



SQUASH 2008-2009

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www.sg-vegetables.com

The key players in your future



Passion for innovation



S&G SQUASH



S&G A passion for innovation

S&G is the name of Syngenta's brand for vegetable seeds in Europe, Africa, the Middle East and Asia, and for seeds and young flowering plants throughout the world.

Syngenta is committed to developing sustainable agriculture, implementing intensive and highly innovative research combined with the use of avant-garde technologies. This is why the company invests over 10% of its turnover in Research & Development.

The Product Development Centres are located in major production areas, in order to ensure quality, increase security and in this way achieve Syngenta's key objective: to fully satisfy each operator all the way along the chain, from farmers to consumers.

S&G has teams of professionals dedicated to squash, providing extensive in-house knowledge and individual know-how in the following areas:

- Product Development
- Seed Production
- Marketing
- Sales



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Innovation and development for high quality products

Research and Development

Specialised work groups are engaged in the creation and development of new products which are capable of meeting market demands.

This approach to quality also includes screening of the best agronomic characteristics available among all the crossbreds in the core market segments. Pathologists also have a key role to play with their studies aimed at developing resistance to disease and harmful insects.

The result of this intensive research is the wide range of innovative products we offer, developed and tested in the main production areas in Europe.

Seed production

Teams dedicated to squash are constantly searching for innovative solutions to supply the highest levels of quality and reliability in the production and supply of seeds.

Marketing

The S&G marketing structure focuses on a strategy that seeks to combine information about the global market, thanks to the presence of the Product Business Manager, with a profound knowledge of local market needs and consumer trends, through the support of Key Account Managers and Product Managers. The Marketing team works to identify the requirements of the major markets and the most important production areas, and to determine agronomic and organoleptic characteristics; this information is the basis from which researchers develop the most suitable and innovative squash varieties.

Sales

Specialised sales teams operate in the major squash markets in Europe, Africa and the Middle East, and their aim is to provide innovative and targeted solutions for every segment of the nursery owner supply chain, professional growers and the industry in general.

Satisfaction of the most demanding customers

In an ever-evolving market, new varieties of vegetables have to combine excellent agronomic performance with an attractive and palatable appearance, and they must deliver the quality characteristics demanded by consumers. S&G is strongly committed to developing corporate strategies that involve the entire chain, ensuring production of the highest quality vegetables which are able to respond to market trends and meet the requirements of the most demanding consumer.



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White - very light

Pearly-white or very light green fruits, which can be elongated and cylindrical or remain shorter with a profile that extends into a club shape.

Defined as “Lebanese type”, they are mainly cultivated and consumed in the lower Mediterranean, North Africa and the Middle East.

In Italy, they are mainly consumed in Piedmont, Liguria and the area around Bologna.

Besides these areas, they are also cultivated in Calabria and a small area in Sicily.

Cylindrical fruit

Otto

A vigorous and rustic plant, with wide and slightly lobated shielding leaves. This variety has been a popular choice for years in the traditional areas of white zucchini cultivation, thanks to its **reliability and yield**, together with its genetic resistance to viruses and powdery mildew. In addition to open field cultivation, the plant also responds well to greenhouse cultivation in intermediate spring and autumn periods, achieving good productivity levels.

Benefits

GROWER - INTEGRATED PRODUCER

- Rusticity and consistent productivity levels

GROWING GUIDELINES

- Open field cultivation
- Protected cultivation in spring and autumn

Intermediate/Average Resistance (IR): Gc / Px / WMV / ZYMV



White - very light



Cylindrical fruit



Albifio

A small, open plant, with deeply cut leaves that make it very easy to harvest. Good resistance to a wide range of viruses, as well as powdery mildew, makes for first-rate rusticity and adaptability to various areas of cultivation.

This hybrid is characterised by its prolific and generous yield and shows a tangible response to fertilisation. The cylindrical club-shaped fruit, which is a shiny pale green colour, is very easy to harvest. Thanks to strong attachment and **the quality of the flower**, it can be marketed with or without the flower.

Intermediate/Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Resistance and fruit quality

GROWING GUIDELINES

- Open field cultivation
- Marketing of fruits with/without flowers



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White - very light



Cylindrical fruit



Carisma

A very beautiful plant of erect habit, well-balanced and open, with short internodes. Early commercial yield and easy to harvest, with shiny, very pale green tending towards white, slightly club-shaped fruits. The plant is appreciated for its high and continued productivity, and for many years it has been **the leading variety** in the category of “**open field white zucchini**”.

Good genetic resistance makes it ideal for all areas of cultivation in this category.

