











Markus Staden

Dear colleagues,

looking back at the last season, we can observe that the conditions for a successful cultivation of strawberry and raspberry plants have not become any easier (overproduction, drosophila, minimum wage etc.). Rapidly changing markets demand a maximum degree of flexibility and creativity. The cultivation is getting significantly more intensive and for this reason also much more expensive. It is essential to occupy high-priced niche places out of low price periods. Further key words are yield and picking rate!

Especially regarding the increasing intensification we recommend an individual expert advice on cultivation for your company.

The plants you are using also have to cope with constantly increasing requirements. A consistent quality and a good plant health are preconditions for your success. In this regard we would like to work together with you as closely as possible. This applies both for the selection of varieties and for the intended production methods. The aim should be a commissioned production where both partners exactly know what is important. Therefore please keep in mind our order dates for the individual plant type (p. 66, 67).



Despite all the fascination for the new, we recommend to change the sorts and cultivation methods that have been proved of value in your company for many years only in a responsible dimension. Another basic requirement for a successful cultivation is the transaction of "basics", like taking soil samples before planting, minding the correct planting depth and ensuring a proper water supply. It also includes the eruption of the blossoms of frigo plants which cannot be picked.

We are very pleased that we can present a true alternative for the late ripening season this year – the variety Faith.

In recent years we have continuously expanded the production of pot plants, tray plants and waiting bed plants. Now, we also received an extremely positive response concerning our potted fresh plants and Long Cane plants in the raspberry sector.

We are looking forward to continued good cooperation

Stefan Kraege, Markus Staden

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Kraege International has been a specialist propagator of strawberry plant material since 1958. Our company produces more than 20 different strawberry varieties on about 140 hectares of rented land. Strawberry frigo plants account for the lion's share of our business. We continuously work to maintain and improve plant material health.

It all starts with producing our own mother plants. (Read more on this on the next page.) Our particular strength is the wide range of varieties we offer. Having good contacts with all major plant breeders worldwide, we are able to test new varieties at an early stage. As you can see from the picking period table, we have a wide range of products with all currently popular varieties included.

In addition to strawberry plants, Kraege focuses on the production of raspberry plants. The latter are offered as bare-rooted cane as well as potted plants gained from root cuttings.

International Kraege

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Mother plants from our own production!

Healthy plants are the basis for successful fruit cultivation. Producing our own starting material we take the decisive step to ensure the propagation of healthy plants. As we know from experience new diseases emerge regionally at first before spreading over larger areas.

Cultivating mother plants of different origin at one site always involves a high risk of disease progression. We minimise the risk by keeping our starting material strictly apart from plants of other origin. For the reasons mentioned above we have put a "closed system" in place.





The production of our elite plants starts with in-vitro propagation in the laboratory. Unlike in common meristem labs, the idea is not to produce as many seedlings as possible in a short period of time. Instead, our one and only intention is to get a small number of definitely healthy plants. In the following steps, we exclusively use runners for propagation. First of all, the in-vitro plants are propagated in a saran house. The tightly woven, gauze-like saran fabric prevents insects from entering the house and infecting the plants with viruses. Mother plants as well as seedlings are grown on table beds, in safe distance from the ground bed, so that infection by soil fungi is excluded. For extra safety, the super-elite plants (SEE) produced in the saran house are inspected for diseases on an annual basis.

The super-elite plants (SEE) are then propagated on a special site, far away from other strawberry plantations. The resulting elite plants (EE) are used for the production of commercial plant material and are subject to constant supervision by the Chamber of Agriculture.

Variety sighting/testing

"What's new in varieties?" is the question most frequently asked by strawberry plant buyers. What they want is a healthy, early or late season variety of outstanding fruit quality and yield potential – in short: the perfect strawberry variety. Unfortunately, there is no such a thing, and there won't be in the future. Selection and breeding of new varieties aims at various objectives. Healthy plants, if possible with resistance to common diseases, and an extended season are the most relevant criteria.

Thanks to our good contacts to strawberry breeders we get new clones in for evaluation each year. The most promising ones are planted in our experimental garden and tested for special properties they might have. Usually this concerns a "normal outdoor cultivation". With interesting varieties additionally tests concerning earliness or rather lateness are done Good varieties are recognised early on. The "candidates" are tested for several years and initially suggested for trial planting only. Intensive testing of strawberry varieties is essential for us to keep our stock up to date.

The experimental results are the basis for our variety evaluation in this brochure. The description shall give you an overview of our current range of varieties and describe the fundamental characteristics. In doing so, results of the experimental stations and impressions from experience are taking into account. Nevertheless, depending on weather conditions, there are very different results each year. A concluding evaluation of a variety is therefore possible after 2 – 3 years at the earliest.

A particular variety evaluation is also getting more and more specific in terms of production and site. In this instance the producer is on his/her own. You have to find the most interesting varieties for your site and your production methods.







New varieties: Aprica and Faith

Aprica is an Italian (CIV) new breeding in the medium-early ripening season. The variety is characterized by bright red fruits with an appealing gloss. With its above average shelf life Aprica is recommended as a variety for retail sector marketing. The taste is insufficient for direct marketing.

Faith is a late variety from the breeding programme of Goossens Flevoplant. The variety ripens about 7 − 10 days after Elsanta and is therefore located in the interesting ripening period directly before Malwina. Faith convinces with big, conically shaped, firm fruits. The colour is medium-red with an attractive gloss. The yield is high. The fruits are big with high individual fruit weights.



Strawberry Plants

Carousel of varieties

What constitutes a good variety? Or more precisely: When is a variety so good that it should be introduced onto the market?

The carousel of varieties turns at high speed and it becomes increasingly difficult for the grower, the experimenter and especially for the breeding companies to maintain an overview.

The development of a healthy breeding takes some time and the variety should still be in demand when it is available in larger quantities. After all, licenses for interesting varieties are very expensive and hard to get. In the past, growth conditions were-relatively comparable.

However, today, there are almost as many methods of cultivating strawberries as there are varieties.

Time and capacity are lacking and due to different production methods, fertilization programs and marketing methods it is very expensive to test new varieties.

Therefore, a new variety is often tentatively cultivated under standard conditions (Elsanta).

If it does not yield enough crops within the next two years, it is re-moved from the programme. Ultimately, there are enough varieties that can be tested.

This raises the next question. How many varieties do we actually miss because we do not have time to develop new growing methods for new varieties?













Varieties that are char-

acterised by excellent fruit qualities or a specific taste deserve the effort to compensate eventual weaknesses by a suitable growing method. With some varieties, e.g. Flair (fertilization strategy), Alba (herbicide sensitivity), Malwina (thrips, strawberry blossom weevil), this has worked perfectly in recent years.

For those, who feel called to lead new varieties to success, we always have new varieties for test plantings available.



