



PRODUCTION GUIDELINES FOR 1 HECTARE OF CABBAGE



PLANTING SEASON/DATE

- Cabbage are widely adapted to a wide range of weather conditions hence they can be grown throughout the year in most regions

CLIMATIC REQUIREMENTS

- Optimum temperature for growth and development is between 18 - 20 degrees Celsius, it is fairly resistant to frost and can survive at very low temperatures without damage.

SOIL CONDITIONS

- Cabbage thrives in well drained moisture retentive loamy soils well supplied with organic matter
- Ideal soil pH ranges from 5.5 - 6.5.

POPULATION AND SPACING

- Population of a hectare ranges between 40 000 – 45 000 plants/Ha and 55 000 – 65 000 depending on the cultivars
- For baby cabbage, population of between 80 000 – 100 000 per Ha are recommended
- Plant spacing; Large headed cultivars 60 – 70 cm between rows and 45 cm within rows
- Small to medium headed cultivars, 60 cm between rows and 30 cm within rows

When spraying, approximately 12.5 * 16 litre knapsacks will cover 1 hectare. That makes 200liters. IT IS

ADVISABLE THAT SOIL TESTS BE DONE BEFORE PLANTING.

FERTILIZER REQUIREMENT	PRODUCT RECOMMENDED	RATE/ Ha	APPLICATION/COMMENT
BASAL DRESSING	OMNIA 20:7:3 (30) + 5, 50% ZN OR OMNIA 2:3:4(30) + 0.5% Zn OR OMNIA 2:3:2(30) OR OMNIA 4:2:1 (28)	500-1000	Apply all at transplanting or just before transplanting
TOP DRESSING	OMNIA Urea OR Ammonium nitrate OR LAN OMNIA Omniboost OR	200-500 150-300	Split apply at week 2-3 and 5-6 after transplanting Split apply at 4 and at 6 weeks after transplanting
	OMNIA Nutriplex	150-300	Split apply at 4 and at 6 weeks after transplanting
	OMNIA Potassium nitrate		Apply in 2 splits, at week 8 and 10 from planting
TOP DRESSING (FOLIAR SPRAY)	KELP -P-MAX 20L	2-4L	Apply 2 weeks after transplanting and after 2 weeks again from the previous application

COMMON PROBLEMS	PRODUCT RECOMMENDED	RATE/Ha	APPLICATION/ COMMENTS
NEMATODES	Oxamyl, Nema-cur 400EC /Fenamiphos Imidacloprid (Imirod)	2 - 3L 380-600ml	Apply as a soil drench within 24 hours after transplanting
DOWNY MILDEW	Benomyl WP OR	300-600g	Full cover spray. Repeat at 10 -14day intervals.
	Copper Oxychloride OR	3-7Kg	Full cover spray. Repeat at 10 -14day intervals.
	Chlorothalonil	1-2l	Full cover spray. Repeat at 10 -14day intervals.
DARK LEAF SPOT	Chlorothalonil	1-2l	Full cover spray. Repeat at 10 -14day intervals.
DAMPING OFF	Copper Oxychloride	3-7Kg	Repeat at 7-10day intervals when necessary

THIS IS A RECOMMENDATION

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COMMON PROBLEMS	PRODUCT RECOMMENDED	RATE/Ha	APPLICATION/ COMMENT
APHIDS, WHITE FLY	Chlorpyrifos OR	800- 1000ml	Apply at first sign of infestation
	Imidacloprid (Imirod)	380-600ml	Apply as a soil drench within 24 hours after transplanting
CUTWORMS, BOLL WORM	Lambda-cyhalothrin	200ml	Apply over crop rows two weeks after transplanting
	Delta-thrin	300ml	Apply at 7 to 10 days interval as necessary
DIAMOND BACK MOTH (DBM), RED SPIDER MITE	Chlorpyrifos OR	800-1000ml	Full cover spray, apply at first sign of infestation
	Lambda-cyhalothrin OR	320ml	Apply at first sign of infestation
	Advance/Addition (Indoxacarb)	250-300 ml	Do not apply more than 5 sprays per season
	Fipronil	185ml	Apply every two weeks not more than 3 sprays/season
	Savage (Chlorfenapyr)	300ml	Apply prior first sign infestation, repeat at 7-10 day intervals not more than 4 times
	Emamectin benzoate	300ml-500ml	Full cover spray
	Acephate	400-800g	Repeat at 7 to 10 spray intervals as necessary
Spinosad (Trinosad 480SC)	200-300ml	Apply at 7 to 10 days interval as necessary	
Tamron (Methamidophos)	400ml	Apply at 7 to 10 days interval as necessary	
Villa Methomyl 90 SP	225-250ml	Apply as full cover spray	