Intermediate/Average Resistance (IR): Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Yield

GROWING GUIDELINES

- Open field cultivation in spring, summer and autumn



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White - very light



Cylindrical fruit

Tulsa

A medium-early variety suitable for open field cultivation, which can also be grown in late autumn. Healthy and vigorous plant, with semi-erect habit thanks to its short internodes.

Slightly club-shaped fruit, similar to the Carisma variety, but with a **light green** and less white colour.

Intermediate/Average Resistance (IR): Gc / Px / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Rusticity and quality of fruit

GROWING GUIDELINES

- Open field in spring, summer and autumn.



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White - very light



Club fruit

Shorouq **new**

A vigorous plant, with wide covering leaves and frequent white spots.

Thanks to its genetic resistance and vigour, Shourouq is a reliable choice for all kinds of open field cultivation, even in the most difficult conditions.

High yield potential, club-shaped fruit with a shiny pale green colour and widespread freckles, **rather similar to the classic “Bolognese” type.**

Intermediate/Average Resistance (IR) : Gc / Px / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Quality of fruit and yield

GROWING GUIDELINES

- Open field in summer and autumn



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Speckled - Grey

Traditional zucchini in various areas of Italy around the Ligurian/Tyrrhenian coast, from Liguria down to Tuscany, Lazio and Campania; propagated in the past by means of numerous local non-hybrid varieties. Cylindrical fruits, slightly club-shaped, or club-shaped, all characterised by an intermediate grey-green colouring, created by a pale green base with spotted or darker longitudinal marbling. Stripes and ribbing are sometimes visible. This category also comprises the Italian specialities, such as the “Fiorentino” or “Romanesco” types, which have gained in importance over the years.

Altea

An ancestor of this striped type squash, with light green fruit, slightly striped and ribbed. Plant of medium vigour with open habit, weak apex dominance and good development of numerous fruit buds.

Good yields and constant continuous productivity. In order to obtain the best from this plant, it is essential to provide good fertilisation and adequate nutritional elements.

Cylindrical fruit, popular large commercial size (20-22 cm), very attractive and extremely long-lasting flowers, even in post-harvest.

The variety is sensitive to plant regulators and it is advisable to use them with care.

Altea is propagated in all the areas where variegated-striped zucchini is cultivated, in particular along the Tyrrhenian coast, from Piedmont to Tuscany, Lazio and Campania.

Benefits

GROWER - INTEGRATED PRODUCER

- Yield and fruit quality

GROWING GUIDELINES

- Open field and protected cultivation





Isotta

Rustic and **compact plant, characterised by medium vigour** and strongly cut leaves with small lamina.

The erect and open habit facilitates the harvest of the cylindrical fruits, which are pale and lightly striped, with an attractive, long-lasting flower. Very high yield potential.

Benefits

GROWER - INTEGRATED PRODUCER

- Yield and compact plant

GROWING GUIDELINES

- Open field and protected cultivation





Lipari

Compact and balanced plant of erect habit, with rather short internodes. Due to its health and rusticity features, it adapts well to difficult cultivation conditions and to areas subject to high viral pressure.

The fruits are similar to those of the “Altea” variety, cylindrical but slightly club-shaped, with a light green colour and delicate variegation. **The large, attractive flowers are firmly attached to the fruit.**

Fruits are harvested and marketed with their flowers.

Intermediate/Average Resistance (IR): WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Quality of fruit and health

GROWING GUIDELINES

- Open field (spring, summer and autumn)



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Ortano

Medium vigour plant, with an open and erect habit, and particularly easy to harvest. Thanks to its rusticity and good cultivation plasticity, this variety adapts easily to even the most difficult conditions.

Suitable for greenhouse cultivation in autumn due to its easy management and yield. Intermediate Altea-Grey type fruit, cylindrical and slightly club-shaped, light green colour with elegant and shiny variegations.

The qualities of the corolla make it ideal for harvesting and **marketing the fruits together with their outstanding flowers.**

Intermediate/Average Resistance (IR): WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Quality of fruit and easy harvest

GROWING GUIDELINES

- Open field (spring, summer, autumn)
- Greenhouses in Autumn





Rigas

Grey variety, **vigorous, healthy and rustic plant**, particularly resistant at high temperatures.

Excellent health, due to its vigour and resistance, which is unusual for the “Grey” type. Offers a prolonged period of consistent productivity throughout the growing cycle.

Club-shaped fruit, light green, shiny and variegated.

Marketed with or without flowers.

