

Crop Guide – Strawberries

PLEASE REMEMBER TO ALWAYS READ THE LABEL BEFORE USING ANY CHEMICAL

CLIMATIC AND SOIL REQUIREMENT

Berries prefer to grow in areas where the winters are very cold followed by mild summers. They need full sun for the highest yields at least 6 (six) hours a day. The soil requirement differs according to variety. Avoid soils with a high clay content. Strawberries grow well in soils that are well drained and high in organic matter.

CULTURAL PRACTICES

Planting

It is important to plant strawberries at the correct time of the year as the crop is sensitive to changes in daylight length. Strawberry plants should be planted at the correct depth (not too deep or too shallow). The crown of the plant must be above the soil surface. Strawberries are normally planted in staggered double rows with an in-row and diagonal spacing of 20 cm x 20 cm. However, this spacing can differ. Plants should be spaced wider (30 x 30 cm) when planted early but closer (10 cm x 10 cm) when planted late. Plants should not be spaced too densely as this will create favourable conditions for pests and diseases.

Fertilization

Soil sampling levels are important and differ according to variety. No lime or phosphorus should be applied after planting as it has already been applied during soil preparation. However, regular applications of nitrogen (N) and potassium (K) throughout the season are essential. Potassium is vital for the formation of flowers and to ensure quality fruit. Enough potassium will also ensure a good yield and quality fruit. Potassium should be applied monthly, starting from the date on which the first flowers appear. Strawberries also need a constant supply of nitrogen, especially after planting. Any source of nitrogen can be used.

		N	P2O5	K2O	CaO	MgO
REMOVAL (kg/MT fruits)		6-10	2.5-4.0	10-15	3.7-4.9	1.1
YIELD LEVEL		UPDATE & REMOVAL BY YIELD LEVELS (kg/ha)				
8 MT/ha	Plants uptake	49	21	83	29	6
	Yield Removal	15	5	26	9	2
	Total recommended application rate	59	68	108	15	6
16 MT/ha	Plants uptake	81	34	138	48	9
	Yield Removal	30	10	51	18	3
	Total recommended application rate	97	83	179	24	9
25 MT/ha	Plants uptake	118	48	200	68	13
	Yield Removal	47	15	80	27	5
	Total recommended application rate	142	100	260	34	13
30 MT/ha	Plants update	129	51	218	75	14
	Yield Removal	57	18	96	33	6
	Total recommended application rate	155	104	283	38	14

35 MT/ha	Plants update	147	59	250	85	16
	Yield Removal	66	21	112	38	7
	Total recommended application rate	176	113	325	43	16

Growth stage	Actual N application (kg / ha / day)
Plant establishment and first vegetative growth	0.5 – 0.7
1 st wave of flowers and fruits	1.0 – 1.5
Cold season, slow plant development	0.7 – 1.0
2 nd wave of flowers and fruits, marked vegetative and reproductive development	1.5 – 2.0
3 rd wave of flowers and fruits, peak vegetative & reproductive development	2.0 – 2.5
3 rd & 4 th wave of flowers and fruits, peak vegetative & reproductive development.	1.0 – 1.5

Plants use mainly stored organic nitrogen

Fertilization Methods

Commercial cultivation of strawberries normally takes one of the following fertilization schemes:

- Base dressing + a few side dressings throughout the growth cycle of the crop. This method is common among growers who are not equipped with a nutrigration (fertigation) setup.
- Base dressing + many side-dressing sessions throughout the growth cycle of the crop. "Many" can take the form of once weekly, once daily, or even- many daily applications, carried out by nutrigration (fertigation).
- Usage of controlled release fertilizers.
- A combination of the above-mentioned methods, according to the grower's capability and preferences.
- Hydroponics
- Foliar feeding. This method serves normally as a complementary treatment to assist the application when encountering problems of soil uptake, and when fast correction results are needed.

Irrigation

Irrigation is necessary to produce quality fruit. Certain factors should be considered in deciding on the time and frequency of irrigation. Such factors include soil type, water quality, weather conditions, season, type of fruit, the type of irrigation system used as well as mulching. Strawberries require 15 mm to 25 mm of irrigation per week and this will depend on the time of year and the stage of production. Sandy soils have low water-holding capacities. It is therefore essential to apply small volumes of water at relatively short intervals, i.e. 2 to 3 days between irrigations. Loamy and clayey soils, on the other hand, have higher water-holding capacities. Larger volumes of water should therefore be applied with longer intervals between irrigations such as once every 4 to 5 days between irrigations.

Weed Control

Grass and weeds absorb considerable quantities of nitrogen and water to the detriment of trees. Weeds can be controlled either mechanically or chemically. However, hand hoeing is labour intensive and time consuming. Hoeing can also damage the roots or fruit of the strawberry plants. Caution should be taken when herbicides are used for weed control. The herbicide must not come into contact with the strawberry plants. User instructions, as supplied by the manufacturer of the herbicide, should be adhered to.

Authority (Sulfentrazone)

Authority is a selective, soil applied herbicide for the control of wild buckwheat, lambs' quarters, pigweed, groundsel and other broadleaf weeds. Authority may be applied as a broadcast spray or as a banded



treatment. Applications should be made to dormant strawberry plants and only once per production season. The recommended timing is to apply to dormant plants before spreading mulch in the late fall. Spring applications may be made during dormancy to established plantings only, very soon after straw removal and before new growth resumes. Applications to strawberry plants with emerged growth are not recommended due to leaf burning and possible stand loss

Use 0.22 to 0.29 L/ha of Authority per application, depending on soil organic matter and texture.