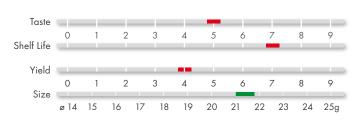


- protected variety, Head Licence: Planasa, Spain

Dream

Colour medium-red, glossy

Comments Flower trusses over the leaves, frostprotection

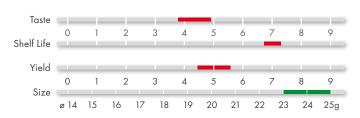




- protected variety, Head Licence: W. Faedi, Italien

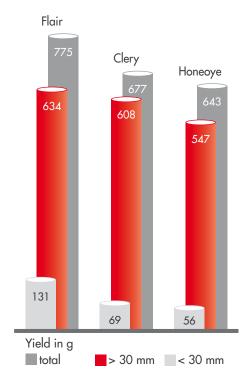
Garda

Colour medium-red ... red, glossy
Comments alternative for Alba in the early season



Flair, a new variety of Goossens Flevoplants has an interesting ripening time, wich is 5 – 7 days earlier than Honeoye. It is very good for growing in tunnels with an even earlier ripening time. Taste of the attractive fruits is excellent. Flair has long flower truses and is an very "open" plant. It is necessary to have a frost protection. A special fertilisation program is recommended, to optimise the yield. Have a look in the variety info on www. kraege.de.









- protected variety, Head Licence: Goossens Flevoplant, NL

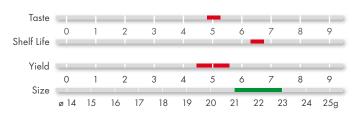
Flair

Colour

medium-red, glossy

Comments

interesting early variety for direct marketing, we recommend to seek special advice on cultivation to get the optimum growth, yield and fruit size





Strawberry Plants

Daroyal® is a cross-breed (Elsanta x Parker) from Darbonne's breeding programme. Daroyal® ripens three to five days earlier than Honeoye. Attractively shaped fruits of large to very large size characterise this variety. The fruit colour is a glossy red to dark red. Yields are good or even excellent. Every single fruit can be picked and sold (unlike Honeoye where at least 30% of the last fruits remain unpicked due to their small size and poor flavour).

The fruits are best marketed on the day they are picked, because they have a tendency to darken in the cold storage. Daroyal® is fine for selling at market stalls as well as for pick-yourown plantations.

Daroyal® is a vigorous, robust variety that does fine on plots without crop rotation. Unlike Honeoye, it is very resistant to Verticillium. Earlier cultivation with fleece material or plastic film is possible and promising (see test results).

Daroyal® produces very long spadices (similar to Darselect®) and should be planted in protected sites.



Daroyal® is significantly superior to the currently favoured early-season Honeoye in terms of ripening period, taste, fruit size and plant health.







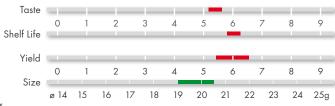
Daroyal®

Colour

glossy, red ... dark red

Comments

resistant for Verticillium wilt, suitable for direct marketing and pick your own







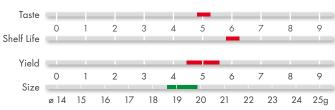


Provenance: USA

Honeoye

Colour glossy, red ... dark-red

Comments susceptible to Verticillium wilt, suitable for production under polyethylene or fleece covering





- protected variety, Head Licence: C.I.V., Italy

Clery

Colour light-red ... red

Comments taste and yield depend a lot on the area, good disease resistance

Shelf Life Yield ____ Size ø 14 25g

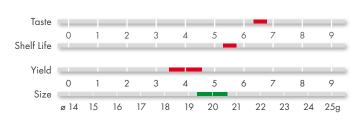




- protected variety, Head Licence: Fresh Forward International B.V. Wageningen, NL

Lambada

Colour bright, medium-red
Comments very sensitive to mildew





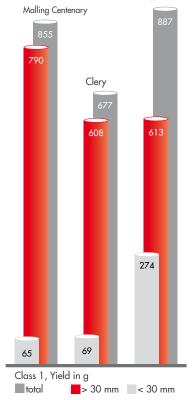
Strawberry Plants

In 2013, Malling Centenary surprised us with a very early ripening season (1 – 2 days after Clery). Hence, we considered this variety to represent a possible alternative for the very early harvesting area. However, these results have not occurred again this year. In 2014, the ripening season lay a few days before the ripening season of Elsanta.

The variety can easily be cultivated earlier, with a start of the harvest 3 – 5 days after Clery and a compact harvesting process. The yields in an earlier cultivated crop slightly exceed those of Clery. In a normal cultivation we did have yields that were higher than those of El-santa. In England, people reported good results with Malling Centenary in 60-day culture. Malling Centenary stands for a new variety with exceptional fruit qualities. The taste of Malling Centenary is good or even excellent, with a nice strawberry flavour. The berries are medium-red and slightly darken in the cold store. Afterwards they have a uniform red fruit colour that is somewhat darker than those of Elsanta. Malling Centenary excels with its beautiful gloss. The berries are large and very, very regular in size. We have picked 98% class 1 fruits! The berries are very firm. Shelf life results are significantly better than they are for Elsanta.

The fruit qualities of Malling Centenary have convinced us that risks would be manageable. What risks? Experience has told us so far that the variety is not very resistant to diseases. We noticed a susceptibility to Xanthomonas and Phythophthora. Moreover, the flowers blossom mostly above the foliage, so they need to be protected against blossom frost. In 2014, Malling Centenary suffered heavily from severe rainfalls in our area. Also in our breeding yard, there were substantial losses due to torn or burst fruits. Despite these problems, Malling Centenary could at the end of the harvest exhibit a total yield of marketable fruits that was considerably above those of Elsanta!

Fleanta





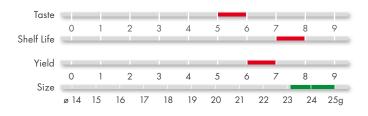


- protected variety, Head Licence: Meiosis, GB

Malling Centenary

Colour medium-red, very glossy

Comments very attractive fruits, suitable for all marketing channels, susceptible to Xanthomonas, Phytophthora



We do not want to downplay the rain sensitivity of Malling Centenary, the first impression after a heavy rainfall is indeed concerning. Nevertheless, we consider the cultivation risk also to be manageable on open land. We did have two extreme harvesting days with up to 50% rain damage.

However, even under these difficult

circumstances, this is explicitly illustrated by our test evaluations, Malling Centenary did have a very good total yield in the end. For us, Malling Centenary is still one of the most promising new varieties. The fruit qualities are simply outstanding! Rumba is an early cropping variety from the breeding programme of Fresh Forward. Rumba ripens about seven days before Sonata, and the season is considerably longer than that of Honeoye or Clery.

The variety produces medium-red fruits with an appealing gloss. The fruits are large, uniform and firm. They have a good shelf life and retain their gloss and shine even after cold storage. The flavour of the juicy fruits is good. Regular picking is important as the berries would otherwise get too dark.