Intermediate /Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Yield and rusticity

GROWING GUIDELINES

- Open field, in spring, autumn and especially summer





RM2361

new
variety for
testing only

Vigorous plant with medium-short internodes and semi-erect and open habit. Its resistance and vigour give the hybrid great rusticity and health compared to other varieties of the same type.

“Fiorentino” type fruit, cylindrical and ribbed, with dark longitudinal stripes and excellent flower attachment.

The long, shiny and elegant fruit with attractive and showy flowers is particularly suitable for the Tuscany area, the whole of Central Italy and the Tyrrhenian coast.

Intermediate/Average Resistance (IR): WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

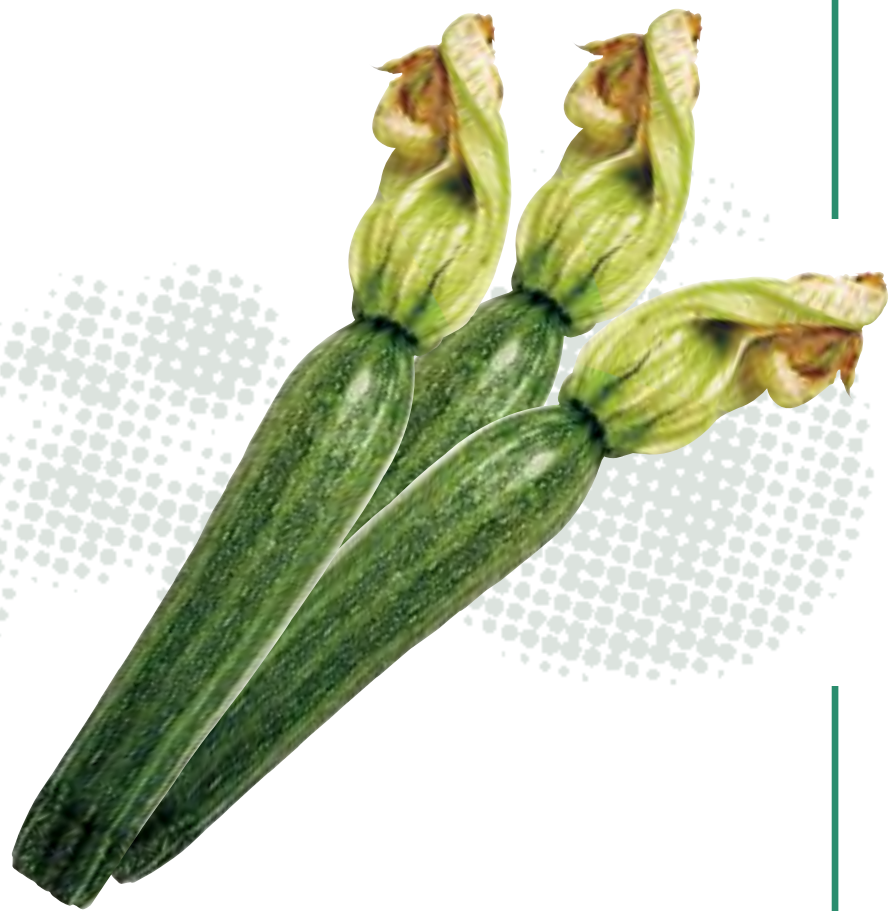
- “Fiorentino” Quality fruit and resistance

GROWING GUIDELINES

- Open Field in spring, summer and autumn



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new
variety for
testing only

RM2379

Plant of medium vigour and precocity, with medium short internodes, of erect and open habit. **“Romanesco” type fruit**, with a cylindrical, regular shape and a more intense shiny, medium green ribbing and stripes. The excellent attachment of the flower and the consistency of the fruit are just some of its qualities and an added value on the markets in Lazio, central Italy and the Tyrrhenian coast.

The plant is healthier and more resistant to viruses compared to other hybrids of the same “Romanesco” type.

Intermediate/Average Resistance (IR): WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- “Romanesco” fruit quality and resistance

GROWING GUIDELINES

- Open field in spring, summer and autumn



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Tondi (Round)

Traditional type in Italy, with local varieties and eco-types used in the past such as the “Florence Tondo” and the “Piacenza Tondo”. The recent arrival of resistant hybrids has permitted a more agronomically viable approach to the production of this type, which has been rather limited to date, but is now expanding due to greater market demand.



Brice **new**

Round-shaped zucchini with a light green colour, rather large white freckles and clear ribbing near the stem.

Plant of medium vigour and orderly habit, with rather short internodes and leaves with extensive white spots.

Its **resistance to powdery mildew and a large group of viruses** makes this a very interesting and useful variety in this “round” category.

