

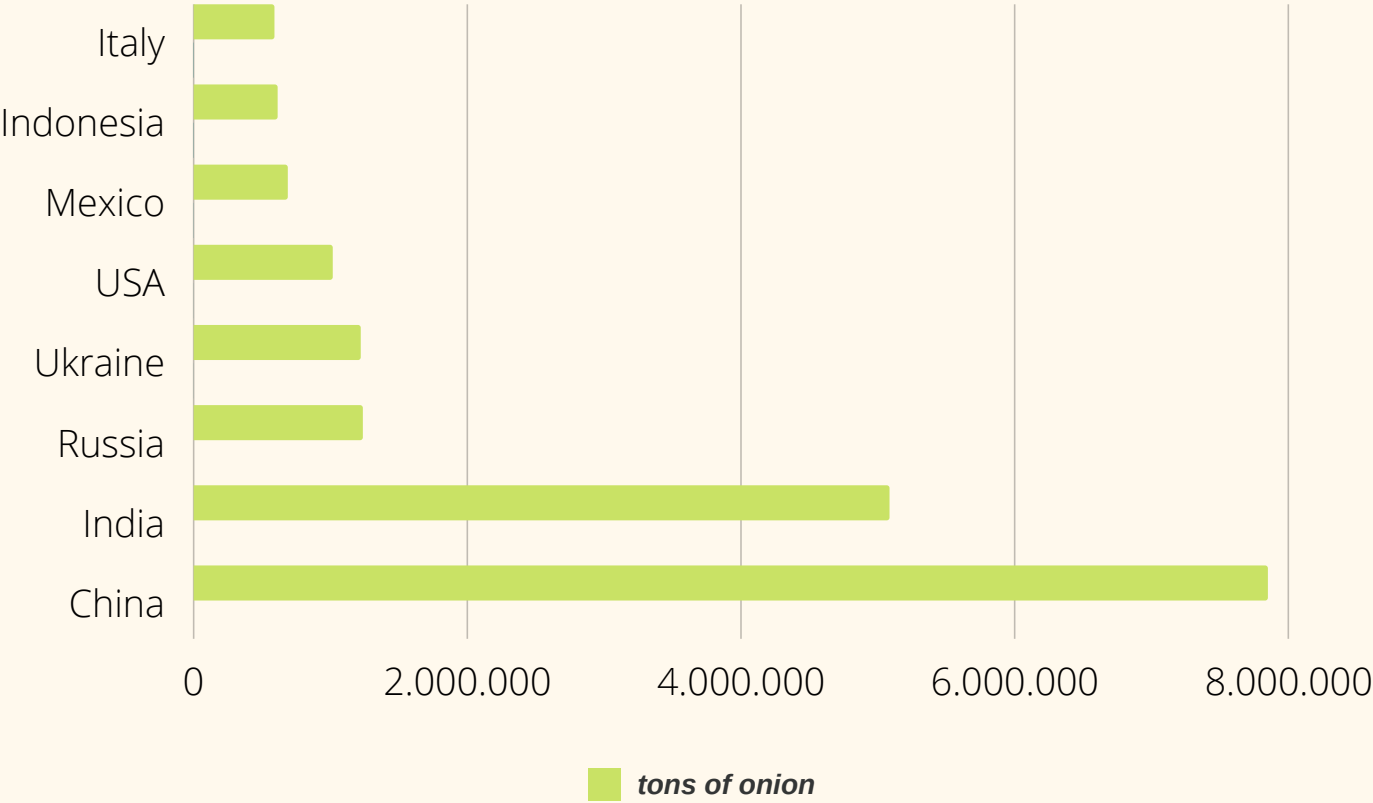
PUMPKIN DRIP IRRIGATION

The complete guide

PUMPKIN WORLDWIDE PRODUCTION

Pumpkins are especially popular in the United States for its tradition during Halloween. Almost 700 million kg of pumpkins are produced annually for this festival alone. In Italy, production is quite high, ranking eighth in the world with more than 500,000 tonnes. Pumpkin production reaches 27.6 million tonnes, half of which are produced in China and India.