For an earlier season start, Rumba can be grown under fleece and/or plastic film as well as in polytunnels. Yields are high thanks to the proper size and weight of the individual fruits. There are barely any crippled fruits. The pedicels are not too long, so the blossoms are fairly well protected by the foliage against late frosts and heavy rain. Even so it is important to cover the plants with plastic film or fleece in spring to protect the flowers from night frosts.

Rumba is a very healthy, vigorous variety that has so far shown no particular susceptibility to specific diseases.

The breeders however recommend preventive treatment against Botrytis and Rhizoctonia.



35 cm has been proven the right spacing between the plants in a row. Two types of planting material can be used – frigo plants in spring or green plants early in August. Given the large size of the fruits, two-year cultivation is possible without any problems. However, the plants must be protected against winter frosts in the second year, because the rhizomes will have grown up fairly high by that time.

Boron-containing fertilisers should be used sparingly, as the variety tends to uptake excessive amounts of this trace element. Apart from this Rumba is relatively easy to cultivate and without any special fertilisers.



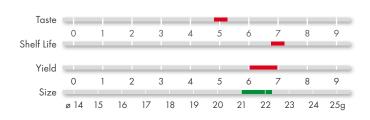


– protected variety, Head Licence: Fresh Forward International B.V. Wageningen, NL

Rumba

Colour medium-red, glossy

Comments good presentation in the punnet, robust plant





Strawberry Plants

Darselect® is a successful variety for pick-your-own plantations, direct marketing and the commercial sector. It is very suitable for early season production, and it can also be planted on former strawberry sites.

Cold-store Darselect® plants should be planted in April/May.

Fresh plant material is planted best in early August.

Plants should be kept free of mildew. First mildew symptoms show up in Darselect® plants at an early stage and have to be treated immediately. The fruits are not affected by mildew.

When selecting the field keep in mind that the variety is susceptible to blossom frost damage.

Darselect® blooms early with blossoms growing above the leaves. Earlier season production will in-crease the risk of frost damage. So make sure you select a well protected site. Frost irrigation is recommendable in critical areas.

A cultivation scheme adapted to the variety will give optimised results. Especially the yield and the gloss of the fruits can be further improved. Where nitrogen requirements are concern, apply the usual 80 kg/ha.

The right date of fertiliser application is important for the plants to generate blossoms early in autumn. The leaf mass development should be completed by early September. Therefore, don't apply nitrogen to newly planted fresh dug material, or choose a very careful dose. Modest fertiliser application is also advisable in the spring (although it has to be considered that a larger leaf mass can help minimise the risk of sunburn damage). The main nitrogen application is done after the harvest.

When growing Darselect® make sure you maintain a proper balance of potassium and magnesium in the soil (soil analysis). Magnesium application during the fruit growth phase can enhance the gloss of the fruits. We recommend using leaf fertilisers.

The fruits are perfect for picking when the outer skin shows a uniform brick-red colour. Pick every 3-4 days, as a rule of thumb. When harvested ripe, Darselect® will reward you with fruits of excellent flavour, flawless quality and good transport properties.





- protected variety, Head Licence: <u>**Darbonne*</u>

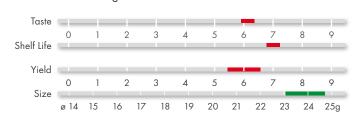
Darselect®

Colour

medium-red, glossy

Comments

susceptible to mildew, red spider and sunburning, suitable for production under polyethylene or fleece covering



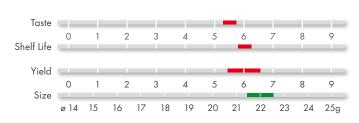




- protected variety, Head Licence: Vissers, NL

Elianny

Colour glossy, medium-red
Comments fruit with firm flesh and sensitive skin

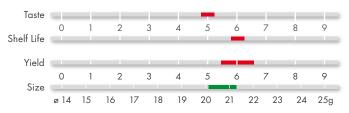




- protected variety, Head Licence: Vissers, NL

Kimberly

Colour glossy, medium-red
Comments good disease resistance, but sensitive to Phytophthora, very sensitive to Colletotrichum!



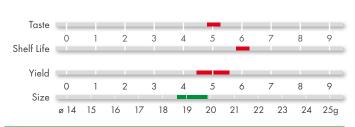


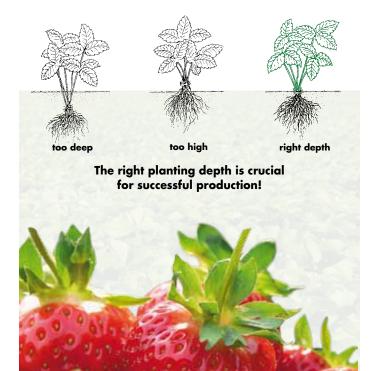


- protected variety, Head Licence: Planasa, Spain

Deluxe

Colour medium-red, glossy
Comments very good disease resistance







Sonata is a crossbreed variety (Elsanta x Polka) by Fresh Forward. It ripens about 1 – 3 days after Elsanta, producing large, firm and attractively shaped fruits. The fruit is glossy and medium-red all over, without any green tips. The flavour is excellent with good levels of sugar.

Yet another advantage over Elsanta is the consistently uniform shape, with no crippled fruits. The plant is robust yet susceptible to Ph. Cactorum, which must be considered in your plant protection scheme. Sonata is sensitive to heat. Earlier production with plastic film or non-woven material is possible but won't give the same effect as with e.g. Darselect®.

Later cultivation with straw is an option. Sonata is the ideal A+/waiting bed plant material for 60-day culture. These positive characteristics have made Sonata a major mid-season variety over the last few years.









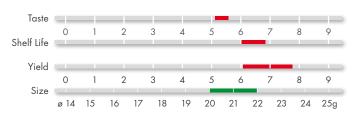
– protected variety, Head Licence: Fresh Forward International B.V. Wageningen, NL

Sonata

Colour Comments light-red ... red, bright and glossy

nents large, attractive fruit, no mishaped fruits, sensitive to Phytophthora cactorum, suitable for production under

polyethylene or fleece covering





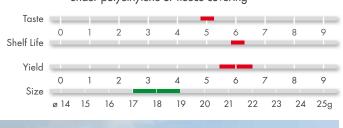


- protected variety, Head Licence: Fresh Forward International B.V. Wageningen, NL

Elsanta

Colour bright, light-red ... red

Comments poor disease resistance, suitable for production under polyethylene or fleece covering







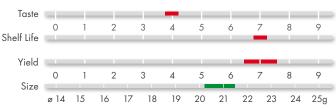


- protected variety, Head Licence: East Malling, GB

Elegance

Colour medium-red, glossy

Comments very attractive fruit, great for supermarkets, susceptible to mildew and Phytophthora



Elegance is a midium-season cropping variety from East Malling's breeding programme. It crops a bit later than Elsanta and has a long season. Elegance produces large, very uniform, medium-red fruits. There are almost no crippled fruits to speak of. The attractive gloss and the overall appearance of the fruits in the punnet are truly convincing. Yields are impressive with a large percentage of Class 1 fruits. Its good shelf life makes Elegance an interesting variety for supermarkets, while it has to be accepted that the flavour is unexceptional and the aroma not very pronounced. Elegance is easy to pick and suitable for 60-day production.

