

D's Notes

010421

Starting Onion Plants Indoors

It can be difficult to find specific onion varieties in sets or transplants, so growing from seed may be a preferred option. Onions are one of the first plants to be seeded for transplanting because this crop takes a significant amount of time (6 to 8 weeks) to reach transplant size and because they can be set out relatively early (late March in much of eastern and central Kansas). Therefore, we want to start onions in mid- to late-January. Onion seed should be placed ½ to ¾ inch apart in a pot or flat filled with a seed starting mix.

Place the container in a warm (75 to 80 F) location until young seedlings emerge. Move to a cooler location (60 to 65 F) when the seedlings are 1 to 2 inches tall. Make sure they have plenty of light, using florescent or LED lights if needed. Start fertilizing when the seedlings reach 2 to 3 inches tall using a soluble fertilizer with each or every other watering.

Onion seedlings tend to be spindly with the remains of the seed sticking to the end of a leaf for several weeks. Encourage stockiness by trimming the ends of the leaves when the plants reach 4 to 5 inches tall. Start hardening off the onions in early March by moving the plants to a protected outdoor location. You may have to move them inside temporarily to protect them from extreme cold snaps. (Ward Upham)

Starting Garden Transplants from Seed

January is often a cold and dreary month for many gardeners. However, planning for and starting vegetables and flower transplants from seed can make this a much more interesting time of year.

Following are the steps needed to be successful in seed starting.

Purchase Recommended, Quality Seed: Start by taking a look at our recommended varieties at <http://www.bookstore.ksre.ksu.edu/pubs/L41.pdf> . These plants have proven themselves across the state of Kansas and this is a good place to start when deciding what to plant. However, also talk to your neighbors, friends and your local garden center about what has worked well for them.

Obtain your seeds from a reputable source including garden centers and seed catalogs. If choosing seeds from a business that does not specialize in plants, pay special attention to the package date to make sure the seed was packaged for the current year. Though most seed remains viable for about 3 years, germination decreases as seed ages. Also, this allows you to keep the seed for a longer period of time with an expectation of good germination. See the accompanying article on using old garden seed for more detailed information.

Determine the Date to Seed: There are two pieces of information that needs to be known in order to determine the date to seed transplants: the target date for transplanting outside and the number of weeks needed to grow the transplant. There is

a companion article in this newsletter listing common plants and the number of weeks needed to grow a transplant.

The target date for transplanting the cool-season crops such as broccoli, cabbage, cauliflower and onions are the end of March to the beginning of April. Warm-season crops like tomatoes, peppers and most annual flowers are usually planted about May 10 in Manhattan. Northern Kansas may be a week or so later than Manhattan and southern Kansas a week or so earlier.

Sowing Seed: Do not use garden soil to germinate seed as it is too heavy and may contain disease organisms. Use a media made especially for seed germination.

Keep Seed Moist: Seed must be kept moist in order to germinate. Water often enough that the media never dries. Using a clear plastic wrap over the top of the container can reduce the amount of watering needed. Remove the wrap after the seedlings emerge.

Light: Most plants will germinate in either darkness or light but some require darkness (Centurea, Larkspur, Pansy, Portulaca, Phlox and Verbena) and others require light (Ageratum, Browallia, Begonia, Coleus, Geranium, Impatiens, Lettuce, Nicotiana, Petunia and Snapdragon).

All plants require adequate amounts of light once emergence occurs. South facing windows may not provide adequate amounts and so fluorescent or LED fixtures are often used. Suspend fluorescent lights 2 to 4 inches above the top of the plants. LED lights are much more variable. Use LED lights that are designed to grow plants and follow the manufacturers recommendations. Regardless of the type of light used, leave the lights on for 16 hours each day.

Temperature: The temperature best for germination is often higher than what we may find in our homes especially since evaporating moisture can cool the germination media. Moving the container closer to the ceiling (top of a refrigerator) can help but a heating mat is best for consistent germination. A companion article lists common plants and their optimum germination temperature. After plants have germinated, they can be grown at a cooler temperature (65 to 70 degrees during the day and 55 to 60 degrees at night). This will help prevent tall, spindly transplants.

Plant Movement: Plants react to movement. Brushing over the plants with your hand stimulates them to become stockier and less leggy. Try 20 brushing strokes per day. However, brushing will not compensate for lack of light or over-crowding. Plants grown under inadequate light will be spindly regardless of any other treatment.

Hardening Transplants: Plants grown inside will often undergo transplant shock if not hardened off. Plants are hardened off by moving them outside and exposing them to sun and wind before transplanting occurs. Start about two weeks before transplanting and gradually expose the plants to outside conditions. Increase the number of hours and degree of exposure over the two-week period. (Ward Upham)

Using Old Garden Seed

Seed stores best if kept in a cold, dark, dry location. Most types of seed will remain viable for about 3 years under these conditions though there are exceptions. For

example, members of the carrot family (carrots, parsnips and parsley) are short-lived and are usually good for only 1 to 2 years. If you are unsure of viability and have plenty of seed, there is an easy method of determining how good your seed is.

