



OUTSTANDING QUALITIES


- ◆ EXCELLENT UNIFORMITY AND HEAD SHAPE
- ◆ STRONG VIGOUR AND RELIABLE PERFORMANCE IN WARM CONDITIONS
- ◆ SEMI-DOME SHAPED HEAD WITH FLAT BASE
- ◆ INTERMEDIATE RESISTANCE TO FUSARIUM WILT

Penetrate is a true Salinas-type iceberg that combines strong field performance and exceptional uniformity. It shows vigorous growth and reliable head formation, even under warm or challenging conditions. The plants produce attractive semi-dome shaped heads with a flat base, ideal for efficient packing and processing. With intermediate resistance to Fusarium wilt race 1 and 2 **Penetrate** delivers consistency, resilience and dependable yield performance across diverse growing regions.

SPECIAL VARIETAL REQUIREMENTS

- Don't plant out of slot times
- Contact area representative for a sowing guide

CHARACTERISTIC	PENETRATE
KIND	Lettuce (<i>Lactuca sativa</i> L. var. <i>capitata</i> L)
TYPE	Iceberg lettuce
MATURITY	Approximately 55 - 65 days from transplant to harvest
SEASON	Harvest in late summer, early autumn and through spring
HEAD SIZE	Large
HEAD COLOUR	Green
ATTACHMENT	Medium
DISEASE	Intermediate resistance: <i>Fusarium wilt race 1 and 2</i> (Fol:1-2)
BOLTING REACTION	Slow
UNIFORMITY	Very good
MARKETS / END USE	Prepack and processing
POPULATION GUIDE	Hydroponic production: 80 000 - 100 000 plants/ha (30 cm in row, 45 cm between rows) Open field production: 60 000 - 70 000 plants/ha (30 cm in row, 60 cm between rows)
SPECIAL FEATURES	Exceptional uniformity and strong performance, even under warm conditions.

* Characteristics given are affected by production methods such as soil type, nutrition, planting population, planting date and climatic conditions. Please read disclaimer.
 **WARNING: VARIETY PROTECTED UNDER PLANT BREEDERS RIGHTS. UNAUTHORIZED MULTIPLICATION AND/OR MARKETING OF SEED PROHIBITED.**

Disclaimer: This information is based on our observations and/or information from other sources. As crop performance depends on the interaction between the genetic potential of the seed, its physiological characteristics, and the environment, including management, we give no warranty express or implied, for the performance of crops relative to the information given nor do we accept any liability for any loss, direct or consequential, that may arise from whatsoever cause. Please read the Sakata Seed Southern Africa (Pty) Ltd Conditions of Sale before ordering seed.
Resistance: is the ability of a plant variety to restrict the growth and development of a specified pest or pathogen and/or the damage they cause when compared to susceptible plant varieties under similar environmental conditions and pest or pathogen pressure. Resistant varieties may exhibit some disease symptoms or damage under heavy pest or pathogen pressure (HR = High resistance, IR = Intermediate resistance).

* **Experimental:** This variety does not appear on the current South African Variety list, but has been submitted for registration.

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GENERAL TIPS FOR LETTUCE PRODUCTION

Crisp head or Iceberg lettuce (*Lactuca sativa* L. var. *capitata*) description

Crisp head is the principal lettuce type grown in South Africa. Even though the market depends on season and availability, a large firm head with a decent cover leaf is usually required. Outside leaves of icebergs are dark green with either a dull or bright cast. Inner foliage is either whitish or creamy yellow. The heads are firm to hard with a crisp texture (from here the name crisp head). The taste is usually mild to sweet. These lettuce heads are either packaged as single heads (pre-packs) or in boxes.

Leaf lettuce (*Lactuca sativa* L.) description

Leaf lettuce varies in size and colour, with leaves characteristically forming a bunch or rosette. Leaves can be long or broad, round, spatulate or lobed, frilled or smooth, dark or light green or in some cases, red. Because of its open growth habit, leaf lettuce has fewer bleached leaves than the crisp types. Leaf lettuce has a higher vitamin and mineral content than crisp lettuce and because the leaves are more exposed to sunlight, a much higher proportion of green leaves are found.