Besides the health of the plant, other key qualities are that it responds well to forcing and it has excellent levels of productivity.

The elegant fruits, best when harvested with a diameter of around 8 cm, fully satisfy the increasing demand for top-quality round zucchini.

Intermediate/Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Resistance and health

GROWING GUIDELINES

- Spring, summer and autumn in open fields



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Green

Classic type of zucchini, the best known throughout Italy. The pigmentation can vary from medium green, mainly found in Central/Southern Italy, to dark green, consumed everywhere, and to very dark green, typical of the area around Milan.

Roberta

Early hybrid, extremely flexible and suited to different forms of cultivation, in open fields and greenhouses/tunnels. It is a balanced, open and erect plant with high apex dominance. Very high yield potential, excellent response to forcing and rapid production levels with marketable fruit.

Medium green coloured fruit, approx. 20-22 cm in length, regular and slightly squared, made more luminous and shiny by small white freckles.

The quality and long life of the flower make the variety suitable for the market both with and without flowers.

Intermediate /Average Resistance (IR): ZYMV

Medium Green

Benefits

GROWER - INTEGRATED PRODUCER

- Quality of fruit and earliness

GROWING GUIDELINES

- Open field in springtime, summer and autumn
- Protected cultivation in spring and autumn





Benefits

GROWER - INTEGRATED PRODUCER

- Maximum productivity

GROWING GUIDELINES

- Open field in spring, summer and autumn
- Greenhouse in spring and autumn

Velvia

Semi-erect and open habit, which facilitates harvesting and the removal of the fruits, hanging from a medium-long stem.

Balanced plant of medium vigour, capable of **extremely high yield performance.**

Appropriate additions of fertiliser from the first growing phases, especially using fertirrigation systems, ensure an excellent plant response and extended production continuity for the entire growing period. Good cultivation suitability, ranging from open fields to greenhouses.

Marketed fruits are about 18-20 cm long and a shiny medium green colour.

The very small flower scar avoids post-harvest problems and combines with the shiny colour to make this fruit a highly marketable commodity.

Intermediate/Average Resistance (IR): WMV / ZYMV





CV2832

new
variety for
testing only

Compact plant of medium vigour with open and semi-erect habit. Variety characterised by good earliness and a shiny medium green coloured fruit.

Good genetic resistance to a wide range of viruses, as well as powdery mildew, guarantees excellent results mainly in the summer and autumn period, when plant diseases can more seriously affect cultivation.

Intermediate /Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Yield and health

GROWING GUIDELINES

- Open field in spring and mainly summer and autumn



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Mastil

Vigorous plant, very productive, healthy and **particularly rustic.**

It can adapt to cultivation in humid conditions and rainy seasons. It maintains consistent productivity through the entire cycle and enjoys excellent health, thanks to its genetic resistance to viruses and powdery mildew. High yield and easy harvest due to the open and semi-erect habit of the plant.

Fruits are a medium green colour, shiny and uniformly shaped, cylindrical even when longer and larger in size.

Intermediate/Average Resistance (IR): Gc / Px / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Rusticity and health

GROWING GUIDELINES

- Open field in spring, but particularly in the summer cycle and autumn





Dark/Medium - Dark Green (protected cultivation in autumn - Sicily)



Alister

Early maturity variety, of average vigour and well balanced. The short internodes favour a semi-erect habit, ideal for conditions of protected cultivation and easy plant management. High tolerance to heat makes it ideal for earlier autumn transplants to protected environments, even in the first days of September. The **partial "parthenocarp"** allows for good setting even during the coldest autumn months, limiting the need for plant regulators. High yield of marketable products. Cylindrical, even-shaped fruit, with a shiny medium-dark green colour, slightly multifaceted with small freckles. Easy harvest due to the habit of the plant and length of the fruit stem. The high quality of fruit is maintained even when the temperature drops.

Benefits

GROWER - INTEGRATED PRODUCER

- Quality of the fruit and parthenocarp

GROWING GUIDELINES

- Autumn tunnel in Sicily





Cronos (CV3097)

new

Early variety, with a good balance between vegetative and reproductive parts.
 “Ideal” plant: its open and erect habit makes it simple to manage in tunnels/greenhouses and easy to harvest; good **resistance to powdery mildew**.
 High potential yield that is best exploited with early September planting.
 Cylindrical fruit with a shiny, fairly dark green colour.
 Harvested fruits are very long-lasting – Long Shelf Life (LSL)

Intermediate/Average Resistance (IR): Gc / Px / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Yield and resistance to Powdery mildew

GROWING GUIDELINES

- Autumn tunnels in Sicily



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Dark - Green/Medium - Dark (open field cultivation)

Afrodite

Traditional variety for open field cultivation. Vigorous, with medium-long internodes.