Dual Magnum (S-Metolachlor)

Dual Magnum is registered for control of American nightshade, Eastern black nightshade, crab grass, barnyard grass, fall panicum, foxtails, witch grass, yellow nut sedge (pre-plant incorporated only), and for suppression of redroot pigweed. Dual II Magnum's strength is generally on control of annual grasses. Pre-emergent applications sometimes provide better control of nightshades than pre-plant incorporated applications. Dual II Magnum is registered for use at 1.25 to 1.75 L/ha. The higher rate is recommended when the weed pressure is high. Apply in a minimum of 150 L water per hectare. Do not apply Dual II Magnum to the cultivar Joliette.

Planting year: Apply as a pre-plant incorporated or pre-emergent treatment after planting. Only one application per year is permitted. Some initial injury may result, but it is temporary and does not reduce yields the following year. If Dual II Magnum is used, do not harvest berries from any variety in the planting year

Glyphosate (any formulations)

Although glyphosate is common to many products, the salt formulation and surfactants present may vary. Differences in weed control between these products are generally considered minimal. Make sure to use the application rate on the product label for the formulation of product that you are applying. Glyphosate kills susceptible plants by inhibiting growth. Treated plants become pale green and slowly turn brown. Glyphosate will damage or kill most green plants and must therefore be used in a manner to avoid spray contact or drift onto strawberry plants or other crops.

Site Preparation: Glyphosate is used mainly for site preparation in the year(s) prior to planting. It must be applied to actively growing weeds at the appropriate growth stage as specified on the labels. Glyphosate is absorbed by the foliage and translocated to above and below ground growing points. Fields treated with glyphosate can be tilled as early as 3 days (72 hours) after application, with little loss in weed control. Otherwise, it is recommended that fields not be tilled until 5 to 7 days following application. This allows for adequate translocation and maximum weed control. Do not delay tillage until field vegetation turns brown, as this may reduce control. Glyphosate should be applied in 50 to 200 L water per hectare. Lower water volumes (50 to 100 L/ha) will usually provide the best results. If higher water volumes (>100 L/ha) are used, then surfactants are recommended to improve control. If glyphosate is mixed and applied in hard water, reduced weed control may occur as a result of less absorption. Therefore, for optimal results, glyphosate should be applied in soft water. The addition of ammonium sulphate to hard water can counteract the negative action of the hard water and improve weed control

Fusilade Forte (fluazifop-p-butyl)

It is registered for the control of emerged annual grasses, volunteer cereals and quack grass in either the planting or fruiting years. For barnyard grass and volunteer cereals, apply at 0.8 L/ha between the 2 and 5 leaf stage. Suppression of top growth will be obtained with the 1 L/ha rate. Fusilade will not control broadleaf weeds or sedges. Venture L must not be applied to strawberries within 30 days of harvest. Fusilade applications should not be made when strawberries are in bloom. Fusilade is absorbed through



the leaves, and translocated to the areas of active growth where it inhibits further growth. It is a slow acting herbicide. Injury symptoms on susceptible grasses may take up to two weeks to become apparent. Growth, however, stops soon after application. Early injury symptoms on grasses include cessation of growth and a gradual change of foliar color to yellow or purplish-green to brown. Fusilade is less effective if grasses are under stress or are too large

Pest & Disease Control

Regular monitoring of pests is of the utmost importance. This will ensure timely intervention to control the pests before the infestations reach critical levels. There are several insecticides which are registered for strawberries to control specific pests. It is important to adhere to the user instructions as supplied by the manufacturers. Red spider mite,

leaf spot and botrytis could be problems on strawberries. The key to good control of leaf spot is good sanitation. Botrytis is a grey mould which is most probably the biggest enemy of strawberries and can be controlled by fungicides

NEMATODES

Vaniva	Cyclobutrifluram 450g/lt	450mls/ha
Velum Prime	Fluopyram 400g/lt	500mls/ha through drip

Immediately after Planting		
Strawberry Leaf roller	Malathion	2.75 – 4.25kgs/ha
Black Root Rot	Ortiva	1,1lts/ha or 6mls/100m row
	Azoxystrobin	1,1lts/ha or 6mls/100m row
Starting one month After transplanting		
Leaf Spot	Bellis	1,2kgs/ha
	Prestige	1,2kgs/ha
Powdery Mildew	Bellis	1,2kgs/ha
	Prestige	1,2kgs/ha
	Velum Prime	500mls/ha through drip
Two spotted Spider-mite	Oberon	880-1160mls/ha. Max of 3 applications
	Abamectin	225mls/ha in min 400lts water/ha
	Dynamec	225mls/ha in min 400lts water/ha
Red Stele	Aliette	5.6kgs/ha
	Ridomyl Gold	250g/100lts water at 500lts mixture/ha
Strawberry Aphid	Sivanto Prime	500-750mls/ha
	Confidor	7.5-12g/100m row in 2000lts water per ha as a soil drench
Botrytis Fruit Rot	Bravo	3.5lts/ha
	Bellis	1,6kgs/ha
	Prestige	1,6kgs/ha
Strawberry Bud Weevil	Karate Zeon	100mls/ha
Leaf rollers & leafhoppers	Malathion	2.75 – 4.25kgs/ha
	Dynamo	2.5kgs/ha
Root Weevils	Actara	210-280g/ha