MAIZE PRODUCTION GUIDELINE AND INPUTS FOR 1 HECTARE



PLANTING SEASON/DATE

- Maize is widely adapted to a wide range of weather conditions, but susceptible to frost.

CLIMATIC REQUIREMENTS

- Maize is best grown in temperatures between 18°C and 27°C during the day and around 14°C during the night

SOIL CONDITIONS

- Maize thrives in well drained soils with rooting depth of 45-60cm
- Ideal soil pH ranges from 5.5 - 6.5

POPULATION AND SPACING

- Maize generally requires about 25 kgs of seed, specifically varies with variety, planting time, farming region
- Plant population; 45 000 to 55 000 depending with the variety, time of planting, agro-ecological region, intended purpose e.g fodder or green mealies
- Plant spacing 25 - 30cm between plants and 80 - 100cm between rows.

When spraying, approximately 12.5 * 16 litre knapsacks will cover 1 hectare. That makes 200liters. IT IS ADVISABLE THAT SOIL TESTS BE DONE BEFORE PLANTING.

FERTILIZER REQUIREMENT	PRODUCT RECOMMENDED	RATE/ Ha	APPLICATION/COMMENT
BASAL DRESSING	OMNIA 20:7:3 (30) + 5, 50% ZN OR	500-1000	Apply all before planting
	OMNIA 2:3:4(30) + 0.5% Zn OR	500-1000	Apply all before planting
	OMNIA 2:3:2(30) OR OMNIA 4:2:1 (28)	500-1000	Apply all before planting
TOP DRESSING	OMNIA Urea OR Ammonium Nitrate OR	200-300	Split apply at week 2-3 and 5-6 after planting
	LAN	200-300	Split apply at 4 and at 6 weeks after planting
	OMNIA Omniboost OR OMNIA Nutriplex	200-300	Split apply at 4 and at 6 weeks after planting
	OMNIA Potassium nitrate	200-300	Apply in 2 splits, prior flowering and a week from previous application
TOP DRESSING (FOLIAR SPRAY)	KELP -P-MAX 20L	2-5L	Apply 2-3 weeks after planting and every two weeks thereafter.

COMMON PROBLEMS	PRODUCT RECOMMENDED	RATE/Ha	APPLICATION/ COMMENTS
APHIDS	Chlorpyrifos	100-200ml	Apply at first sign infestation
	Imidacloprid(Imidor)	200-300ml	Apply as a soil drench within 24 hours after transplanting
ARMYWORM	Lambda-cyhalothrin	150-200ml	Apply over crop rows two weeks after planting
	Indoxacarb (Addition)	200-250ml	Apply every two weeks from 4-6 weeks after planting
	Delta-thrin (Deltamethrin)	250-300ml	Apply prior first sign infestation, repeat at 7-10 days interval not more than 4 times
	Savage (Chlofenapyr)	350-700ml	Apply during first infestation and repeat as necessary

COMMON PROBLEMS	PRODUCT RECOMMENDED	RATE/Ha	APPLICATION/ COMMENTS
STALK BORER	Chlorpyrifos	160ml	Full cover spray, apply at first sign of infestation
	Lambda-cyhalothrin	160ml	Full cover spray, apply at first sign of infestation
	Indoxacarb	250-300 ml	Apply at first sign of infestation
	Fipronil	185ml	Apply at first sign of infestation
	Emamectin benzoate	400-800g	Apply every two weeks not more than 3 sprays/season
	Acephate	200-300mL	Apply prior first sign infestation, repeat at 7-10day intervals not more than 4 times
	Villa Methomyl 90 SP	225-250mL	Repeat at 7 to 10 spray intervals as necessary to maintain control
NEMATODES	Oxamyl, Nemacur 400EC/Fenamiphos	2 - 3L	Apply to the land prior to transplanting at any time from two weeks before until immediately before transplanting.
DOWNY MILDEW	Benomyl WP	300-600g	Full cover spray. Repeat at 10 -14day intervals.
	Copper Oxychloride	3-7Kg	Full cover spray. Repeat at 10 -14day intervals.
	Chlorothalonil	1-2l	Full cover spray. Repeat at 10 -14day intervals.
BACTERIAL KERNEL ROT	Chlorothalonil	1-2l	Full cover spray. Repeat at 10 -14day intervals.
COMMON RUST	Copper Oxychloride	3-7Kg	Repeat at 7-10day intervals when necessary