The plants are healthy and feature an erect habit. The fruits are well displayed on long pedicels, which gives a high picking rate.

Cultivation is fairly easy as experience has shown so far. Where diseases are concerned, we have to mention the high susceptibility to mildew.

Elegance is a promising variety for supermarkets. The berries look great in the punnet.



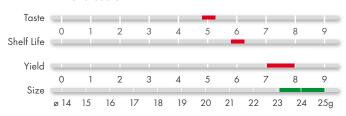


- protected variety, Head Licence: New Fruit Italy

Asia

Colour bright, medium-red

Comments very big first fruits, good presentation in punnet and basket

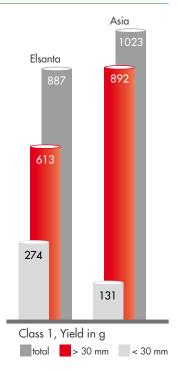


An interesting variety for the high season

Asia, bred by New Fruits of Italy, ripens about 2 – 3 days after Elsanta. The uniformly shaped, attractively glossy fruits feature an excellent firmness. Their colour is a bright medium red. Yields match those of Elsanta, with a larger percentage of Class 1 fruits. Asia flowers bloom slightly under the foliage, the large fruits give a high picking rate.

The berries are very nice to look at, in the basket as well as in the punnet. This makes Asia an interesting variety for pick-your-own and direct marketing. Depending on weather conditions, wholesale marketing can also be worth a try.

The plants are vigorous and little susceptible to Verticillium.



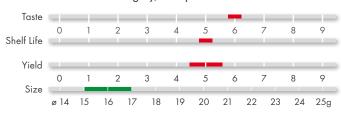




- protected variety, Head Licence: Fresh Forward International B.V. Wageningen, NL

Polka

Colour glossy, red ... dark-red
Comments one-year culture recommended (fruit size), tolerant to
Verticillium slightly, susceptible to mildew



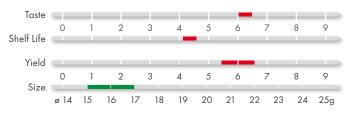


- protected variety, Head Licence: Fresh Forward International B.V. Wageningen, NL

Korona

Colour glossy, red ... dark-red

Comments good disease resistance, very good for pick your own, getting small in the second year





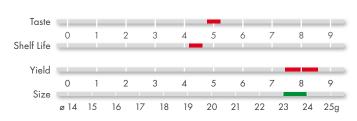


- protected variety, Head Licence: Fresh Forward International B.V. Wageningen, NL

Salsa

Colour light-red ... red, bright and glossy

Comments very high yield, for pick your own and direct selling

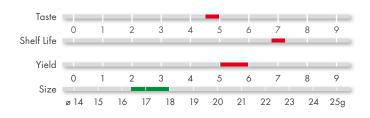




- protected variety, bred by Scottish Crop Research Institute, Dundee, Scotland

Symphony

Colour light-red ... red, bright and glossy
Comments good resistance to Phytophthora





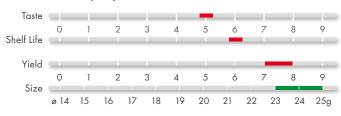


- protected variety, Head Licence: Goossens Flevoplant, NL

Faith

Colour medium-red, glossy

Comments attractive fruit, suitable for supermarkets, direct selling and pick your own



Faith is a late variety from the breeding programme of Goossens Flevoplant. The variety ripens about 7 – 10 days after Elsanta and is therefore located in the interesting ripening period directly before Malwina. Faith convinces with big, conically shaped, firm fruits. The colour is medium-red with an attractive gloss. The yield is high. The fruits are big with high individual fruit weights.

Altogether Faith is a fruit with a good taste and a very nice presentation in punnet. Well branched infructescences with big fruits facilitate the yield, so that very high picking rated can be reached.

Faith is a very vigorous variety that should be planted with a wider plant distance. It flourishes for a long period and therefore ensures a steady, long yield. Faith can be strohverspätet very well.

Faith is not very prone to mildew and botrytis, but should be protected against phythophthora cactorum. A preventive treatment with the usual supplements (phosphorous acid) is recommended. During our experiments Faith has not been very sensitive to rain.

Faith is the late variety between Sonata and Malwina that both convinces with a good taste and a very nice presentation in punnet. It is very well suited for direct marketing as well as for retail sector marketing.



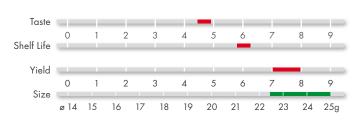


- protected variety, Head Licence: Meiosis, GB

Florence

Colour red ... dark-red

Comments good disease resistance, susceptible to sunburning





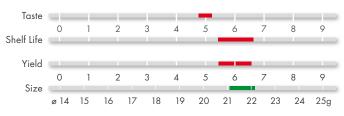
- protected variety, Head Licence: Meiosis, GB

Yamaska

Colour orange-red, bright and glossy

Comments very vigorous, male sterile, good pollination with

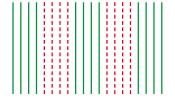
Florence



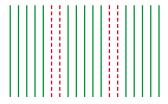
Faith, Florence - Yamaska

Being an all-female variety, Yamaska needs a male for pollination. This is where Florence recommends itself as a late season variety of excellent quality. To ensure good pollination, Florence should be planted at least every sixth to eighth row. Row spacing will depend on what marketing channel you are going to serve. When picking the two varieties make sure you are using separate punnets (different fruit colours). If you are going to serve the commercial sector only, keep the proportion of Florence as small as possible, because its rather dark fruit colour is likely to be less accepted.

Planting example: Yamaska - Florence, Faith



4, 6 or 8 rows of each variety alternating for commercial marketing only



5 or 7 rows of Yamaska alternating with 2 rows of Florence for combined commercial and direct marketing

Yamaska cold-stored material should not be planted before mid-May, fresh plants from the first or second week of August. Yamaska is a very vigorous variety, comparable to Malling Pandora. Please note that a too strong vegetative growth may impair pollination or cause albinism.