Its **high precocity yielding marketable fruits** and its high productivity rate make it ideal for use in open fields with spring seed sowing and lead to excellent yields, even in a short growing cycle. Medium-dark green classic fruit, with a regular cylindrical shape, even when longer and larger than usual.

Afrodite continues to be a variety that is highly appreciated by the food industries, due to its small flower scar, excellent post-harvest preservation times, resistance during transport and handling, and low water content.

Intermediate/Average Resistance (IR): CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Earliness & yield

GROWING GUIDELINES

- Spring open field cultivation





Xsara

For many years this has been the leading variety on the Italian market in the open field dark green zucchini category. The agronomic merits of the plant, together with the excellent commercial qualities of the fruit, are key to the success of Xsara. An early variety of ideal habit. Balanced, erect and open plant with very short internodes. High yield, with production of numerous cylindrical fruits, which are appealing due to their regular shape and shiny dark green colour. From a commercial point of view, it is one of the most attractive fruits on the market and very popular with producers, wholesalers and retailers.

Intermediate/Average Resistance (IR): CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Quality of fruit

GROWING GUIDELINES

- Open field cultivation in spring and summer





Quine

Balanced plant with an airy, open habit, very short internodes and a long fruit stem: characteristics that facilitate harvesting, even if this is manual.

Shiny dark green fruit that are regular and cylindrical.

The wide range of genetic resistance (viruses & powdery mildew) makes this variety particularly suitable for cultivation in open fields, especially in the summer.

Very high production potential.

The fruit maintains its regular cylindrical shape even when very elongated. Thanks to this characteristic, combined with its constant productivity, ease of harvesting and fruit texture, this variety is **highly appreciated, not only by the fresh food market, but also by the food industry in general.**

Intermediate /Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Yield

GROWING GUIDELINES

- Spring, summer and autumn open field cultivation





Mikonos

A fairly vigorous variety, with semi-erect and open habit. This voluminous plant, with expansive leaves, requires thorough watering and feeding in order to attain its high yield potential.

Regular, cylindrical fruit, slightly multifaceted, shiny medium-dark green in colour, specifically chosen and ordered by many market operators.

Resistance to a wide range of viruses and powdery mildew makes this variety very effective, especially when planted in summer and autumn.

Intermediate/Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Fruit Quality

GROWING GUIDELINES

- Open field in spring, summer and autumn





Naxos

Vigorous plant with wide leaf lamina and excellent health and rusticity features.

Ideal for open field cultivation at the end of summer and autumn, even in areas subject to strong viral pressure and powdery mildew, where it currently offers the best genetic solution.

The dark green fruit is evenly cylindrical and has an elegant, shiny colour with small freckles, making it highly appreciated commercially.

Intermediate/Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV



Benefits

GROWER - INTEGRATED PRODUCER

- Plant Health

GROWING GUIDELINES

- Open field, end of summer and autumn





Syros

The latest commercial variety for the dark green sector, it is characteristically a small-sized plant with a good balance between vegetative and reproductive parts. It needs appropriate staking and training during the early growing phases, especially in poor soil. The open and erect habit is due to the short internodes and makes the fruits, which have a good peduncle, very easy to pick.

Thanks to its excellent genetic resistance, it is a very healthy plant with a long harvesting period.

Early marketable fruits and **very high yield levels.**

The fruits are elegant, evenly shaped and a shiny dark green in colour.

Intermediate/Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Yield

GROWING GUIDELINES

- Spring, summer and autumn cycle in open fields





CV3376

new
variety for
testing only

Over the last two years CV3376 has shown **outstanding reliability and productive performance** in Italy. The plant has a very well-balanced and open habit, and it has consistently high productivity rates.

The fruit is shiny dark green, with freckles that have a lightening effect, resulting in higher qualitative merit.

Intermediate/Average Resistance (IR): Gc / Px / CMV / WMV / ZYMV

Benefits

GROWER - INTEGRATED PRODUCER

- Yield

GROWING GUIDELINES

- Open field





Very dark green

Raven

Historic variety in the S&G range, ideal for satisfying demand for the “**Scurissimo di Milano**” type (Darkest Milan). A well-balanced plant of medium vigour and a shiny uniform dark green in colour, which produces high-quality fruits.

Benefits

GROWER - INTEGRATED PRODUCER

- Fruit quality

GROWING GUIDELINES

- Open field in spring, summer and autumn



Passion for innovation



Useful advice for the protection of your harvest

The concept of protection is to use all available tools at our disposal: a mix of genetic, chemical and biological elements and good prevention is the starting point for successful results.

