



OUTSTANDING QUALITIES

- ◆ RESISTANCE TO FUSARIUM RACE 3, TOMATO CURLY STUNT AND TOMATO SPOTTED WILT
- ◆ GOOD COMPACT PLANT HABIT
- ◆ UNIFORM FRUIT SIZE AND SHAPE
- ◆ GOOD LEAF COVER AND VIGOUR

Emma* is a new indeterminate salad tomato from Sakata's local breeding programme. **Emma*** is characterized by a very good fruit set, uniform fruit size and a very good disease package. **Emma*** has high resistance to *Verticillium* wilt race 1 (Vd: 1), *Fusarium* wilt races 1, 2 and 3. (Fol: 1 - 3), Tomato mosaic (ToMV) and Leaf mold races 1 - 5 (Ff: 1 – 5) (ex Cf) and intermediate resistance to Tomato curly stunt (ToCSV) and Tomato yellow leaf curl (TYLCV). **Emma*** has a very good shelf life. The strong vigour of the plants tends to make it less susceptible to common leaf diseases under circumstances normally conducive to disease development. **Emma*** can be grown under protection in shadenet structures and in the open field.

SPECIAL VARIETAL REQUIREMENTS

- First three trusses should not be set during the coldest time of the season
- Contact area representative for more information

CHARACTERISTIC*	EMMA*
KIND	Indeterminate F1 hybrid tomato (<i>Lycopersicon esculentum</i> L.)
PRODUCTION TYPE	Open field and under protection
FIRMNESS	Very good
MATURITY	Medium
PLANT VIGOUR	Strong
SEASON	Year-round production in frost-free areas
FRUIT WEIGHT	160 - 220 g
FRUIT SHAPE	Oblate
PEDUNCLE	Jointed
ATTACHMENT POINT	Medium, neat
SHOULDER	Smooth to slightly ribbed
SHOULDER COLOUR	Uniform
COLOUR	Internal: very good; External: very good
FLAVOUR	Good
UNIFORMITY	Excellent
LEAF COVER	Medium dense
DISEASE REACTION (SCIENTIFIC)	<p>High resistance: <i>Verticillium dahliae</i> race 1 (Vd: 1), <i>Fusarium oxysporum</i> f.sp <i>lycopersici</i> races 1, 2, 3 (Fol: 1 - 3), <i>Tomato mosaic virus</i> (ToMV), <i>Fulvia fulva</i> races 1-5 (Ff:1-5) and <i>Meloidogyne incognita</i>, <i>Meloidogyne javanica</i> (Mi,Mj)◆</p> <p>◆ Nematode resistance can break down when soil temperatures are above 32°C</p> <p>Intermediate resistance: <i>Tomato curly stunt virus</i> (ToCSV), <i>Tomato yellow leaf curl virus</i> (TYLCV) and <i>Tomato spotted wilt virus</i> (TSWV)</p>
MARKETS / END USE	Fresh market and pre-pack
POPULATION GUIDE	20 000 – 24 000 final stand per ha for production under protection 10 000 – 14 000 final stand per ha for open field
SPECIAL FEATURES	Excellent quality, resistant to Tomato curly stunt

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Resistance: is the ability of a plant variety to restrict the growth and development of a specified pest or pathogen and/or the damage they cause when compared to susceptible plant varieties under similar environmental conditions and pest or pathogen pressure. Resistant varieties may exhibit some disease symptoms or damage under heavy pest or pathogen pressure (HR = High resistance, IR = Intermediate resistance).

* **Experimental:** This variety does not appear on the current South African Variety list, but has been submitted for registration.

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GENERAL TIPS FOR TOMATO PRODUCTION

Climatic requirements

Tomatoes can grow at a wide range of temperatures but for optimum growth, tomatoes prefer temperatures between 10°C (minimum) and 30°C (maximum). The temperature requirements for the different growth stages are given in the table below. Tomatoes do not tolerate frost or waterlogged conditions and these should be avoided at all costs. The most sensitive stages for water and temperature stress are directly after transplanting, during the flowering stage and during the fruit development stages. Water stress during these stages of tomato development will reduce yield and quality.

Developmental stage	Temperature (°C)		
	Min	Opt	Max
Germination	11	16-29	34
Vegetative growth	18	21-24	32
Fruit set (night)	10	14-17	20
Fruit set (day)	18	19-24	30
Red colour development	10	20-24	30
Yellow colour development	10	21-32	40
Chilling damage		< 6	
Frost damage		< 1	
Lethal temperature		< -2	

Soil requirements

In South Africa, tomatoes are cultivated on different soil types, from heavy clay to light sandy soil and sandy peat. Tomatoes seem to prefer well-drained sandy soils. Good moisture-holding capacity with good drainage is important. Tomatoes grow well at a wide pH range from 5.5 - 7.5 but are sensitive to acid soils and if the pH (H₂O) is lower than 5.5, additional lime should be applied. The lime should be added 4 - 6 weeks before planting.

Soil preparation depends on the soil conditions and the climatic conditions under which the crop is to be cultivated. Tomatoes are very seldom direct-seeded. Seedlings are normally produced by commercial seedling growers and then transplanted.

Raised beds are ideal for tomato production. It helps prevent damage from soil compaction and flooding. Raised beds also improve airflow around the plant roots resulting in reduced disease incidence. Before beds are made, the soil should be properly worked to a depth of 40 cm to enhance aeration as well as water penetration and drainage.

Early blight (*Alternaria solani*)

Vegetables affected by this disease are tomato, potato and eggplant. Uncontrolled, the disease may cause severe defoliation, resulting in reduced fruit number and size.

Symptoms

This pathogen affects the plants foliar parts (yellowing that later turns brown and the leaf drops from the plant) as well as the stem and fruit. Brown spots develop on the leaves and fruit close to the calyx attachment and lesions occur on the stems.

Conditions favourable for disease development

Mild temperatures between 24 – 29 °C and humid conditions. For the spores to germinate free standing moisture is required, the spores are spread by air, irrigation water and heavy dew. The spores survive in soil, seed and plant material

Prevention and control

- Control humidity and wetting of the leaves
- Use pathogen free seed
- Spray with a fungicide at regular intervals

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