



## Red Chinese Cabbage (*Brassica rapa* var. *pekinensis*)

Red Chinese cabbage varieties have recently been introduced into production in North America. Although grown in a manner similar to green Chinese cabbages, red Chinese cabbages have some specific cultural requirements that need to be met for successful results.

Two critical cultural requirements are that transplanting be timed correctly and, for best results, that internal tipburn be managed with applications of foliar calcium. The amount of available calcium in your soil may also have a bearing on internal tipburn. Recommendations for transplanting dates and tipburn management are noted below.

### SITE SELECTION & CROP CARE

Chinese cabbage produces the best crops when planted in full sun, in well-drained, fertile soil with a pH of 6.0–7.5. To maintain steady growth, the crop should be well fertilized and irrigated in dry weather. Plants should be provided the equivalent of 1 inch of water per week.

### TRANSPLANTING

Chinese cabbage performs best in the gradually decreasing day length and temperatures of late summer. Spring-planted crops require extra maintenance to prevent bolting.

Following the recommended transplant dates and temperatures noted below, sow 2 seeds per cell in 72-cell plug flats, ¼" deep. Ensure good light and keep temperature at 75–85°F/24–30°C until germination, then reduce air temperature to 60–70°F/16–21°C. Transplant to the field when seedlings are 3–5 weeks old, taking care not to disturb the roots. Space plants every 12–18", in rows 18–30" apart.

### TRANSPLANTING DATES

Red Chinese cabbage is more sensitive to high temperatures when forming heads than green varieties of Chinese cabbage. If seedlings are repeatedly exposed to temperatures above 80°F/27°C during the period of head formation (6–8 weeks post-transplant), head formation can be impeded or prevented. The exact timing of transplanting depends on the planned season of harvest.

#### Spring sowing for summer crops

Start seedlings 3–5 weeks prior to your last frost date. Transplant only after the last frost has occurred. Seedlings exposed to frost or to more than a week of nighttime temperatures below 50°F/10°C may bolt prematurely.

#### Summer sowing for fall crops

Start seedlings in mid to late summer, timing so the crop will mature in the cool days of fall. Temperatures exceeding 80°F/27°C in the first 6 weeks post-transplanting do not appear to affect head formation.

Ideally, transplanting can be timed to meet following temperature regime:

Weeks Post-Transplant	Min. Temp.	Max. Temp.
1–4	50°F/10°C	82°F/28°C
4–6	50°F/10°C	73°F/23°C
6–8	40°F/4°C	70°F/21°C

## TIPBURN MANAGEMENT

Red Chinese cabbages are much more susceptible to internal tipburn than green varieties. Because it begins with browning and eventual decay of the inner leaves, the only way to diagnose internal tipburn is to cut open the head.

Tipburn is more problematic during hot, dry periods but can occur at any time during the growing season. In Korea, where red cabbage varieties are grown and bred, tipburn has been managed successfully with the application of foliar calcium 3 times during the growing period. Calcium applications are recommended at 25, 30, and 35 days post-transplanting. It is critical to apply the calcium before the heads form; once the heads form the spray cannot reach the inner leaves of the head and will be ineffective.

The recommended application rate is 200 parts per million (ppm). Nutri-Cal Concentrate is liquid calcium supplement suitable for use in a foliar spray. As a concentrated liquid product, it needs to be diluted prior to application. To achieve 200 ppm, use 2 $\frac{2}{3}$  teaspoons Nutri-Cal per gallon of water, or 3 $\frac{1}{3}$  milliliters per liter of water. Other calcium-based products suitable for foliar application can also be used.

**Note:** Application of foliar calcium reduces the possibility but does not guarantee the elimination of tipburn.

While we have had success growing red Chinese cabbage crops at Johnny's Research Farm without foliar calcium spray, its use has reduced the occurrence of tipburn.

## DISEASES

To control diseases, adhere strictly to a preventative program that includes long crop rotations (at least 3 years) with non-cruciferous crops, clean starting mixes, and strict sanitation practices. Should disease occur in your crop, have an infected specimen tested to positively identify the disease.

Black rot is a common disease of Chinese cabbage, causing yellow lesions on the leaves in its earliest stages. As the disease progresses, the affected leaves may die and turn brown to black. Applications of copper fungicides may offer some control. Black rot can be seedborne; Johnny's only stocks seeds lots that have been tested free of black rot in a sample of 30,000 seeds.

## PESTS

The best insect pest control on young plants is achieved with floating row covers, which prevent pest access when correctly put in place on the day of transplanting. If heavy pressure from flea beetles is observed, treat with azadirachtin or pyrethrin. Cabbage worms can be controlled with *Bacillus thuringiensis* (B.t.). The presence of cutworms can be prevented by cultivating the soil 2–4 weeks before transplanting seedlings, to work in any cover crops and destroy weeds.

## HARVEST AND STORAGE

Heads can be harvested 9–10 weeks post-transplant. Cut heads when very firm. A light frost (temperatures falling to 32°F/0°C), will not damage the heads of a fall crop, but the crop should be harvested before a heavy frost (temperatures falling to 24°F/-4°C).

Heads can be stored for 1–2 month in near-freezing, humid conditions, in a cooler or root cellar, if trimmed and wrapped in newspaper.