

Capsicum and chilli information kit

Reprint – information current in 1999



REPRINT INFORMATION – PLEASE READ!

For updated information please call 13 25 23 or visit the website www.deedi.qld.gov.au

This publication has been reprinted as a digital book without any changes to the content published in 1999. We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research:

- Chemical recommendations—check with an agronomist or Infopest www.infopest.qld.gov.au
- Financial information—costs and returns listed in this publication are out of date. Please contact an adviser or industry body to assist with identifying more current figures.
- Varieties—new varieties are likely to be available and some older varieties may no longer be recommended. Check with an agronomist, call the Business Information Centre on 13 25 23, visit our website www.deedi.qld.gov.au or contact the industry body.
- Contacts—many of the contact details may have changed and there could be several new contacts available. The industry organisation may be able to assist you to find the information or services you require.
- Organisation names—most government agencies referred to in this publication have had name changes. Contact the Business Information Centre on 13 25 23 or the industry organisation to find out the current name and contact details for these agencies.
- Additional information—many other sources of information are now available for each crop. Contact an agronomist, Business Information Centre on 13 25 23 or the industry organisation for other suggested reading.

Even with these limitations we believe this information kit provides important and valuable information for intending and existing growers.

This publication was last revised in 1999. The information is not current and the accuracy of the information cannot be guaranteed by the State of Queensland.

This information has been made available to assist users to identify issues involved in the production of capsicum and chilli. This information is not to be used or relied upon by users for any purpose which may expose the user or any other person to loss or damage. Users should conduct their own inquiries and rely on their own independent professional advice.

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in this publication.



Queensland Government



Common QUESTIONS

This section contains the most commonly asked questions about growing capsicums and chillies. Where the word capsicums is used it includes chillies unless they are mentioned separately. The answers are as brief as possible. Where this is difficult and more detail is required, we refer you to other sections of the kit. Symbols on the left of the page will help you make these links.

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Varieties



a key issue

Varieties
Section 4 page 19

What variety do I plant?

The two main capsicum varieties grown are Target in the Bundaberg district and Merlin in the Dry Tropics. Chilli varieties commonly grown include Caysan, Firefly, Inferno and Long Cayenne.

Transplants

What do seedlings cost?

Container-grown seedlings cost about \$55 per thousand plus the cost of the seed, which for new hybrid varieties may be up to \$9000 per kilogram.



more info

Seedling nurseries
Section 6 page 5

Where can I buy transplants?

Numerous seedling nurseries grow transplants for sale.

Why aren't my transplants growing properly?

The most common reasons for poor transplant growth in the nursery are poor water management and over fertilising.

Over watering is the most common cause of poor seedling growth. Irrigate until water just starts to drip out of the cell. Over watering leaches out fertiliser and also induces poor root health. If this occurs, increase the fertiliser and reduce the amount of water applied.

Over fertilising could occur:

- if too much fertiliser is added to the mix used to produce the seedlings;
- if too much foliar fertiliser is applied in cool weather (for example, if growers are trying to push their seedlings);
- from a combination of too much fertiliser in the seedling mix and too much foliar fertiliser sprayed over the plants.

You must be careful about how much fertiliser, particularly nitrogen, goes into the seedling mix and how much is applied thereafter. One way of finding out what is happening is to have a conductivity measurement done on the seedling mix to measure salt content (from water or fertiliser). Very often, when seedling growth is poor, the conductivity of the mix is too high.

Poor quality water will produce similar symptoms, for example necrosis (death) of the leaf margins and leaf drop. Water used on seedlings should have a conductivity of less than 1200 microSiemens per centimetre ($\mu\text{S}/\text{cm}$).

Planting

What time of year can capsicums be grown?

In north Queensland plant capsicums from February to September to harvest from May to December. In south Queensland there are two main seasons—planting from January to April gives a March to early August harvest and planting from July to September gives a late October to early January harvest.

more info



Growing the crop
Section 3 page 5

How many plants do I need?

About 30 000 to 40 000 plants per hectare is the optimum density.

Should I use plastic mulch?

Almost all commercial crops of capsicums are grown on plastic mulch, which will significantly increase yields and make crop management a lot easier. Plastic mulch helps control weeds, aids in maintaining soil moisture and reduces nutrient leaching, so fertiliser stays in the raised bed. It can also be used to modify soil temperatures. Better root and plant growth can be achieved by using reflective or white plastic mulch during summer to reduce soil temperature and black plastic mulch in winter to warm the soil. Disposal of plastic mulch at the end of its use may be a major problem.

Pests, diseases and disorders

What is this brown blotch on the side of the fruit?

A brown blotch can be either:

- blossom-end rot, a dry papery blotch on the side or the lower end of the fruit, or
- sunburn, a bleached softer area on the side or the top of the fruit.

