

EASTER LILIES HIT YOUR TARGET DATE

This updated Easter Lily bud meter is a useful tool to help you predict the "days to flower" for your Easter Lily crop.

by **PAUL FISHER, HEINER LIETH and ROYAL HEINS**

FLOWERING an Easter lily crop in time for holiday sales is essential for profitability. Many growers now use a lily "bud meter" that

was developed in 1984 by Will Healy and Harold Wilkins at the University of Minnesota.

The bud meter shows the days to flower for any combination of temperature and



If temperatures are set too low, Easter lilies may flower later than your target date. If caught too late, plants may not be ready in time for Easter.

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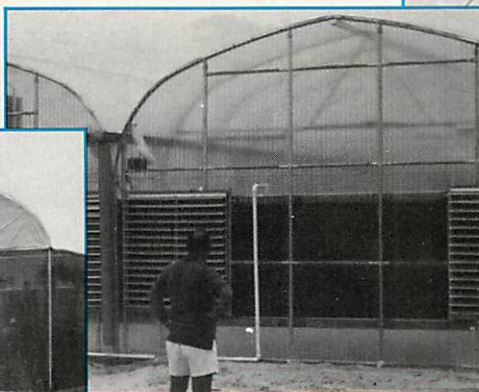
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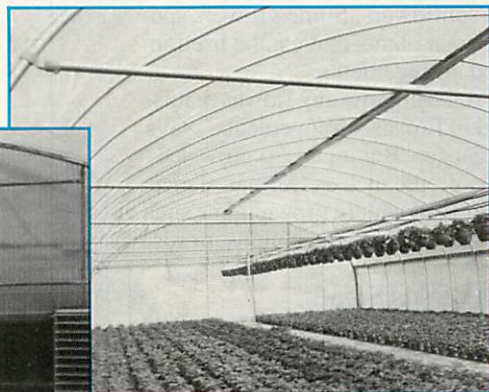
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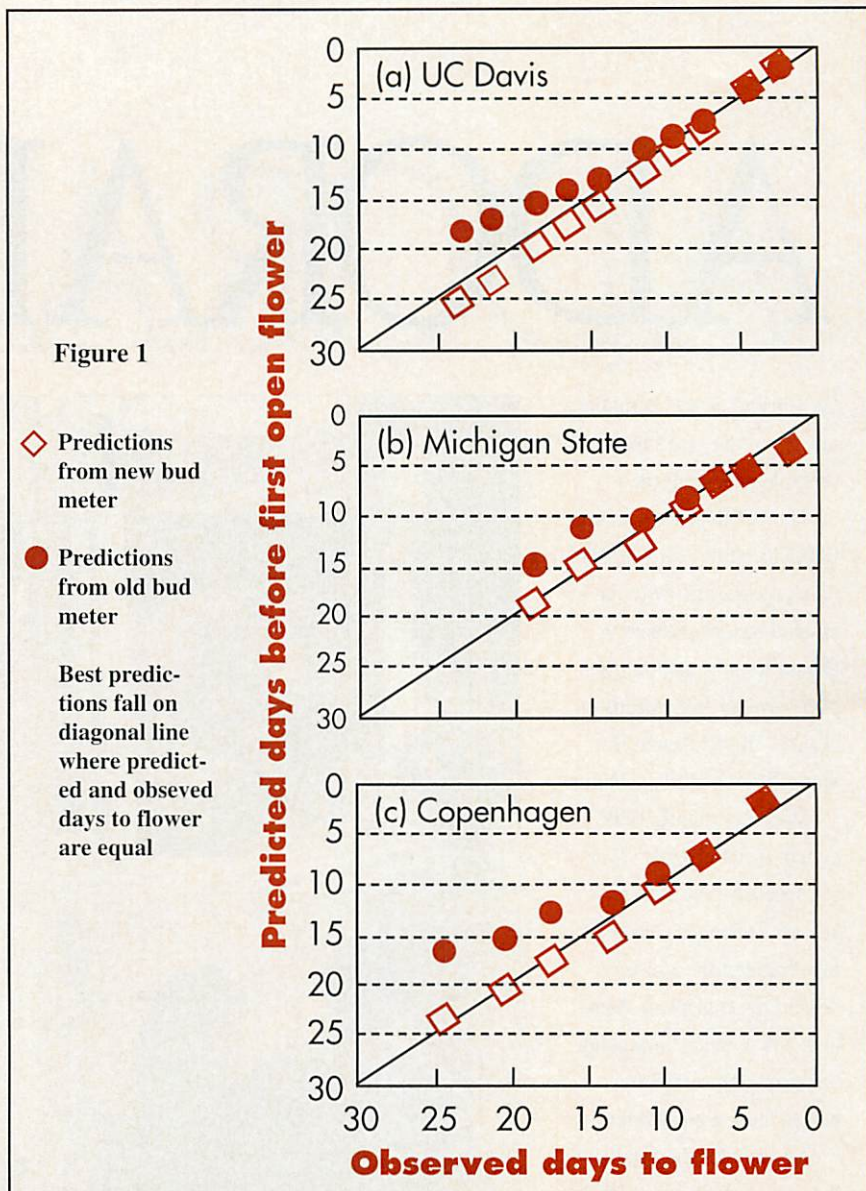
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Figure 2 Instructions:

Place left end of meter at the base of the flower bud. Observe where the tip of the bud falls on the meter. Where the tip of the bud falls corresponds to the number of days to flower at the specified temperature.