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TOMATO PRODUCTION GUIDELINE AND INPUTS FOR 1 HECTARE

DISEASES	FUNGICIDES RECOMMENDED	APPLICATION RATE/ Ha	APPLICATION/ COMMENTS
EARLY & LATE BLIGHT LEAF SPOTS	Copper oxychloride WP	2.5- 10 kg	Repeat as necessary at 7 days intervals as field crop sprayer
	Benomyl WP	250-750g	Full cover spray on 7-10 days intervals
	Indicate 250 SC	800-1000mL	Full cover spray on 7-10 days intervals
	Difenozim SC	1.2-1.4L	Full cover spray on 7-10 days intervals
POWDERY MILDEW	See Early and Late Blight above.		



PLANTING SEASON/DATE

- Rainfed crop: December – January, Irrigated crop: August - September

CLIMATIC REQUIREMENTS

- Grows best at day temp. range 21-25 degrees celcius & night range 8-20 degrees celcius
- Tomatoes can be grown all year round in frost free areas.

SOIL CONDITIONS

- But best results are obtained in deep, well-drained loams, the soil should be rich in organic matter and plant nutrients
- pH value of 5.8 to 7

PLANT POPULATION AND SPACING

- Use spacing of 1.2 - 2 m between, rows and 30 - 50 cm within rows.
- Seeds requirement of 120 – 160g per Ha
- Expected yield: 25 - 40 tonnes per Ha
- With higher fertilization rates and good agronomic practices yields can go up to 100 tonnes per Ha

When spraying, approximately 12.5 * 16 litre knapsacks will cover 1 hectare. That makes 200liters.

IT IS ADVISABLE THAT SOIL TESTS BE DONE BEFORE PLANTING.

PESTICIDES AND FUNGICIDES

FERTILIZER REQUIREMENT	PRODUCT RECOMMENDED	RATE/ Ha	APPLICATION/COMMENT
BASAL DRESSING	OMNIA 20:7:3 (30) + 5, 50% ZN OR OMNIA 2:3:4(30) + 0.5% Zn OR OMNIA 2:3:2(30) OR OMNIA 4:2:1 (28)	500-1000	All at transplanting or just before transplanting.
TOP DRESSING	OMNIA Urea OR Ammonium nitrate OR LAN + OMNIA Omniboost OR OMNIA Nutriplex Split apply OMNIA Calcium nitrate Split apply OMNIA Potassium nitrate	200-500 150-300 150-300 150-300 150-300	Split apply at week 2-3 and 5-6 after transplanting Incorporate with Urea/ AN preferably on fertigation Incorporate with Urea/ AN preferably on fertigation Split apply from early/ medium fruiting stage onwards Split apply at flowering and at early fruiting stage
TOP DRESSING (FOLIAR SPRAY)	KELP -P-MAX 20L	2-4L	Apply 2 weeks after transplanting and after 2 weeks again from the previous application

