



## Kale - Introduction

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Kale (*Brassica oleraceae var acephala*), commonly known as Sukumawiki, is a cool season crop that belongs to the Brassicas family. Its leaves, which are rich in vitamins and essential mineral elements are widely utilized alone or mixed with other vegetables, pulses or meat. It is an all-year crop and has the potential to reduce poverty levels.

The demand for kales is usually very high because of their benefits, which include the following;

- High in iron which is essential for good health, e.g. in formation of haemoglobin and enzymes, cell growth, proper functioning of the liver, among others.
- Rich in vitamin K which helps in protecting the body against various cancers and is also necessary for a wide range of bodily functions.
- High in fibre, low in calorie and zero fat
- Has anti-inflammatory properties which helps in fighting against asthma, arthritis and autoimmune disorders
- Rich in antioxidants, e.g. flavonoids and carotenoids which protect the body against various cancers.
- Rich in vitamin A and C
- Good source of calcium which helps in preventing osteoporosis, bone loss and maintaining a healthy metabolism.
- Rich in zeaxanthin and lutein which are powerful nutrients which protect the eyes

### Kale: Testing the learning: Introduction

- Kale has many benefits? True / False
- Kale can be grown all year. True/False

### Kale: Micro Jobbing: Introduction

Tell us about your growing conditions.

- What is the prevailing wind?
- What are the normal temperatures during your growing program?



## Kale – Ecological Requirements

Kale is grown in a wide range of climatic conditions provided water is available.

Soils	Temperature	Rainfall
<ul style="list-style-type: none"> <li>Performs best in well drained soils which are rich in organic matter with a pH of 5.5-7.5.</li> <li>Kale can tolerate slightly alkaline soil and frost.</li> </ul>	<ul style="list-style-type: none"> <li>Requires an optimum temperature range of 16-21°C</li> <li>It requires at least 6 hours of direct sunlight daily and prefers plentiful, consistent moisture.</li> </ul>	<ul style="list-style-type: none"> <li>The crop requires sufficient amounts of moisture throughout the season.</li> <li>A well distributed rainfall of 30-500mm is ideal for optimum yield.</li> <li>Irrigation is recommended if rainfall is inadequate.</li> <li>Some varieties are drought tolerant.</li> </ul>

Growing Kale	
Plant In	Feb-May; Aug-Sept
Sun/Shade	Full Sun
Planting Depth	1/2"
Space Seeds	2"
Days to Germinate	7-10 days
Days to Maturity	Approx. 48

### Kale: Testing the learning: Ecological Requirements

- This crop requires an optimum temperature range of 16-21°C. True/False
- This crop requires sufficient amounts of moisture throughout the season. True/False

### Kale: Micro Jobbing: Ecological Requirements

- Log and record temperatures
- Have you tested your soil?



## Kale – Soil Preparation

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Kale does best in full sun, but does tolerate partial shade. Based on the soil test, amend your soil with nitrogen-rich compost or blood meal. (If you didn't test your soil, mix in a few inches of compost). Soil needs to drain well and also be enriched for tender leaves.

- To prepare your soil for kale, enhance your soil with fertilizer.
- Clear all the weeds.
- Kale doesn't do as well in clay-like soils, so make sure you're loosening up the soil before planting.
- Kale tends to like nitrogen, but keep in mind the pH level.
- Use things like compost, lime, and blood meal to adjust your acidity to an appropriate concentration.

### **Kale: Testing the learning: Soil Preparation**

- Seedbeds should be weed free. True/False
- Clay like soil is not liked by Kale. True/False

### **Kale: Micro Jobbing: Soil Preparation**

- Take a picture of the land before you start preparing it.
- Take a picture of the land once you have made it ready to start planting.
- Send us a short video of how you have prospered you land.



## Kale – Planting

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Kale is easy to grow because it tolerates cold, is disease resistant, and is less troubled by pests than other brassicas. It grows up to 1m tall and is cultivated for its leaves, which grow from a central stem and are picked from the bottom upwards, always leaving the top four leaves as the growing crown. As the stem becomes denuded of leaves, space is created for other veggies to be grown at its base, making it a real space saver in small gardens. It can also be sown in August and September as a spring crop.

### Kale's requirements

- Kale grows best in fertile, well-composted soil that is slightly acidic.
- Full sun is ideal, but plants also tolerate partial shade.
- Space seedlings 45-50cm apart and in rows 60cm apart.
- Regular, plentiful water is essential if the leaves are to be sweet and tender.
- Feeding monthly with a nitrogenrich fertiliser will also boost leaf production and quality.
- Mulch around the plants for weed control and soil insulation in winter.
- As the plants grow, draw the soil up around the stems to support them.



### Kale: Testing the learning: Planting

- Space seedlings 45-50cm apart and in rows 60cm apart. True/False
- Kale can be sown in August and September. True/False

### Kale: Micro Jobbing: Planting

- Take a picture of the varietal you are growing.