Here are some recommendations to follow:

- Late planting date for coldstore material (from mid-May)
- In-row plant spacing should be 40 to 50 cm, spacing between rows 1 metre where possible
- No nitrogen fertiliser in spring
- Soil must contain a sufficient amount of potassium and magnesium
- Row widths should be kept narrow towards autumn

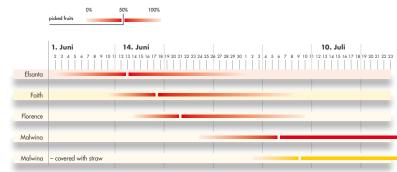
Advantages

- very late picking period
- selffertility, no other variety for fertilization
- excellent taste
- attractive fruit
- tolerant to verticillium

Important:

- complete picking season together with late varieties like: Florence, Faith, Yamaska, Salsa
- thinning to 3 4 crowns for a second year crop
- picking every two days for a high fruit firmness
- special spraying against thrips and strawberry blossom
- susceptible to Ph. cactorum, protection with phosphor acid chemicals recommended





Very important is a special spraying program against thrips and strawberry blossom!





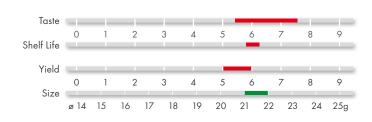


– protected variety, Head Licence: Peter Stoppel, Germany

Malwina

Colour glossy, red... dark-red

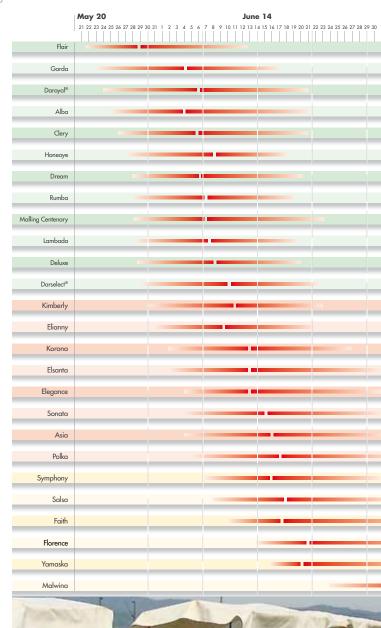
Comments very late picking period, self-fertilization





Picking Periods
Trials at KRAEGE/Telgte pick

0% 50% 100% picked fruits





July 10 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Taste 0 – 9	Shelf life 0 – 9	Yield 0 – 9	Size Ø g/Frucht
	5,2	6,5	5	21 – 23
	3,5 - 5,5	8	8	23 – 25,5
	5,73	6	6,5	20
	4,6	6,5	8	22 – 24,8
	5	7	5	18 – 20
	5,2	5 – 6	5	18 – 20
	5,5	7	4	21,8
	4,9	7	6,5	21,9
	5,2	7,5	6,7	23 – 25,5
	6,5	5,5	4	20
	5,5	7	4	21
	6,1	7	6	23 – 25
	5	6	6,5	21
	5,5	6	6	22
	6,25	4,5	7	15 – 17
	5,2	6	6	16 – 19
	4	7	7,5	22
	5,5	6,5	7,5	21,5
	5,3	6	7,5	23,5 - 25
	6,25	5	5,5	15 – 17,5
	4,75	7	5,5	17
_	5,2	4,5	8	24
	5	6	8	23 – 25,5
	4,7	6	7,5	22 – 25
	5	6,5	6	22
	6	6	5,5	21,6
	12.14	BENCH C	See .	No. of Lot, House, etc., in case of the lot, the





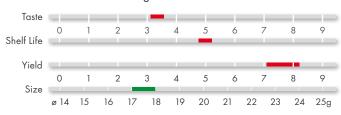
- protected variety, Head Licence: Peter Vinson

Everest

Colour red ... dark-red, shiny

Comments poor disease resistance, suitable for supermarkets

and direct selling

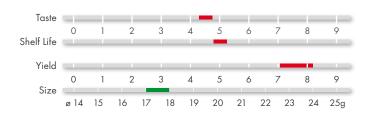




- protected variety, Head Licence: Peter Vinson

Evi II

Colour bright, light-red ... red
Comments berries are susceptible to cracking when it rains



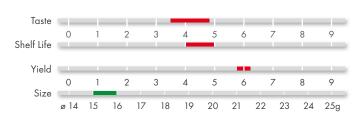
Strawberry Everbearers



- protected variety, Head Licence: Goossens Flevoplant, NL

Florin

Colour glossy, attractive bright red
Comments beautiful fruit in the punnet

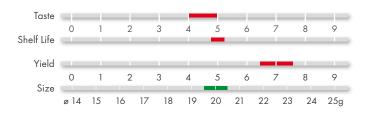




- protected variety, Head Licence: Goossens Flevoplant, NL

Floring

Colour medium-red, glossy
Comments beautiful fruit in the punnet



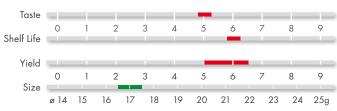


- protected variety, Head Licence: Peter Vinson, GB

Verity

Colour medium-red ... red, glossy

Comments early everbearer with good taste, poor yield in the open field, substrate culture recommended

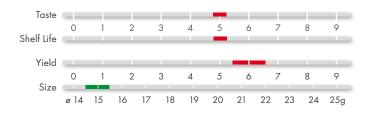




- protected variety, Head Licence: Ciref, France

Charlotte

Colour glossy, red...medium-red woodland strawberry flavour





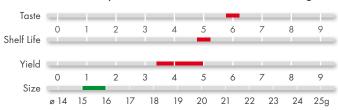


- protected variety, Head Licence: Peter Vinson, GB

Sweet Eve

Colour medium-red, glossy

Comments very aromatic taste, protected culture in substratum is necessary, Sweet Eve is a bit earlier than Eve's Delight

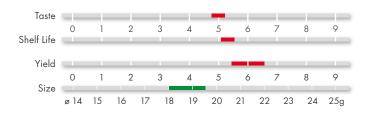




- protected variety, Head Licence: Goossens Flevoplant, NL

Florenting

Colour medium-red, glossy
Comments aromtic taste





Fresh plant: availble end of July,

August Kraege fresh plants are lifted all by Hand

Misted Tips: potted freshplants availble end of July, August





are available in various grades, which are best described by the crown diameter.



Weak grade (A) plants (8 – 10 mm)

This grade can be perfectly adequate when planting on light to medium soils. Do not pick in the planting year, remove the blossoms instead. Plant as early as possible.

Standard grade (A) plants (10 - 14 mm)

The most common grade planted. Can be picked in the planting year, but this will result in less yield.

Grade (A+) plants (+ 14 mm)

The perfect grade for 60-day culture. To be planted about 8-10 weeks before the picking date. Good irrigation is essential to succeed with this time- and cost-intensive production method.

Waiting beds: Darselect® • Elsanta • Flair • Malwina Sonata • Malling Centenary



Our waiting-bed plants are exclusively produced from fresh plant material! The fresh plants are harvested by hand and replanted shortly afterwards to ensure almost unimpaired growing.