DAYS TO FLOWER															Average temperature																						
															27° C (81° F)																						
															24° C (75° F)																						
															21° C (70° F)																						
															18° C (64° F)																						
															15° C (59° F)																						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15								
23	20	18	16	14	12	10	9	8	7	6	5	4	3	2	1	25	20	18	16	14	12	10	9	8	7	6	5	4	3	2	1						
30	25	20	18	16	14	12	10	9	8	7	6	5	4	3	2	1	35	30	25	20	18	16	14	12	10	9	8	7	6	5	4	3	2	1			
40	35	30	25	20	18	16	14	12	10	9	8	7	6	5	4	3	2	1	40	35	30	25	20	18	16	14	12	10	9	8	7	6	5	4	3	2	1
Bud Meter for 'Nellie White' Easter lilies (1995 Version)															Bud Length (cm)																						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15								



flower bud length. The tool has proven useful, especially during the last 10 days before flowering, to know when plants will be ready to ship or go into the cooler for storage. The tool can also be useful to help set the optimum temperature if the crop is going to flower too early or late – the warmer the average temperature, the sooner the crop will flower.

Bud Trials

In a series of greenhouse validation trials, we found problems with using the original bud meter: Near visible bud, the stage when flower buds first become visible, the tool recommended temperatures that were too low to achieve the target flowering date. As the crop approached flowering, the required temperature tended to be over predicted. The errors sometimes can-

celed each other out, but were big enough to mean that the tool should not be used early on near visible bud.

To refine the bud meter and correct these imperfections, we ran greenhouse experiments during the 1994 and 1995 seasons in three locations: the University of California at Davis, Michigan State University, and the Royal Veterinary and Agriculture University in Copenhagen, Denmark. Growing plants in these diverse conditions helped ensure the tool was sound.

Results from one of the experiments during 1994 are presented in Figure 1, above. Flower bud lengths on 15 'Nellie White' plants were measured twice each week at each locations. Temperatures were set to flower the plants on a target date, and ranged between 50°F and 80°F (10°-27°C).

On the X-axis in Figure 1, you can

see the observed (actual) number of days to the first open flower on each measurement date. The Y-axis represents the number of days to flower predicted by the bud meters. Predictions from the new bud meter are represented by open diamonds (◇). The solid circles (●) represent the number of days to flower predicted by the old bud meter. The best predictions fall on the diagonal line, where predicted and observed days to flower are equal.

The new bud meter (◇) did a good

job and the error between observed and predicted days to flower was always within 2 days for this experiment. In the case of the old bud meter (●), the crop was predicted to flower up to 8 days before it in fact did flower. This bias in the old bud meter was consistent across validation experiments. This means that if you relied on the old bud meter soon after visible bud, you would tend to set temperatures too low (sometimes by up to 10°F), and the crop may flower

later than your target date. This can result in substantial energy costs to bring the crop into flower on time. If the problem is caught too late, plants may not be ready in time for Easter.

Make Your Own Bud Meter

To make your own bud meter, photocopy Figure 2 and use a standard ruler with centimeters to verify that the centimeter graduations on the bottom of the ruler are correct. If not, you need to enlarge or reduce the figure until it is exactly the right size. Paste the bud meter onto a cardboard backing. Laminating the bud meter will also help it last in the greenhouse. This tool is designed for use with 'Nellie White' Easter lilies.

To use the bud meter, place the left end of it at the base of a flower bud after the stage when the buds are visible without moving any leaves and you can measure without damaging the plant. Observe where the tip of the bud falls on the meter. Where it falls corresponds to the number of days to flower at the specified temperature.

Be aware that the "Days to Flower" on the meter refers to the first day when the flower bud petals split open. Lilies should be shipped or cooled at least 1 to 2 days before open flower — often at what is called the 'puffy bud' stage. Take this difference of 1 or 2 days into account when calculating your target days to flower. For example, a bud that is 8 centimeters in length will have open flowers in 10 days at 70°F, but would be ready to ship in only 8 days.

Note that bud meters are simple tools intended to help, not replace, your experience in local growing conditions. In the validation trials, the new bud meter predicted flowering date to within 3 days of observed flowering date when used as early as 30 days before flower. When the bud meter was used closer to Easter (less than 10 days to flower), the tool was accurate to within 2 days. **GG**

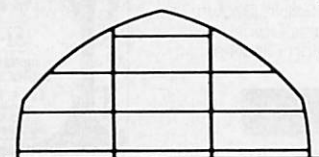
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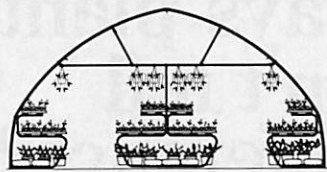
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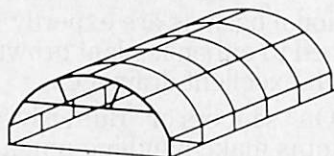
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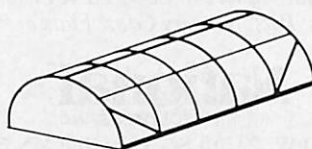
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