## Kale – Weed and Pest control

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- Kale is a member of the cabbage family, which is notorious for rot diseases and attracting insect pests.
- It is susceptible to black rot and clubroot, as well as aphids, cabbage loopers, cabbageworm, cutworms, flea beetles, and slugs.
- The best defence is to monitor the plants often for signs of eggs or feeding, such as holes in the leaves.
- Treat problems as soon as they arise.



Cutworm



Aphid



Cabbage maggot

### Weeds

Are controlled mechanically or by hand as well as chemically through the application of registered herbicides. Mechanical cultivation should be done during land preparation until the plants are about half-grown. The first cultivation should be done two to three weeks after transplanting.

- Weeds provide a habitat for insects, nematodes, and diseases and can reduce the efficacy of spray-applied pest control materials by interfering with pesticide deposition.
- A number of shallow cultivations are an essential part of a weed control programme.
- Good weed control requires integration of cultural and chemical methods.
- Crop rotation - it essentially involves growing different groups of crops on the same piece of land in successive years.
- Stale seedbed is a technique whereby the planting bed is made early, under dry conditions, water may be applied, and weeds are allowed to germinate and grow.
- For weeds that escape and grow close to the crop, hoeing can be used as a control option.
- Between-row cultivation is an important method of cultivation. This can be done on a regular basis.
- Care must be taken to avoid fields where herbicide residue from previous years persists in the soil as crop injury may occur.

### Kale: Testing the learning: Weed and Pest Control

- Good weed control is necessary for successful Kale production, and it is particularly important to control early emerging weeds. True / False
- Are you using chemicals? Yes / No
- Which method of pest control are you using?

### Kale: Micro Jobbing: Weed and Pest Control

- Relook at the plan with your agent and plan for chemicals.
  - This plan must include which of the chemical you will use and when.
  - Have you grown this crop before?
  - What insects do you see when you grow in your crop?
  - Take a picture if you can and show it to your agent.
  - With your growing plan agree with your agent which pesticide to use if you see the insects. Wherever possible, only put the pesticide on the bug and not all over the plant.



## Kale – Harvesting

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- Somewhere between two and three months after sowing is when you should be able to begin harvesting.
- Kale can be hand harvest.
- As a general rule, the plant should be at least 15cm - 21cm tall.
- Remember to pick from the lowest part of the plant and never to pick the crown leaves at the very centre.
- The stems are also edible, particularly if you steam them to make them tender.
- You can continue to harvest over months, especially after a frost that will make the leaves sweeter to the taste.
- Store leaves in a plastic bag in the fridge for up to 5 days before eating.

### **Kale: Testing the learning: Harvesting**

- Can I hand harvest this crop? Yes/No
- Kale should be between 15 -21cm before harvesting? True/False

### **Kale: Micro Jobbing: Harvesting**

- When your crop is ready for harvesting, take a photo of the crop before harvesting.
- Send us a short video of your method of harvesting, explaining and how proud you are of your harvest.



## Kale – FAQ

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1. What is the best time to plant kale?
  - a. Kale is a cool weather crop, so it grows best in the spring and fall and in locations where it can receive plenty of sunlight. In the spring, you can plant seeds outside immediately after the last frost. At this point, the soil will have warmed enough for germination to occur.
2. What can you not plant near Kale?
  - a. Varieties include lacinato, red Russian, and dinosaur kale. Avoid planting kale with other brassicas (like broccoli, kohlrabi, cauliflower, brussels sprouts, and Swiss chard), as they can fall prey to the same pests and diseases.
3. Will Kale regrow after cutting?
  - a. If you harvest kale correctly, the plant will continue to grow and produce leaves. If you harvest it incorrectly, the plant will stop growing. ... If you cut the plant off at the top or harvest the smaller leaves growing in the centre, it is very likely that you will kill the plant.
4. What does Kale like to grow with?
  - a. If you're growing during warmer temps, plant in partial shade. Kale is buddy-buddy with beets, celery, cucumbers, herbs, onions, spinach, chard, and potatoes. It isn't happy growing next to beans, strawberries, or tomatoes. Keep soil moist to encourage consistent growth.
5. Should I let my kale flower?
  - a. Just harvest regularly and you shouldn't have a problem. That said, aphids are also fond of kale flowers. When a Kale plant does mature enough to begin flowering, you can make an exception to the chop-from-bottom-only rule and remove the flowers – before they attract aphids.
6. Does Kale come up every year?
  - a. Kale normally is grown as an annual even though kale actually has a biennial life cycle that takes two years to complete. In the first year, kale produces an abundance of leaves.
7. How long will a kale plant live?
  - a. If - and that's a big if - you live in an environment where the kale can survive, it could live for multiple years - I've heard of it living more than five years. That said, kale is a biennial meaning it flowers the second year (like carrot) and typically is grown as a food source as an annual.