Elsanta waiting beds can be supplied in three grades:

"light" (15 – 18 mm) "medium" (18 – 22 mm) "heavy" (> 22 mm)

Waiting-bed plants are especially suitable for greenhouse production, dam cultivation and 60-day culture.



Varieties for pick-your-own fields

When choosing suitable strawberry varieties for pick-your-own marketing you should consider the following points:

Flavour

Good flavour is the key requirement for successful pick-your- own selling. Saving money is less of an incentive for buyers these days, given the low retail prices and a generally decreasing demand.

Season

The variety's season should match the marketing period you intend to serve. Here are a few tips:

"Early bird" benefit

It's essential to be among the very first when the strawberry season starts. Customers who have migrated to your rivals are very hard to get back.

Complementary products

Are there other products that could be marketed at the same time – e.g. asparagus at the beginning of the strawberry season or raspberries, currants, etc. towards the end of it.











For the reasons mentioned before we recommend the following varieties:

Early Season

Flair: 6 days(!) before

Honeoye, good flavour

High yielding Daroyal®:

> variety 3 days before Honeoy

now as before the Honeoye:

> most important early season variety

Lambada: outstanding flavour,

> great for winning new customers or as a treat for loyal customers

Darselect®: can be an interes-

ting early season variety if earlier production under plastic film is applied

good taste,

Malling Centenary: very attractive fruits

Mid Season

Asia, Korona. Polka:

the best-selling varieties for the pick-your-own sector; increasingly used for one-year production to improve the quality and size of the fruits

Late Season

Salsa: robust plant, very

high yield, good

flavour

Faith. very late varieties, Florence. Yamaska:

suitable for extending the season by

10 days

Malwina: very late variety

with an excellent

taste



The cultivation of raspberry plants has steadily increased in recent years.

New varieties and more intensive cultivation methods have made this culture very attractive, not only for direct marketing, but also for trade production. While Floricanes have already been subject to change in favour of Tulameen and Glen Ample years ago, we can also observe an increasing biodiversity within Primocanes by now. New varieties like Kwanza and Kweli are interesting alternatives to the established varieties Himbo-Top® and Polka.

Trade requirements concerning the quality of raspberries are constantly growing. In order to meet these requirements, it is not only the variety selection that counts but also the production process. Shorter culturing periods, more intensive raspberry cultivation and cultivation on substrate all lead to better and more regular fruit qualities.

The cultivation on substrate normally takes place with Long Cane raspberries.

With regard to more intensive forms of production, a respective planting material has to be provided by young plant breeders.

In order to ensure this in the future, the company Kraege Beerenpflanzen has reorganised in personnel terms. Specifically for the production of raspberries a new horticultural engineer has been employed.



Tobias Linnemannstöns enriches our team since March 2014. After finishing his horticultural education as ornamental plant cultivator, he successfully completed a horticultural study programme at Geisenheim University. Already during his studies he turned to the production of berry fruit. As part of his thesis he dealt with the cultivation of Long Cane raspberries in substrate crops. Moreover, he gained wide experience with raspberries abroad, including Italy and Switzerland

We have expanded our production of high-quality raspberry plants by green pot plants and Long Cane plants.

Furthermore, we also provide plants from the house of Dieffenbach.

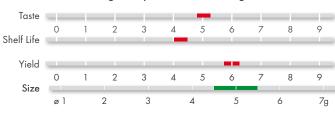


- protected variety, Head Licence: Meiosis, GB

Malling Freya

Colour medium-red ... red

Comments earliest summer-bearing variety,
interesting variety for direct marketing

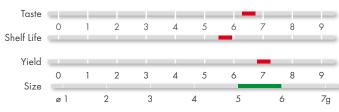




- protected variety, Head Licence: Scottish Crop Research Institute, Dundee, Scotland

Glen Ample

Colour glossy, medium-red
Comments good to pick, beautiful, large, round-shaped fruit, susceptible for leaf and bud mite



Raspberry Floricanes

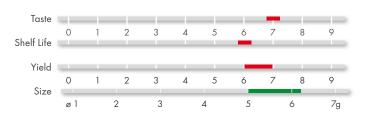


Provenance: Canada

Tulameen

Colour attractive, bright, glossy fruit

Comments the top variety for quality, susceptible to Phytophthora



Tulamenn/Glen Ample: The standard in retail sector marketing and direct marketing

Tulameen and Glen Ample are the two standard varieties within the summer-bearing raspberries. They are characterized by high yields and an excellent. The fruit size (picking rate) is also convincing. The berries are well qualified for retail sector marketing as well as for direct marketing.

Both Tulameen and Glen Ample are suitable for Long Cane production

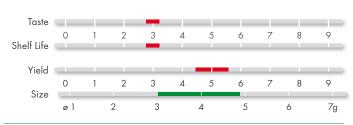




- protected variety, provenance: East Malling/GB, 1989

Autumn Bliss

Colour medium-red ... dark-red
Comments early primocane, not easy to pick

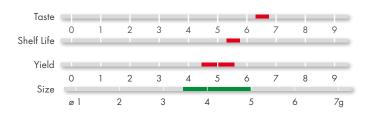




- protected variety, provenance: Poland, Institut Brzezna

Polka

Colour glossy, medium-red
Comments very good fruit quality, early primocane





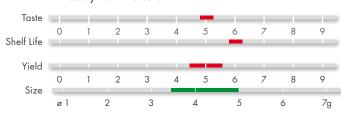
- protected variety, Advanced Berry Breeding, NL

Kweli

Colour medium-red ... red, glossy

Comments vigorous growth, lots of young canes, berries separate

easily from the core





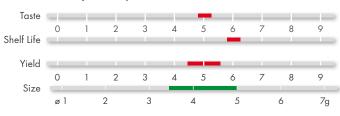
- protected variety, Hauenstein AG, Switzerland

Himbo-Top®

Colour attractive, bright, glossy fruit

Comments Himbo-Top® does not darken after picking,

very late crop



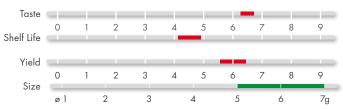


- protected variety, Advanced Berry Breeding, NL

Mapema

Colour red ... dark red, glossy

Comments interresting new variety for direct selling and pick your own

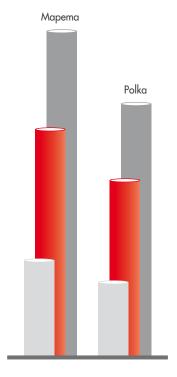


Mapema (No. 8) is a raspberry variety from the breeding programme of Advanced Berry Breeding. The early yield beginning of this autumn raspberry is comparable to that of Polka. The fruit colour is also very similar to Polka. Mapema is slightly dark with a beautiful gloss. The big, conical fruits enable a high picking rate. Mapema convinces with a good taste. This makes the variety especially interesting for direct marketing. Mapema is a very vigorous variety. She can be very well established on the field and is characterized by powerful canes.