Disease reaction definitions:

Resistance: is the ability of a plant variety to restrict the growth and development of a specified pest or pathogen and/or the damage they cause when compared to susceptible plant varieties under similar environmental conditions and pest or pathogen pressure. Resistant varieties may exhibit some disease symptoms or damage under heavy pest or pathogen pressure. Two levels of resistance are defined:

High/standard resistance (HR): plant varieties that highly restrict the growth and development of the specified pest or pathogen under normal pest or pathogen pressure when compared to susceptible varieties. These plant varieties may, however, exhibit some symptoms or damage under heavy pest or pathogen pressure.

Moderate/intermediate resistance (IR): plant varieties that restrict the growth and development of the specified pest or pathogen, but may exhibit a greater range of symptoms or damage compared to resistant varieties. Moderately/intermediately resistant plant varieties will still show less severe symptoms or damage than susceptible plant varieties when grown under similar environmental conditions and/or pest or pathogen pressure.

Bolting of lettuce

Bolting refers to the plant flowering and producing seed prematurely. In a lettuce crop, this would result in the produce being unmarketable. The following factors can cause bolting:

- Wrong sowing time
- Cold temperatures, especially below 7°C
- Excessive fertilization of seedlings
- Cold grown seedlings
- Oversized seedlings at transplant
- Difference in temperatures between seedling nursery and farm
- Stress caused by heat, drought, waterlogging and disease
- Diurnal temperature swings

Mixes for pillow packing

This trend is developing all over the world and is expected to become increasingly popular. Mesclun mixed greens are packed in plastic bags that are inflated and sealed to create a pillow. Mesclun is the term for fresh, tender greens combined for their textures, flavours and colours grown and marketed together. Pillow packing ingredients includes half a dozen, or more, of any of the following lettuces as well as other crops: Crisp head, butter head, cos, leaf, red leaf and other lettuces mixed with other crops such as endive, sorrel, spinach, parsley, watercress, chives, garlic chives, fennel, chicory, baby corn, mustard, spring onion and blossoms (pak choi, borage and violets).

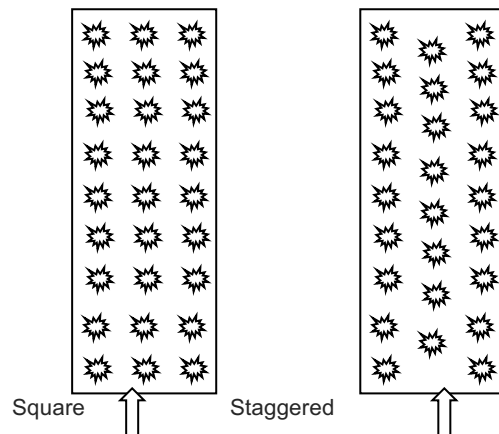
Seedling production

Seedlings must be strong, uniform and healthy. A weak seedling never grows into a strong, productive plant. Seed trays with 200 holes are generally used for lettuce. The seed requires light and temperatures of around 24°C to germinate. Germination is poor at temperatures above 27°C. Seedlings will be ready for transplanting in 3.5 - 4 weeks if the temperature is optimal or 5 - 6 weeks under cool conditions.

Spacing and plant population in Gravel Flow Technique systems

Lettuce spacing depends on the hydroponic system used, type of lettuce grown, variety as well as the specific climatic conditions. Certain crisp head varieties will produce smaller pre-pack heads whereas other varieties can produce very large heads. Because of these reasons, it is difficult to give the exact spacing of lettuce. Lettuce seedlings can be planted in either a square or staggered formation as illustrated below:

Planting method



Many lettuce varieties can be spaced at approximately 30 x 30 cm between plants. That would result in approximately 90 plants in a bed of 1 m wide and 10 m long. This would probably differ from variety to variety. The plant population in hydroponic systems are usually higher than in open field lettuce production.

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