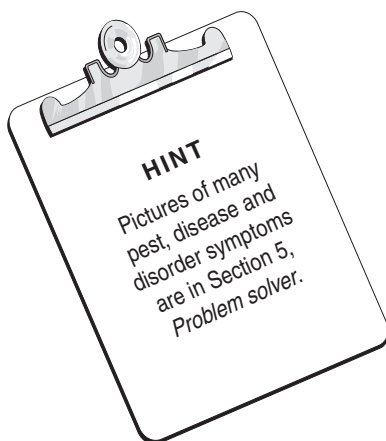
Blossom-end rot usually has a firm ridge around the outside of the blotch where it meets the healthy fruit.

What causes holes in the fruit?

The most common cause of holes is heliothis attack, but eggfruit caterpillar and potato tuber moth can also cause them. Low temperatures at time of setting can cause splitting in the end of the fruit.

Why are my leaves going yellow and falling off?

Leaf yellowing and falling is usually caused by either powdery mildew or bacterial spot. Powdery mildew is a fungus and can be a big problem in northern Queensland. Bacterial spot is caused by bacterial infection resulting in black spots on the leaves, which then go yellow and drop off.



Powdery mildew is more of a dry weather problem whereas bacterial spot can become very prevalent in wet windy weather.

Why are my leaves puckered and sticky?

The sticky secretion (honeydew) is caused by aphids (usually green peach aphid), which are small black or green insects that suck sap from the plant. A black sooty mould may grow on the sticky secretion, giving the fruit a dirty, sticky, black appearance. Green peach aphid is resistant to some insecticides.

Leaves may also become sticky from the secretions of silverleaf whitefly. Spray with a suitable chemical from the *Problem solver handy guide*.

What causes plants to wilt suddenly?

Plant collapse soon after planting out can be due to damping-off organisms such as *Pythium*, *Phytophthora* and *Rhizoctonia* or from attack by crickets, cutworms or wireworms. High temperatures heat the plastic mulch, which can burn the plant stem around the level of the plastic.

Once the plants have become established, collapse can be caused by sclerotium base rot (*Sclerotium rolfsii*). This fungus appears around the base of the plant as a thick white growth with small radish-seed-like resting bodies at the advanced stage of the infection. Drenching around the base of the plants with a suitable chemical from the *Problem solver handy guide* may be worthwhile if heavy losses are expected.

Plant collapse can also be due to sudden wilt or bacterial wilt.



Disease management
Section 4 page 77

Do capsicums get nematodes?

Yes. Capsicums can get nematodes but treatment is rarely necessary. The effect of nematodes on the plant is much less severe than on many plants, for example tomatoes.

What causes misshapen fruit on my bush?

Fruit may be misshapen because there is insufficient seed in part or all of the fruit. This is the result of poor pollination and is commonly caused by extremes of temperature, either too high (above 32°C) or too low (below 15°C). A well-shaped fruit requires the development of seeds evenly throughout the fruit.

Wind damage and thrips in the flowers can also cause misshapen fruit. Plants infected with potato virus Y (PVY) may produce deformed, flattened fruit.

How do I adopt an integrated pest management approach to capsicums?

Crop monitoring consultants are generally very good at integrated pest management (IPM), so in areas that have monitoring



IPM
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consultants we suggest you employ them to monitor your crops and make IPM decisions. Better results will be achieved if integrated pest management programs are carried out on a 'whole district' basis.

Using spray chemicals

Do I need training in the safe use of chemicals?

In some states you cannot buy chemicals unless you have a current spray accreditation. Currently, by law in Queensland, you only need training in safe use of chemicals if you are a contractor spraying on other people's land or you want to buy restricted chemicals.

However, most customers now see it as highly desirable for their growers to be able to demonstrate safe responsible use of chemicals. One of the best ways to demonstrate this is to obtain a ChemSmart accreditation. Remember spray accreditations must be renewed every five years.



ChemSmart Training
Section 6 page 7

How do I get spray accreditation?

Spray accreditation is a certificate obtained after completing a training course in the safe handling and application of chemicals.

Spray accreditations can be obtained by attending a course provided by an accredited ChemSmart Training Queensland trainer.

How do I store my chemicals?

Chemicals need to be stored in accordance with the AS2507–1998 standard. This does not mean you will have to spend a fortune on elaborate storage facilities. You do, however, need to be aware of several safety, environmental and food safety factors whenever you deal with chemicals. Further information on correct use of chemicals is covered in the chemical user course. Agsafe or ChemSmart accredited trainers also understand these requirements and employees of farm chemical resellers with Agsafe accreditations are also useful sources of information.



Calibration method
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How do I calibrate my spray equipment?

To work efficiently equipment needs to be calibrated and results of this calibration should be documented. You will learn the correct method of calibration at the spray accreditation course.

Do I need to keep a diary of spraying records?

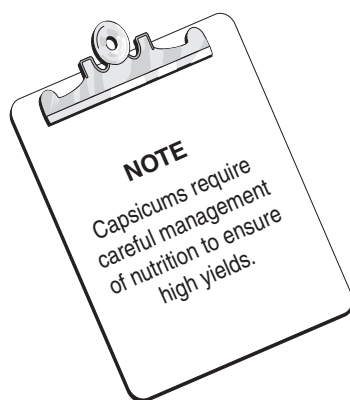
It is not compulsory to keep a diary but we strongly recommend that you keep accurate records of spray applications. Quality assurance schemes and the preharvest Interstate Certification Assurance (ICA) protocol require you to keep records. Records

of chemical application are one of the most important pieces of documentation you will need to prove what you have done with chemicals. Produce merchants and agents supplying the retail sector expect you to keep spray records showing **at least** what was applied, how much, by whom, and when the application took place.