■ total: 4.500 3.500 g/m
■ class 1: 3.150 2.450 g/m
□ class 2: 1.350 1.050 g/m

Yield in g, 8 – 10 canes/m, open field production



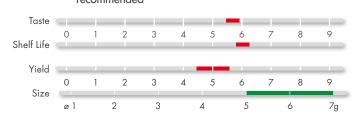


- protected variety, Advanced Berry Breeding, NL

Kwanza

Colour bright red, glossy

Comments very beautiful in the punnet, cultivation in plastic tunnels recommended



Three interesting newly bred varieties from Advanced Berry Breeding.



Kweli, Mapema and Kwanza are very promising primocanes that have the potential to give two harvests, in autumn and spring. All three varieties are recommended for tunnel production. Their attractive fruits are large and of good firmness. The breeder, Advanced B. Breeding, has adopted a new way of licenscies charged once per plant but on an annual basis per linear metre of varieties planted. Licence fees are payable to Meiosis, UK.

For further information: www.kraege.de



0%

picked fruits

Picking Periods

100%



ptember	October				
8 5 7 9 11 13 15 17 19 21 23 25 27 29 1	1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 30	Taste	Shelf Life	Yield	Size
		0 – 9	0 – 9	0 – 9	Ø g/fruit
		5	4,5	6-7	4,5 - 5,5
			-,-		.,,, .,,,
		6,5	5,5	6,5 – 7,5	5 – 6
		7	5,5 - 6	6-7	5 - 6,5
		3	3	5	3 – 5
		6,5	4	5	3,5 – 5
		0,0			0,0 0
		6,5	4,5	6	5-7
		5	5,5 – 6	5,5	3,5 – 5
		5	5,5 – 6	5	5-6
			3,3 - 6		3-6
		5	5,5 - 6	5	3,5 – 5
		5,5	6	5	5-7



Raspberry Plants



Potted fresh plants:

- root cuttings, for planting in middle of May





Bare-rooted canes:

one year old,
 for planting in autumn
 or early spring



Potted fresh plants

The raspberry potted fresh plants produced by Kraege are raspberry plants as a result of propagation by cuttings. In order to produce this type of plant, root material is planted and cuttings are made from the young buds. The cuttings are placed in multi-cell plug trays where they take root. The potted fresh plants are delivered with substrate pellets 4-6 cm in size. This type of plant serves, among other things, as the starting material for the raspberry long cane production. Potted fresh plants are also good for establishing production areas in natural soil

Delivery of the plants

The delivery of plants that have been ordered takes place according to prior agreement. As a rule, we need a few days to get the plants ready for dispatch. After receiving the plants, you should plant them as quickly as possible. If this isn't possible due to bad weather conditions, the cases with the seedlings must be unloaded from the palettes and placed ideally in a semi-shaded area. The fact that you should regularly check the seedling cases and, if necessary, water them goes without saying. If the plants are well-cared for, the planting can be postponed for a few days.

Planting

After careful preparation of the soil, planting can be carried out starting in May. In order to achieve a sufficient cane height, all plants should be in the ground by mid-June. It is important

that these delicate plants are definitely planted so that they are free of frost. Watering the plants from overhead guarantees soil contact between the root balls and the natural soil. A consistent supply of water and nutrients is crucial in achieving the desired cane length of 1.80 cm. Drip irrigation with appropriate fertilisation can ensure this. In this way, the basis for the yield potential in the following year can be laid in the year of planting.

In order to control weeds, we recommend that foil or Mypex should be laid out before planting. If a ridge former is available, it is recommended to plant the potted green plants on dams. The faster warming of the dam stimulates the growth of roots and prevents water stagnation.

Planting requirements

In order to achieve high yields in the first crop year, a planting distance of 6 plants per metre is recommended. The row distances result in the following number of plants per hectare:

- -2.5 m = ca. 24.000 plants/ha
- -3,0 m = ca. 20.000 plants/ha
- -3,5 m = ca. 17.200 plants/ha
- -4.0 m = ca. 15.000 plants/ha

The distances between the rows should be chosen according to the technical equipment available. Besides the recommended distance between the plants to establish the production of the fruits, an appropriate trestle for breeding the canes must also be available. The goal in any case should be to achieve a cane length of 180 cm in the year of planting. Any seedling canes (along with the main stems) should be removed in the year of planting.



Trellis

The raspberry canes must be supported in any case. This is done by tying the canes to a wire or a Tonkin stake. As an alternative, the canes can be fixed between two tight cords. The important thing is that the canes are not moved too much by wind. Otherwise the growth rate will be greatly limited. This is especially important for varieties that grow slowly, such as Glen Ample. The distance between the stakes should be between 4 and 6 metres. Along with a structure to stabilise the canes, the lateral canes must also be supported. The easiest way to do this is to use cords or a net.

Fertilisation

Fertilisation should always be preceded by a soil test. As already mentioned, you should fertilise again via drip irrigation. At the beginning of the cultivation, you should have the irrigation water tested.



The results will tell you which quantities of nutrients are contained in the water and how you should then fertilise again.

The first irrigation after planting should be done without fertiliser (the root growth should be stimulated by the "search for nutrients"). As soon as you can see that the delicate roots are leaving the root balls and are beginning to colonise the soil, you can start to fertilise again.

A nitrogen-based, soluble mixed-nutrient fertiliser is generally suitable for raspberry production. In order to control the fertilisation, some water droplets have to be collected at some





point of the installed drip irrigation. A commercially available EC-meter can be used to test the collected water. Depending on the EC-value of the collected water, the saline content of the first fertiliser dosage should not exceed an EC of 1.8. With increasing growth, the raspberry plants' need for nutrients also increases. You must adapt the fertilisation to the needs of the plants.

In autumn it is better to change the fertilisation from nitrogen-based to potassium-based. This supports the hardening of the stems and reduces the sensitivity to frost.

Generally speaking: as long as the raspberries are growing, they should have luscious green foliage. Your goal



is to achieve a cane length of 180 cm in the year of planting. Fertilisation and watering are of crucial importance for this.

Cane management

Starting in the first year of cultivation, seedling canes for the following year have to be produced for raspberries that bear fruit in the summer. The first growth of seedling canes should be removed. You can let the second set of seedlings remain. It is very important to know the right time to let the seedling canes grow. After all, they have to reach the length of 1.80 m in the same year. The next generation of seedlings must be thinned out to the desired number.

Canes that are destined for harvest and the seedling canes are always in competition with one another as rewgards the available nutrients and light. Another problem is that because of the continuous harvest, plant protection strategies for seedling canes cannot be carried out resolutely.



Annual plants

Along with the establishment of a "classic" raspberry open field, the same plant system can also be used for annual raspberry cultivation. This type of cultivation requires changing the location annually and an annual replanting. The advantage of this cultivation variant is that there is no competition between seedling canes and canes to be harvested.