TABLE 1: WORLDWIDE PRODUCTION OF PUMPKINS



PUMPKIN CHARACTERISTICS

The pumpkin is a plant native to America and belongs to the Cucurbitaceae family and is called Cucurbita. This vegetable is harvested in autumn but keeps well for several months, making it a winter vegetable. It has an annual cycle.

Roots: The root system of the pumpkin consists of several root bundles that develop superficially in the first 15-40 cm, from the plant.

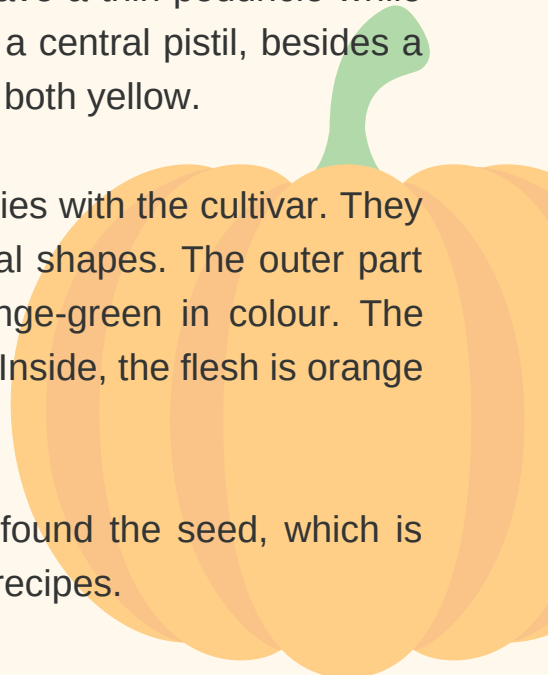
Stem: It tends to be climbing and has numerous branches that can be up to 6-8m long. These branches are cylindrical and herbaceous.

Leaves: Pumpkin has large, lobed leaves that grow on hollow stems and are covered in fuzz. Pumpkin leaves are also edible in different ways, in soups, salads or even eaten raw, they are green in colour.

Flowers: the flowers are monoecious, i.e. there are both male and female flowers. The male flowers, born straight off the vine, have a thin peduncle while the female flowers have a much shorter peduncle and a central pistil, besides a small fruit swelling at the base near the stem. They are both yellow.

Fruits: are large in size and their shape and colour varies with the cultivar. They can be round, elongated, oval or take on more unusual shapes. The outer part can be ribbed or uniform while they tend to be orange-green in colour. The average weight of a pumpkin can vary from 5 to 20 kg. Inside, the flesh is orange and contains seeds.

Seeds: they have a white outer skin and inside we found the seed, which is widely used not only for planting pumpkins, but also in recipes.



PUMPKIN REQUIREMENTS

Clima: il clima ideale è il clima mite in quanto teme sia temperature sotto i 10°C che superiori ai 30°C. Quindi le temperature ideali stanno attorno ai 20°C.

Terreno: si adatta bene a vari tipi di suolo anche se predilige terreni ricchi di sostanze organiche, profondi e ben drenati. Richiede svariate concimazioni perché ha bisogno di molti elementi nutritivi, il primo tra questi è il potassio che permette una migliore maturazione dei frutti e soprattutto un più alto grado zuccherino.

Preparazione del terreno: Effettuare una lavorazione profonda come una vangatura o aratura profonda seguita da un affinamento e sminuzzamento del terreno superficiale.



PUMPKIN VARIETIES

The pumpkin is famous not only for its beneficial culinary properties, but also as a tradition for one of the most famous holidays in the world: Halloween. Nothing is wasted from the pumpkin, as also its seeds are widely used as a snack. Pumpkin varieties fall into two categories:

- Cucurbita Maxima (giant pumpkins)
- Cucurbita Moschata (winter squashes)

CUCURBITA MAXIMA

Generally, this variety is globular in shape and flattened at the poles, but we can also find elongated varieties. Colours range from orange to dark green. It is mainly used in cooking for its hard and solid flesh.