What is a withholding period (WHP)?

The withholding period is the number of days that must pass between the last chemical application and harvest. It will be on the chemical label. Produce at the markets is randomly tested for chemical residue. Farmers have been prosecuted when chemical residues were above the maximum residue limit (MRL), or residues of non-registered chemicals were found.

Residues should be below the MRL if the chemicals are used at the registered rate and frequency and the withholding period is observed.



Nutrition
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Fertiliser

What fertilisers do I need?

A fertiliser application schedule should be based on the results of a complete soil analysis taken six to eight weeks before planting. This will also indicate if lime or dolomite is required to increase the pH to the optimum of between 6 and 6.5. These products should be applied at least four weeks before the crop is planted.

If no soil analysis is available and the soil is of average fertility, a basal fertiliser that contains 45 kg/ha of nitrogen, 50 kg/ha of phosphorus and 50 kg/ha of potassium is commonly used. On fertile soils apply 30 kg/ha of nitrogen, 30 kg/ha of phosphorus and 40 kg/ha of potassium.

Once the crop is growing, sap testing is used to indicate how much nitrogen fertiliser should be applied through the trickle irrigation.

Irrigation

What quantity and quality of irrigation water do I need?

Almost all capsicums are grown with trickle irrigation and this requires up to four megalitres (ML) of water per hectare. For seedling growth water up to 1200 microSiemens per centimetre ($\mu\text{S}/\text{cm}$) can be used. In the field water above 2000 $\mu\text{S}/\text{cm}$ will markedly reduce yields and increase the incidence of blossom-end rot.



Irrigation
Section 4 page 49

Harvesting

How long does it take for a capsicum crop to mature?

Capsicums and chillies are in the seedling stage for four to eight weeks, depending on the temperature and the size of the cell in which they are grown. From transplanting to green harvest takes 10 to 12 weeks and you can add another two to three weeks for harvest of red fruit.

What yield can I expect?

Average yield for capsicums is about 4000 to 5000 cartons per hectare. Capsicum yields are usually lower if fruit is left on the plant to colour. Chillies are harvested over a longer period, up to about nine months, and average yields are 6000 to 7000 three-kilogram cartons per hectare.

When is the fruit ready to pick?

The first mature green fruit should be ready about 10 to 12 weeks after transplanting. Mature green fruit will be firm, thick-walled and bright green. Fruit usually takes a further two to three weeks to reach the fully mature colour. For the common red capsicums the market wants either full green or full red fruit. Intermediate colours ranging from stripes of red to chocolate are not wanted.



Harvesting
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How many picks do I take?

When the variety Merlin is grown in the Dry Tropics it is usually harvested from one to four times, while Target grown in Bundaberg may be harvested six or more times.

Postharvest treatment

Do capsicums and chillies need to be cooled after harvest?

Yes. The temperature should be reduced as quickly as possible to between 7 and 10°C.

Can I ripen the fruit in a gas room?

No. Colour development is very poor if you try to ripen fruit using ethylene.



Postharvest treatments
Section 3 page 43

Marketing

What are the quarantine restrictions in selling fruit interstate?

The quarantine treatments required for capsicums vary from state to state. No treatments are required for capsicums going



Quarantine contacts
Section 6 page 16

into New South Wales, except into the Fruit Fly Exclusion Zone (FFEZ) which includes the Murrumbidgee Irrigation Area (MIA), New South Wales Sunraysia and the mid-Murray region. All other states require that capsicums be treated to control fruit fly, either under DPI supervision or under an Interstate Certification Assurance (ICA) scheme.



AQIS offices
Section 6 page 15

What are the requirements for exporting?

For overseas export of capsicums your packing shed must be registered with the Australian Quarantine and Inspection Service (AQIS). Our main markets are South-East Asia and New Zealand. New Zealand is very restrictive in what they will accept, whereas South-East Asia has comparatively easy access. Information on the requirements of overseas countries is available from AQIS offices.



Quality assurance
Section 4 page 99

What level of quality assurance (QA) do I need?

You will need different levels of quality assurance (QA) depending on to whom you supply your produce. If you supply direct to a retailer in some instances you may need a full quality management system which is accredited by a third party. If you supply to a processor you will need to meet their requirements.

General

Do I need bees for pollination?

No. Bees are not important for pollination. Although you always see plenty of bees in the patch capsicums are self-pollinated. Bush movement due to wind is sufficient for pollination.

What is the best spray equipment to use?

There is no one best type of spray equipment to use in capsicums, so buy equipment that suits your situation. Select equipment based on its ability to give good coverage; droplet size is very important, as is the volume of active ingredient per hectare to be applied. Boom sprays are commonly used and some growers use droppers down between the rows. In north Queensland, aerial spraying is still used. Boom-mounted Micronair sprayers and standard boom sprays are also used.