Some steps – such as the thinning out of the seedlings – can be omitted. Negative developments that can arise with the ageing of a raspberry plant (diseases, declining size of the fruit and – quality) are thus circumvented from the beginning.

The yield, the size of the fruit and the resulting picking rate are the decisive factors for the success of an annual raspberry cultivation. This can only succeed if the canes achieve a sufficient length with an appropriate number of nodes.



Raspberry 🏂 Plants



Long Canes

Raspberry Long Cane plants are, as the name indicates, long canes that are covered with buds. They are therefore suitable for harvesting in the year they are planted.

Essentially there are two different Long Cane types: bare root and potted plants.

The bare root Long Cane plants are shoots $1.60-2\,\mathrm{m}$ in length, which were taken from a raspberry propagation bed. Depending on the concentration of the material planted and the light conditions there, these canes have internodes of differing lengths and therefore different numbers of buds. The root growth should be as intensive as possible and have many fine root hairs.

If you look at a raspberry field and see that roots have spread everywhere, even between the rows, it becomes clear that the root growth and thus also the water absorption will soon be the weak point of long cane cultivation with bare root plants. That is why potted plants have increasingly gained in importance.

To produce this type of plant normally two potted green plants are planted in a container. These two green plants will be pulled up a trellis in the year when planted during the entire vegetation period. The aim is to have a container that has a good root system and two canes about 1.80 m in length. As soon as the growth is completed and the plants are in their dormant period, they are placed in cold storage at minus 2° C.

In the following year, the long cane plants are removed from cold storage and are placed or planted in a foil tunnel or under rain covers.

Depending on the time the plants were placed, harvesting should occur 65 to 80 days after planting. This type of nursing extends the production of raspberries. Production before and after the harvest in the field is possible. Basically this kind of cultivation can be compared to that of strawberry Frigo plants.

The main varieties for a fruit production with long cane plants are the summer raspberries Tulameen and Glen Ample.

The standard method is to plant 6 canes per metre. This means that there are 3 plants with 2 canes per metre.

For this very intensive method of production, we often produce in foil tunnels or under rain covers. On the one hand, this helps short-rotation culture and, on the other, serves as rain shelter.

Upbringing and reaping

Apart from the selection of varieties upbringing and reaping do have an essential influence on yield and plant health of the facility.

Floricanes

In the year of planting the cane is pulled-up for harvesting in the following year. In the year of production canes are pulled up parallel to the harvest, in order to harvest them in the following year. In doing so, the growing of young canes is competing with the yield. This cycle repeats over a number of years.

In order to counteract the competition of yield and growing of young canes and to prevent the alternation of raspberry stocks, the annual cultivation of raspberries shows promising results. Within this proceeding summer raspberries get harvested just once, afterwards the area is cleared and replanted.

Primocanes - with one harvest per year

In the year of planting the canes are grown. Depending on the date of planting and the development a small yield can be expected. In autumn/winter, the canes get cut near the ground. In spring, new canes sprout from the root buds and get harvested in autumn

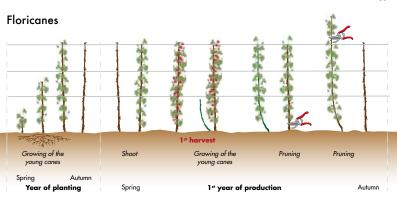
Primocanes

with two harvests in the second year of production

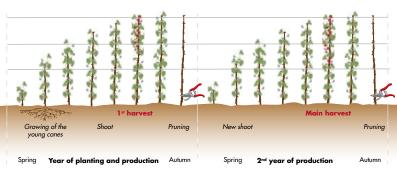
In the year of planting the canes are grown. Depending on the date of planting and the development a small yield can be expected. After harvesting, root segments get cut below the last inflorescence. The cane below the last inflorescence remains in place over winter and can be harvested in the following year. Usually the harvest takes place 2 - 3 weeks before the harvest of summer raspberries. Parallel to this harvest one grows young canes. These carry a yield in the autumn of the same year. After the third harvest a new planting of the stock usually takes place.

This kind of cultivation of raspberries is much more intensive and usually takes place in special companies. Cultivation below rain capes or in a tunnel is recommended. This cultivation method often comes along with cultivation in substrate. First experiences have shown that high yields and an expansion of the harvesting period can be achieved by combining new autumn varieties and this production method.

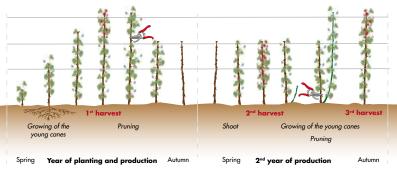




Primocanes - with one harvest per year



Primocanes - with two harvests in the second year of production



Ordering dates

During the last years the number of varieties as well as possible growing methods increased continuously. Different plant types are needed for individual production methods. Having these plant types in stock in all favoured varieties is hardly possible. To guarantee that you will actually get the best plant type in your favoured variety you should contact us and tell us about your plans at an early stage.

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Thorsten Waltering

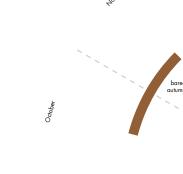
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Tobias Linnemannstöns

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The listed order dates make it easier to harmonise our production and your plant needs.



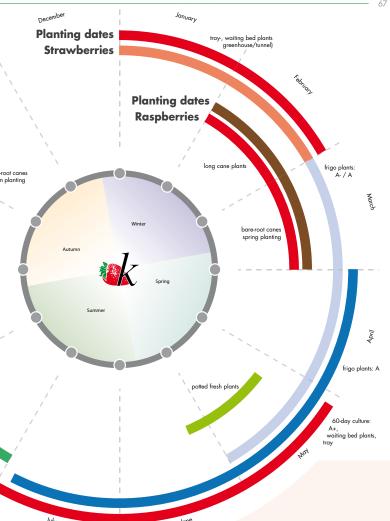
fresh plants, misted tips

Strawberries Ordering dates:

- frigo plants:
 October January
- → for delivery from January
- waiting bed plants:
- → for delivery in the following year
- tray plants: until 15th June
- → for delivery in the following year
- fresh plants, misted tips: until 15th May
- → for delivery in July/August

Planting dates:

- waiting bed plants: (greenhouse/tunnel): January/February
- tray plants: (greenhouse/tunnel): January/February
- frigo plants: A-/A: March – May
- frigo plants:
 A: April 25th July
- 60-day culture:
 A+, waiting bed, tray:
 10th May 30th July
- fresh plants, misted tips: End of July – 20th August



Raspberries Ordering dates:

- bare-root canes: until 31thAugust
- → for delivery in autumn/winter
- potted fresh plants until 15th Januar
- → for delivery in May/June
- long cane plants: until 30th April
- → for delivery in the following year

Planting dates:

- bare-root canes:
 autumn planting
 Mid October November
 spring planting
 February March
- potted fresh plants 10th May – 10th June
- long cane plants: February/March



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