



Lighting Schedules for Arizona Backyard Laying Flocks

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Maintaining steady egg production in backyard flocks requires understanding how changes in daylight length influence a hen's natural laying cycle. It's a common misconception that cold temperatures in the wintertime lead to decreased egg production. In fact, light exposure, or photoperiod, stimulates egg production through the pineal gland and the decreased daylight length in the winter is responsible for drops in egg production. The pineal gland is a small, pea-sized gland located near the center of the brain. It sits just behind the eyes and close to the brain's surface, where it senses changes in light. The pineal gland helps regulate the bird's internal clock and reproductive cycles by responding to daylight length, with increased daylight in spring boosting egg output and shorter winter days leading to a natural decline. Ideally, hens should receive 14–16 hours of light daily to maintain peak production. Supplementing light during low daylight months can help support consistent egg laying year-round without compromising hens' health, as long as they receive adequate nutrition, including calcium. This article explores effective lighting strategies to optimize egg production, ensure consistency, and meet the needs of hens at different life stages.

How much light?

In Arizona, daylight ranges from 9-10 hours in December-January up to 14-15 hrs. in May - July, depending on latitude (northern Arizona vs southern Arizona). It's a common misconception that the onset of cold weather stops egg production, rather it's the shortened daylight hours that occur in the fall to early winter. To keep hens producing all winter, add lights on a timer that come on automatically in the early morning and/or remain on after sunset to keep daylight length at or above 14 hours.

When to supplement light?

Ideally, this lighting should be provided entirely in the hours before sunrise to facilitate hens roosting with the

natural sunset. This means that lights need to come on as early as 3:20 AM in the darkest weeks. If choosing to supplement some or all the light needed after sunset, it must be dimmed gradually over 30-45 minutes to avoid sudden darkness. Hens have poor night vision and rely on a gentle transition to locate their roosts.

Do not allow lights to remain on 24/7, too much daylight can cause significant hormonal and behavioral disruptions, and a photoperiod greater than 16hrs does not stimulate additional egg production. As daylight lengthens in the spring, lights can be discontinued when the natural light period matches the photoperiod and resumed when natural daylight falls below 14 hours.

What type of bulb should I use?

For small backyard flocks, a single 60-watt incandescent bulb or a 9-watt LED (equivalent in brightness) per 200 square feet of coop/run space provides adequate supplemental light. Position bulbs as needed to distribute light evenly throughout the coop/run and avoiding creating excessive shadows or dark areas. Keep bulbs clean of dust to maintain their effectiveness, as dirt can reduce light output over time. Nesting areas should remain dim, as hens prefer a darker, secluded space for laying; adding a curtain over the nest boxes can help create this environment. When choosing bulbs, select ones that emit a 'warm' wavelength light (more red-orange) rather than 'cool' light, as warmer wavelengths more closely mimic natural daylight and are better for stimulating egg production. Always ensure the light source is securely hung and safe from moisture or disturbance by the birds. Also note that the use of a heat producing bulb (i.e. a heat lamp) is unnecessary if your coop protects your birds adequately from the elements. Heat lamps carry a large risk of fire, they should be avoided. If you do need to heat your coop, there are much safer options such as a heating panel. Do not use a heat producing bulb/heat lamp as your light source for increased egg production.

Will this harm my hens?

Supplemental lighting, when used correctly, does not harm hens or shorten their laying lifespan. Research shows that providing hens with a consistent 14–16 hours of light daily helps maintain egg production without depleting their reproductive system prematurely. Hens are born with many more egg follicles than they will lay in a typical lifetime, so a steady photoperiod simply supports a regular laying cycle rather than exhausting their natural egg supply. The key to using supplemental lighting safely is maintaining balanced nutrition, particularly with adequate calcium, to support egg shell quality and overall health. As long as hens have proper nutrition and aren't exposed to continuous, excessive light beyond 16 hours daily, supplemental lighting can effectively support a productive flock without negative impacts on their wellbeing.

Managing Pullets

Pullets (young female birds) need careful lighting management to prevent early sexual maturity. Ideally, they should be on a naturally declining light schedule from 8 to 20 weeks of age, as early laying can lead to prolapse (a serious condition where the uterus is expelled during egg-laying). Additionally, early sexual maturity can prevent them from reaching their full genetic potential in egg size and lifetime production. If your existing flock is on a high-production lighting schedule, pullets hatched in spring can be introduced in summer, when the lighting is usually off because daylight exceeds 14 hours. Then, delay reinstating the lighting schedule in the fall until the pullets reach laying age. This has an added benefit of giving hens a break to molt, although laying will be reduced during this time. Re-start the light schedule when the pullets are 18 weeks old. Gradually increase the lights by only 15–30 minutes weekly until reaching 14 hours. Alternatively, raise the pullets separately and introduce them to the flock once they're laying and on the same light schedule.

