Similar problem may occur with high rates of control-release fertilizer that could result in very high EC due to uncontrolled release in hot weather. High salts will damage roots and stop plant growth. If control-release fertilizer releases in a very short time and all nutrients are leached with clear water, plants will later experience more stress from being underfed.

Also any extreme weather conditions like very high temperatures combined with low relative humidity or excessive rainfall causing root loss may result in premature budding.

Growers can often prevent premature budding by following these steps:

- Garden mums must never be allowed to dry during the early stages. Keep plants moist and well fed until they reach at least 60 % of the final size.
- Avoid planting or moving outside too early if unable to maintain optimum temperature. Very cold nights will most likely trigger early flower initiation and plants will finish too short. The appearance of small flower buds will indicate the end of the vegetative growth.
- Feed with phosphor-rich fertilizer like 20:20:20 at 250 ppm right after transplanting to promote rooting and vegetative growth. Plants that are well fertilized will overcome premature budding and continue to develop lateral breaks.
- Light cuttings in propagation, 4 hours night interruption from 10pm to 2am will keep garden mums vegetative. Growers in the Deep South should light cuttings in propagation year around.
- Use Florel if necessary, apply 500 ppm spray when cuttings are fully rooted or one week after transplanting. Florel will delay flowering in some varieties so it is safer to use temperature and lights to prevent premature budding.
- Mist plants in the middle of the day for several days after transplanting or spacing outside during extreme hot weather. Mist-ing will reduce heat stress and limit potential root loss.
- When using overhead watering consider half the rate of control-release fertilizer in combination with liquid feed to minimize extreme EC fluctuations. This feed combination tends to keep plants more compact and well branched.
- GroLink varieties don't require pinch to perform best under normal conditions unless terminal buds initiate too early and rooted cuttings have to be pinched. In such case use hard pinch by removing at least 0.5" of top growth and leaving

If for some reason premature budding occurs, pinch off any visible flower buds, apply high rate of phosphor-rich fertilizer and allow plants to regrow. In most cases if bud removal is done early enough, plants will continue to branch and finish satisfactory with minimum delay.

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