Today, in the cultivation of zucchini, the synergy between innovation and know-how, which represents the cornerstone of Syngenta's strategy, enables us to optimise harvests, respecting good agricultural practices, guaranteeing safe products to consumers and encouraging sustainable agriculture.

However, correct observation of the cultivar and the decisions made regarding it are still critical factors for professional growers.

Therefore, our recommendations aim to provide useful guidelines, although they cannot determine the end result.



Physiology of the plant

- Plants for temperate-warm climates prefer light, heat and good soil humidity without water stagnation.
- Temperatures under 10° C rapidly block the physiological activity of the plant, including processes such as germination, pollen production and flowering. On average, germination in open fields takes about a week with air and soil temperatures of around 15° C. Temperatures under 4-5° C inflict severe cold damage and can even kill off the plant.
- Plants must adapt well to various types of soil, which should preferably be deep, of medium texture, rich in organic substances and drain well.
- Plants tolerate high levels of salinity compared with other fruit-producing plants, but they are not suited to alkaline soil with pH levels higher than 7.
- Together with temperature, the photoperiod affects vegetative growth and sexual differentiation, increasing the tendency towards branching and bunching, elongation of the internodes and development of male flowers.
- The branching of the plant, with the formation of large numbers of sprouts, is influenced by climatic conditions and by excessively fertile soil. (see Excess of nitrates or organic substances).
- Due to the plant's characteristics and root structure, zucchini can be heavily damaged by wind: different varieties behave differently in terms of their wind resistance, depending on their habit, vigour and tissue elasticity.
- Insect pollination is mainly performed by insects (bees and bombus); however, the genetic capacity to induce partial parthenocarpy can reduce the use of plant feed during the cooler months.



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Cultivation Management

- Rotation is always advisable, rather than re-planting zucchini or implementing crop succession with other cucurbitaceous varieties.
- Direct sowing and transplanting (generally with seedlings with 2-3 real leaves) are equally common, according to the cycle and type of cultivation.
- The most rational technique involves the use of mulch, which increases the soil temperature, forces cultivation, helps to control weeds and leads to a more compact habit, making harvesting phases easier and reducing the soiling of the fruit. Reflective mulch also tends to repel insects.
- Localised drop irrigation has taken over in recent years in comparison with aspersion or running water irrigation, as it requires smaller volumes of water to maintain excellent humidity levels, limiting the development of weeds and allowing for fertigation.
- Fertirrigation is the ideal way of administering nutrients to a plant in continuous harvesting like zucchini.
- For every ton of fruit harvested, the most significant removals are: nitrogen (3.8 kg), phosphorus (1.6 kg), potassium (9 kg) and magnesium (1 kg). (Source: Siviero e Trentini, 2006).
- It is, however, difficult and misleading to indicate an optimal fertilisation formula, since this varies according to the type of soil, the type of cultivation and the length of the productive cycle.
- Adding manure or organic substances is very useful in sustaining the plant and yield, but exaggerated amounts lead to excessive and undesired luxuriant vegetative growth and branching.
- Nitrogen is fundamental in all phases to ground the plant and guarantee continued productivity, but it needs to be balanced by phosphorus and potassium in order to avoid an imbalance in favour of leaves that reduces the yield.
- During fertilisation it is essential to add potassium, which also helps to improve the quality of the fruit.
- The temporary use of NWF covering can be useful as protection in low temperatures to achieve an early harvest and create an obstacle for aphids and insects.
- The use of training stakes/wires in protected cultivation can increase density of planting, accentuating the erect habit of plants and making cultivation and harvest operations easier.



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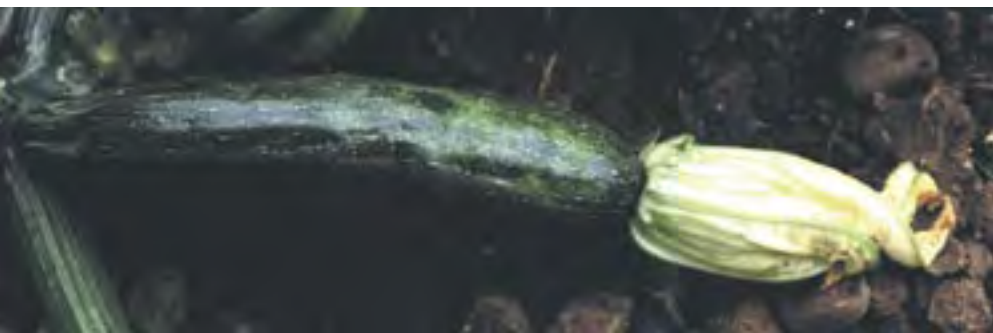
Harvest and shelf life