Timing

Sunrise and sunset times change only slightly from year to year. For a given location, the times on the same day across different years typically vary by just a few seconds to a couple of minutes. This small variation results mainly from subtle shifts in Earth's orbit and axial tilt, as well as factors like leap years. Generally, annual sunrise/sunset times remain close enough that you can reuse the same lighting schedule each year. What's most important in a lighting program is consistency. Do not abruptly stop or start a lighting program. Make any adjustments to the

light schedule gradually, by 15–30 minute increments each week, until the desired photoperiod is reached. Remember to adjust the schedule every couple of weeks as sunrise/sunset times change throughout the year. Forgetting to turn the lights on even one or two days can cause a temporary drop in egg production, or trigger hens to molt which will drop egg production for 6–8 weeks. Use an automatic timer to control the lights, and check on the system regularly to ensure there are no burned out bulbs and its functioning as intended.

References

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extension.arizona.edu/pubs/az2185-2026.pdf

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The following table includes a morning only light schedule for a 14-hour photoperiod for both Tucson (Southern Arizona) and Flagstaff (Northern Arizona), with adjustments to the schedule occurring every 2 weeks. Lights should come on at the indicated times and can turn off after sunrise.

Week of	Tucson				Flagstaff			
	Sunrise	Sunset	Total Natural Daylight	Turn Lights on for 14 hours of Daylight:	Sunrise	Sunset	Total Natural Daylight	Turn Lights on for 14 hours of Daylight:
1-Jan	7:26 AM	5:29 PM	10:03	3:30 AM	7:33 AM	5:21 PM	9:48	3:20 AM
15-Jan	7:24 AM	5:41 PM	10:17	3:40 AM	7:30 AM	5:34 PM	10:04	3:35 AM
29-Jan	7:17 AM	5:55 PM	10:38	3:55 AM	7:21 AM	5:49 PM	10:28	3:50 AM
12-Feb	7:06 AM	6:08 PM	11:02	4:10 AM	7:08 AM	6:03 PM	10:55	4:05 AM
26-Feb	6:52 AM	6:20 PM	11:28	4:20 AM	6:52 AM	6:16 PM	11:24	4:15 AM
11-Mar	6:36 AM	6:31 PM	11:55	4:30 AM	6:33 AM	6:29 PM	11:56	4:30 AM
25-Mar	6:18 AM	6:41 PM	12:23	4:40 AM	6:13 AM	6:41 PM	12:28	4:40 AM
8-Apr	5:58 AM	6:51 PM	12:53	4:50 AM	5:54 AM	6:52 PM	12:58	4:50 AM
22-Apr	5:39 AM	7:01 PM	13:22	5:00 AM	5:37 AM	7:02 PM	13:25	5:00 AM
6-May	5:22 AM	7:11 PM	13:49	5:10 AM	5:24 AM	7:13 PM	13:49	5:15 AM
20-May	5:09 AM	7:19 PM	14:10		5:15 AM	7:23 PM	14:08	
3-Jun	5:03 AM	7:24 PM	14:21		5:10 AM	7:32 PM	14:22	
17-Jun	5:02 AM	7:27 PM	14:25		5:09 AM	7:37 PM	14:28	
1-Jul	5:07 AM	7:26 PM	14:19		5:14 AM	7:38 PM	14:24	
15-Jul	5:16 AM	7:21 PM	14:05		5:23 AM	7:33 PM	14:10	
29-Jul	5:27 AM	7:12 PM	13:45	5:10 AM	5:35 AM	7:24 PM	13:49	5:25 AM
12-Aug	5:38 AM	7:00 PM	13:22	5:00 AM	5:47 AM	7:10 PM	13:23	5:10 AM
26-Aug	5:48 AM	6:45 PM	12:57	4:45 AM	5:59 AM	6:55 PM	12:56	4:55 AM
9-Sep	5:58 AM	6:29 PM	12:31	4:30 AM	6:10 AM	6:37 PM	12:27	4:35 AM
23-Sep	6:08 AM	6:11 PM	12:03	4:10 AM	6:20 AM	6:17 PM	11:57	4:15 AM
7-Oct	6:18 AM	5:53 PM	11:35	3:55 AM	6:30 AM	5:57 PM	11:27	3:55 AM
21-Oct	6:29 AM	5:35 PM	11:06	3:35 AM	6:41 AM	5:38 PM	10:57	3:40 AM
4-Nov	6:40 AM	5:20 PM	10:40	3:20 AM	6:53 AM	5:22 PM	10:29	3:20 AM
18-Nov	6:51 AM	5:10 PM	10:19	3:10 AM	7:06 AM	5:10 PM	10:04	3:10 AM
2-Dec	7:02 AM	5:06 PM	10:04	3:05 AM	7:19 AM	5:04 PM	9:45	3:05 AM
16-Dec	7:10 AM	5:08 PM	9:58	3:10 AM	7:28 AM	5:04 PM	9:36	3:05 AM
30-Dec	7:16 AM	5:14 PM	9:58	3:15 AM	7:33 AM	5:09 PM	9:36	3:10 AM