Place 10 seeds on a paper towel moistened with warm water and cover with a second moistened towel. Roll up the towels and place inside a plastic bag with enough holes for air exchange but not so many that the towels dry quickly. Place the bag in a warm place such as the top of a refrigerator. Remoisten towels with warm water as needed. After the first week, check for germination. Remove sprouted seed and check again after another week. Add these numbers together to determine the percent germination. (Ward Upham)

Vegetables and Flowers Seeding Table

The following information was adapted from a North Carolina State Publication titled "Starting Plants from Seeds" which is no longer available.

<u>Plant</u>	<u>Planting Date*</u>	<u>Temperature**</u>
<u>Ageratum</u>	<u>8</u>	<u>70</u>
<u>Alyssum</u>	<u>8</u>	<u>70</u>
<u>Aster</u>	<u>6</u>	<u>70</u>
<u>Balsam</u>	<u>6</u>	<u>70</u>
<u>Begonia</u>	<u>12 or more</u>	<u>70</u>
<u>Broccoli</u>	<u>8</u>	<u>70</u>
<u>Browallia</u>	<u>12 or more</u>	<u>70</u>
<u>Cabbage</u>	<u>8</u>	<u>70</u>
<u>Cauliflower</u>	<u>8</u>	<u>70</u>
<u>Celosia</u>	<u>8</u>	<u>70</u>
<u>Centuria</u>	<u>6</u>	<u>65</u>
<u>Coleus</u>	<u>8</u>	<u>65</u>
<u>Cosmos</u>	<u>4 or less</u>	<u>70</u>
<u>Cucumber</u>	<u>4 or less</u>	<u>85</u>
<u>Dahlia</u>	<u>8</u>	<u>70</u>
<u>Dianthus</u>	<u>10</u>	<u>70</u>
<u>Eggplant</u>	<u>8</u>	<u>70</u>
<u>Geranium</u>	<u>12 or more</u>	<u>70</u>
<u>Impatiens</u>	<u>10</u>	<u>70</u>
<u>Larkspur</u>	<u>12 or more</u>	<u>70</u>
<u>Lettuce</u>	<u>8</u>	<u>70</u>
<u>Marigold</u>	<u>6</u>	<u>70</u>
<u>Muskmelon</u>	<u>4 or less</u>	<u>85</u>
<u>Nicotiana</u>	<u>8</u>	<u>70</u>

<u>Pansy</u>	<u>12 or more</u>	<u>65</u>
<u>Pepper</u>	<u>8</u>	<u>80</u>
<u>Petunia</u>	<u>10</u>	<u>70</u>
<u>Phlox</u>	<u>8</u>	<u>65</u>
<u>Portulaca</u>	<u>10</u>	<u>70</u>
<u>Snapdragon</u>	<u>10</u>	<u>65</u>
<u>Squash</u>	<u>4 or less</u>	<u>85</u>
<u>Stock</u>	<u>10</u>	<u>70</u>
<u>Tomato</u>	<u>6</u>	<u>80</u>
<u>Verbena</u>	<u>10</u>	<u>65</u>
<u>Vinca</u>	<u>12 or more</u>	<u>70</u>
<u>Watermelon</u>	<u>4 or less</u>	<u>85</u>
<u>Zinnia</u>	<u>6</u>	<u>70</u>

* Number of weeks before transplanting to start seed.

** Temperature in degree F

(Ward Upham)

Cold Stress in Cattle

Most cattle producers appreciate that cold weather increases nutrient requirements. However, what increases? And by how much? Cattle are most comfortable within the thermoneutral zone when temperatures are neither too warm nor cold. The upper and lower boundaries of the thermoneutral zone are referred to as the upper and lower critical temperature.

During the winter months, cattle experience cold stress anytime the effective ambient temperature, which takes into account wind chill, humidity, etc., drops below the lower critical temperature. The lower critical temperature is influenced by both environmental and animal factors including hair coat and tissue insulation (body condition).

The table below lists the estimated lower critical temperatures of cattle in good body condition with different hair coats. In wet conditions cattle can begin experiencing cold stress at 59°F, which would be a relatively mild winter day. However, if cattle have time to develop a sufficient winter coat the estimated lower critical temperature under dry conditions is 18°F.

Estimated lower critical temperatures for beef cattle	
Coat Condition	Critical Temperature
Wet or summer coat	59°F
Dry fall coat	45°F
Dry winter coat	32°F
Dry heavy winter coat	18°F

Cold stress increases maintenance energy requirements but does not impact protein, mineral or vitamin requirements. The general rule of thumb (for a cow in good body condition, BCS = 5 or greater) is to increase the energy density of the ration by 1% for each degree (Fahrenheit) below the lower critical temperature. The classic response to cold stress in confinement situations is an increase in voluntary intake. However, it has been documented that cattle maintained in extensive environments (native range, wheat pasture, corn stalks) may spend less time grazing as temperatures decline below freezing, which reduces forage intake (Adams et al., 1986) and makes the challenge of meeting the cow's nutrient requirements even greater. In many cases feeding a greater amount of low-quality hay will replace grazed forages but may not provide sufficient energy. Therefore, providing additional energy by feeding a higher quality hay or fiber-based supplement (DDGS, Corn gluten feed, or Soybean Hulls) may be required.

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