- Harvesting can be performed manually or by knife, leaving a peduncle of 2-3 cm on the fruit. The commercial length and size of fruit vary according to the type of fruit, the variety and the end market.
- On average a plant can produce 1.5-3.5 kg of fruit in open fields and 2-6 kg with protection.
- Harvesting with flowers still on the fruit is traditional for some types of products (mainly grey, speckled, “Fiorentino” and “Romanesco”) and is positively valued as proof of freshness in many markets. The longevity of the flower is genetically based and distinguishes the different hybrids.
- The additional harvest of the male flower, generally marketed on trays, can be performed on all cultivation, with variations according to the period and type.
- The ability of the fruit to withstand handling varies especially according to the type and varietal characteristics (the green type is generally less delicate). The addition of calcium via the leaves helps to make the fruit cuticles stronger for harvesting and handling, and makes them last longer in the post-harvest stage.
- The shelf life of zucchini varies according to the storage temperature and humidity. The control of temperature and humidity, together with good ventilation, is essential. For example, the quality of green types of fruit remains at its best for no more than 10 days at a temperature of 10-12° C and UR above 90%. Low temperatures damage the appearance and consistency. At under 8° C conservation is already endangered. Considering its vulnerability to ethylene, zucchini should not be stored in refrigerators with other fruit. The differences in post harvest shelf life (LSL) are significant from one variety to the next, regardless of type. Work on genetic improvement in recent years has also focused on this aspect.
- The fruit is easily digestible. It has a water content of over 90% and a very low calorie count: less than 20 calories per 100 grams of fresh edible product.

Protection

- The major problem consists in the possible presence of viruses: at present, CMV (Cucumber Mosaic Virus), WMV (Watermelon Mosaic Virus 1 and 2) and ZYMV (Zucchini Yellow Mosaic Virus) are the most widespread zucchini viruses in Italy and they are all transmitted by aphids (generally *Myzus persicae* and *Aphis gossypii*). During recent years, in addition to some particularly aggressive strains of these viruses, the MWMV (Moroccan Watermelon Mosaic Virus) has arrived, reaching the area around Latina and causing extensive damage to crops.
- All viruses generate serious symptoms on the leaves and fruits, with changes, decolouration and deformation of the organs, and progressive elimination of commercial fruit production.
- The risk of viruses varies according to the area and is generally higher in the case of open field cultivation during summer.






- To reduce the risk of viruses, it is advisable to use resistant varieties (at present, we only have the IR variety, with intermediate/average resistance) and carry out regular anti-aphid treatments, not only using chemical products.
Effective weed control reduces the presence of aphids and whitefly, whilst the use of anti-insect mesh is useful with protected cultivation.
- It is important to remove and eliminate plants affected by viruses in order to prevent the disease from spreading; it is also recommended to try rotation for one year with another species in cases where residues of seriously infected plants are buried in the ground.
- Other than spreading viruses, aphids such as mites and whitefly can directly damage cultivation, causing the plant to wither and lose a significant amount of production. Elaterid larva and noctuids can inflict damage, especially in the early phases of development.
- The fungal diseases most frequently found in zucchini are, in order of frequency:
 - Mildew (*Pseudoperonospora cubensis*)
 - Powdery mildew (*Golovinomyces chioracearum* ex *Erysiphe chioracearum* *Podosphaeria xanthii* ex *Sphaerotheca fuliginea*)
 - Cladosporiosis (*Cladosporium cucumerinum*)
 - Sclerotinia (*Sclerotinia sclerotiorum*)
 - Botrytis or grey mould (*Botrytis cinerea*)

Defence with agrochemicals and relevant active ingredients normally leads to rational control of fungal diseases. The intermediate/average resistance (IR) of some varieties to powdery mildew makes it easier to restrict the proliferation of this fungus.
- The most common bacteria infections are *Erwinia Carotovora* (most frequent in greenhouses, this starts as growths and rots the tissues, especially around the collar) and *Pseudomonas syringae* (which leaves necrotic stains on leaves and fruits).