- Marina di Chioggia pumpkin: Blistery, bubbled, slate blue-green rind it is often used in culinary recipes;
- Harvest moon pumpkin: Get orange fruits before the end of the summer. Round, smooth, dark orange pumpkins, suitable for different purposes, Avg. 3-5 fruits/plant;
- Orange Hokkaido pumpkin (also called Red Kuri): A teardrop-shaped, thin skin orange colored winter squash used mainly to be eaten;
- Turk's Turban pumpkin: multi-colored, buttercup-type squash striped with silver, green, and white with an orange-red base. It is used both for eat and décor purposes, 2 or 3 fruits per plant.

PUMPKIN VARIETIES

CUCURBITA MOSCHATA

The shapes of these varieties are usually elongated, swollen at the ends and the colour varies from orange to green. It is less used in the culinary field because too sweet. Because of its different shapes and colours it is often used as an ornamental fruit.

- Butternut Squash: Beige skin, with deep orange, smooth-textured seetw, nutty-tasting flesh. This is widely used in recipes like soup, breads or pies. 4 or 5 squash per plant are produced;
- Mosque de Provence pumpkin: Ribbed, flat, tan fruits 8-15 lb. Thick, deep orange moderately sweet flesh. 2 fruits per plant;
- Cushaw squash: Cushaws all have the characteristic bottle shape, but they come in a variety of colors and stripe patterns. 2 to 4 fruits per plant.



DRIP IRRIGATION INCREASES GROWTH, YIELD AND SEED PRODUCTION

Irrigation in pumpkin cultivation is essential because pumpkins have a high-water requirement, especially during the flowering and fruit set period. It is advantageous to design a drip system since it reduces waterlogging, which is feared by pumpkins. In addition, through the use of fertigation, we can easily increase potassic manuring in the growth and ripening phases of the fruit.

Drip irrigation also makes possible the use of mulching sheets which not only reduces the weeds in the field, but also avoids direct contact of the fruit with the soil.

One study compared drip irrigation with furrow irrigation and found that drip irrigation had a much positive effect on pumpkin yields.

The study was conducted in 1993-1994 by a College in Saudi Arabia, where they compared drip and furrow irrigation on three pumpkin varieties.

Irrigation methodology	plant weight (g)	plant height (cm)	leaves number	leaf area (cm ²)
Drip irrigation	528.87	56.25	23.33	6308.6
Furrow irrigation	302.22	44.58	16.42	3585.5

During the research period, a significant increase in pumpkin growth was observed with drip irrigation.

Drip irrigation increases pumpkin yields considerably compared to furrow irrigation, resulting in larger fruits and many more seeds.

DESIGNING A DRIP IRRIGATION SYSTEM: AN EXAMPLE

EXAMPLE OF AN INSTALLATION OF 10000 m² (100x100m)

Soil type: Medium Mixture

Crop: Pumpkin in open field

Planting layout: 2,00 x 1,50 m

Water supply source: Well with water level at -30 m

Capacity flow rate: 12.500 lt/h

Pump specifications:

- Q = up to 20 m³/h
- Head up to 6 bar i.e. 60 m.c.a

By submerging the pump at 40m, we will obtain the following performances:

- Q= 250 l/min corresponding to 15 m³/h
- Head of 5 bar

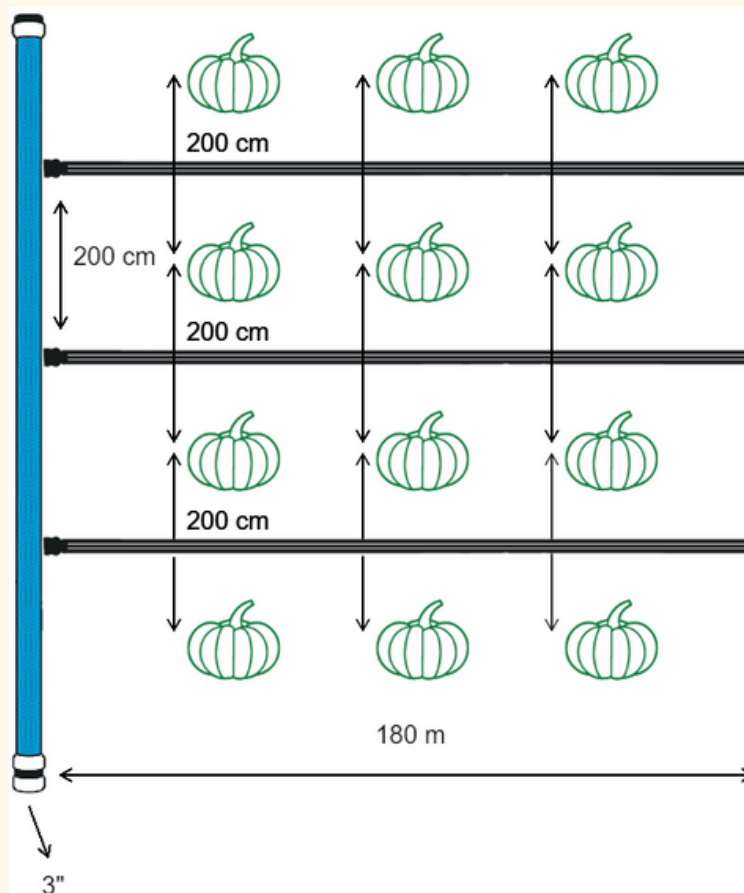
By choosing the SKY drip-tape Ø16 8mil, with drippers at 0,4 m and emitters of 1 l/h it will be sufficient to have one sector made up of 50 drip lines with a distance between them of 2 m.

At this point we will adopt a header line that can handle pressures and flow rates of the pump. In this case we will choose a 3", 78mm Rioflex pressure.

DESIGNING A DRIP IRRIGATION SYSTEM: WHAT DO YOU NEED?

BRIEFLY, WHAT DO YOU NEED FOR THE SYSTEM IS:

- Approx 5000 m of SKY Ø16, 8mil i.e. 3 coils of 2200 m with 1 l/h drippers at 0,4 m,
- 1 Rioflex 3", 78 mm coil of approx 100 m,
- N. 1 x 3" disc filter SABfilter,
- N. 50 Tape-Rioflex fittings with valve,
- Perla fittings (1 connector and 1 end plug)



Recommendations:

- Never leave the plant under water stress or root asphyxiation
- Watering frequently, especially in the early stages of development
- Opt for a planting pattern of 2.0 m between rows and 1.5 m on the row with double rows; make plants grow in two opposite directions
- Fractionate nitrogen supply through the use of fertigation and increase potash fertilisation during fruit development.

DESIGNING A DRIP IRRIGATION SYSTEM: WHAT DO YOU NEED?

1



RIOFLEX PRESSURE

RioFlex is a 100% PE, layflat, light and fully recyclable;

Nominal pressure: 4 bar;

Diameter: 3", 78mm.

2



SKY

Drip irrigation PE tape with a large section labyrinth, high-performing and recyclable;

Nominal pressure: 0,7 bar;

Diameter: 16 mm;

Spacing: 40 cm.

3



DISC FILTER

3" disc filter SABfilter;

Maximum flow rate 50 mc/h.

4



LAYFIT FITTINGS AND TAPE CONNECTOR

N. 50 Tape-Rioflex fittings;

Perla fittings (1 connector and 1 end plug).



***Do you need additional
information on our products or
on drip irrigation?***

Get in contact with us!
Our technicians and sales
managers will be at your
complete disposal.





ASAB

cherish your water

www.sabspa.com

sab@tubi.net | T +39 0722 810 800