Problem	Stage	Transplant	Vegetative development	Harvest	Harvest	
Powdery mildew			TIOVIT JET / TOPAS / ORTIVA			
Pseudoperonospora			ORTIVA			
Botryte/Sclerotinia			SWITCH			
Cladosporiosis			ORTIVA			
Aphids		ACTARA 25 WG in the soil		ACTARA 25 WG / PLENUM 50 wg		
Aleurodidae		ACTARA 25 WG in the soil		ACTARA 25 WG / PLENUM 50 wg		
Noctuids		FORCE				
Nutrition		SEQUESTRENE NK 138 Fe / SEQUESTRENE LIFE				



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Zucchini range S&G 2008-2009

	Variety	Fruit	Length in cm	Positioning	Marketed with flowers
White Very Light	Otto	Cylindrical	18-20	open field + protected cult.	
	Albifio	Cylindrical	14-18	open field	YES
	Carisma	Cylindrical	13-15	open field	
	Tulsa	Cylindrical	12-13	open field	
	Shorouq • New	Club	12-13	open field	
Speckled - Grey	Altea	Ribbed/striped	20-22	open field + protected cult.	YES
	Isotta	Striped	18-20	open field + protected cult.	YES
	Lipari	Cylindrical/striped	14-20	open field	YES
	Ortano	Cylindrical/striped	14-20	open field + protected cult.	YES
	Rigas	Grey	14-16	open field	YES
	RM2361 • New - Variety for testing only	Fiorentino	18-20	open field	YES
RM2379 • New - Variety for testing only	Romanesco	18-20	open field	YES	
Round	Brice • New	Round	8-9 (diameter)	open field	
Medium Green	Roberta	Cylindrical	18-22	open field + protected cult.	YES
	Velvia	Cylindrical	18-20	open field + protected cult.	
	CV2832 • New - Variety for testing only	Cylindrical	18-20	open field	
	Mastil	Cylindrical	18-20	open field	
Dark - Medium Dark Green	Alister	Cylindrical	18-20	tunnel autumn	
	Cronos (CV3097) • New	Cylindrical	18-20	tunnel autumn	
	Afrodite	Cylindrical	18-20	open field	
	Xsara	Cylindrical	18-20	open field	
	Quine	Cylindrical	18-20	open field	
	Mikonos	Cylindrical	18-20	open field	
	Naxos	Cylindrical	17-19	open field	
	Syros	Cylindrical	17-19	open field	
	CV3376 • New - Variety for testing only	Cylindrical	18-20	open field	
Very Dark Green	Raven	Cylindrical	17-19	open field	

Explanation of the terms and abbreviations used in this publication

Gc	[IR]	Golovinomyces cichoracearum (ex <i>Erysiphe cichoracearum</i>)
Px	[IR]	Podosphaeria xanthii (ex <i>Sphaerotheca fuliginea</i>)
CMV	[IR]	Cucumber Mosaic Virus
WMV	[IR]	Watermelon Mosaic Virus
ZYMV	[IR]	Zucchini Yellow Mosaic Virus

Definition of resistance

Resistance = capacity of a plant variety to limit the growth and development of a specific parasite or pathogen and/or the damage it causes, compared to a variety which has been raised under the same conditions and the same pressures of infectious disease or parasite. However, the resistant variety may show some symptoms of the disease or damage if the parasite or pathogen pressure is very high.

High / Standard Resistance (HR) = capacity of a plant variety to substantially limit the growth and development of a specific parasite or pathogen under normal conditions of infectious pressure in comparison to more susceptible varieties. These plant varieties might, however, show some symptoms or damage under conditions of high pressure from parasites or pathogens

Intermediate / Average Resistance (IR) = capacity of a plant variety to limit the growth and development of specific parasites or pathogens; however, this group shows a larger range of damage if compared with the HR variety. The variety with IR resistance will show less damage or symptoms compared to a susceptible variety, if they are grown in similar conditions and/or under the same parasite or pathogen pressure.

Tolerance (T) = capacity of a plant variety to cope with abiotic stress without serious consequences for development, appearance and productive yield.

Syngenta Seeds Vegetables has exercised reasonable care and skill in compiling this brochure. All resistances quoted refer only to races or pathotypes indicated at the varieties. Other pathogen races or pest biotypes capable of overcoming the resistance may exist or emerge. Syngenta Seeds Vegetables uses highly elaborate analytical methods to verify specific variety resistances. Specificity of pests or pathogens may vary over time and space and depends on environmental factors. In order to maximize the efficiency of a resistance, it is highly recommended to mix different ways of control such as growing conditions, plant protection products and genetic resistance as part of an integrated crop management. All data in this brochure are intended for general guidance only and the user should apply it in accordance with his own knowledge and experience of local conditions. In case of doubt we recommend that a small scale trial production be carried out to determine how local conditions may affect the variety.



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