PESTS /INSECTS	PESTICIDES RECOMMENDED	APPLICATION RATE/Ha	APPLICATION/ COMMENTS
TUTA ABSOLUTA (LEAF MINER) BOLLWORMS CUTWORMS	Villa Addition (Indoxacarb)	250-300mL	Apply in 200 litres of water and repeat as necessary
	Villa Lambda 50 EC	200-250mL	Apply as soon as you notice symptoms and apply on 7 days intervals
	Villa Methomyl 90 SP Tamron 585 SL	225-250mL 500-1000mL	Apply as full cover spray Start spraying at flowering time and repeat every 7 to 14 days, as long as these pests remain active.
	Emamectin benzoate	150-200g	Apply during first incidence of larvae and repeat as necessary
	Delta-thrin (Deltamethrin) Acephate Spinosad (Trinosad 480 SC)	300 mL 400-800g 200-300mL	Apply in 7 to 10 days intervals as necessary Repeat at 7 to 10 days spray intervals as necessary to maintain control Apply at 7 to 10 days intervals as necessary
NEMATODES	Oxamyl, Nemaicur 400EC / Fenamiphos	2 - 3L	Apply to the land prior to transplanting at any time from two weeks before until immediately before transplanting.
RED SPIDER MITES THRIPS AND SEMI LOOPERS	Villa Savage (Chlorfenapyr)	350-700mL	Apply as a high volume, high pressure, full cover spray, at first signs of infestation and repeat as necessary.
	Metamidophos (Tamron 585 SL) Dichlorvos 1000 EC	500-1000mL 200-400mL	Start spraying at flowering time and repeat every 7 to 14 days, as long as these pests remain active. Apply as a full cover spray when the pest is noticed. Repeat as necessary.
FRUIT FLY APHIDS WHITE FLY, GRUBS AND HOPPERS	Imidacloprid/Imirod 350 SC	0.05mL per plant	Only for use on tomatoes in enclosed areas (e.g. glasshouses, tunnels, etc.). Apply as a soil drench 24 hours after transplanting.
	Thiaxam 250 WDG	0.03g per plant	Apply as a soil drench around the stem base in 50 ml water per plant at transplant or shortly afterwards.

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PRODUCTION REQUIREMENTS FOR 1 HA BUTTERNUTS, CUCUMBER OR SQUASHES



PLANTING SEASON/DATE

- Plant as soon as danger of frost is past and soil temperatures are above 18o C, up to February.

CLIMATIC REQUIREMENTS

- Optimum temperature ranges for production are 18 - 21 at night and below 29 degrees Celsius during the day therefore restricting production to summer

SOIL CONDITIONS

- Butternuts can be grown on a wide range of soils, fertile soils with adequate drainage are preferable, ideal soils are sandy loams or silty loams which warm up rapidly

PLANT POPULATION AND SPACING

- Spacing for basin method, 3.0 - 3.6 m apart.
- Rows, 2.0 - 3.5m between rows and 1.0 - 2.0 m within the row.
- Population variable but about 10 000 - 15000 plants per ha.
- Seed requirement of 2 - 4kg per Ha depending on seed size and spacing

When spraying, approximately 12.5 * 16 litre knapsacks will cover 1 hectare. That makes 200liters.

IT IS ADVISABLE THAT SOIL TESTS BE DONE BEFORE PLANTING.

FERTILIZER REQUIREMENT	PRODUCT RECOMMENDED	RATE/ Ha	APPLICATION/ COMMENT
BASAL DRESSING	OMNIA 20:7:3 (30) + 5, 50% ZN OR OMNIA 2:3:4(30) + 0.5% Zn OR OMNIA 2:3:2(30) OR OMNIA 4:2:1 (28)	500-1000	All at or just before transplanting
TOP DRESSING	OMNIA Urea OR Ammonium nitrate OR LAN + OMNIA Omniboost OR OMNIA Nutriplex Split apply OMNIA Calcium nitrate Split apply OMNIA Potassium nitrate	200-500 150-300 150-300 150-300 150-300	Split apply at week 2-3 and 5-6 after transplanting Incorporate with Urea/ AN preferably in fertigation Incorporate with Urea/ AN preferably in fertigation Split apply from early/medium fruiting stage onwards Split apply at flowering and at early fruiting stage
TOP DRESSING (FOLIAR SPRAY)	KELP -P-MAX 20L	2-4L	Apply 2 weeks after transplanting and after 2 weeks again from the previous application

PESTS/ INSECTS	PESTICIDES RECOMMENDED	APPLICATION RATE/Ha	APPLICATION/ COMMENTS
APHIDS PUMPKIN FLY/ FRUIT FLY	Imirod (Imidacloprid)	200ml	Apply as a soil drench within 24 hours after transplanting
	Methomyl 90 SP	225-250ml	Apply as full cover spray and repeat as necessary
	Thiexam 250 WDG	0.03g per plant	Apply as a soil drench around the stem base in 50 ml water per plant at transplant or shortly afterwards.
CUTWORMS	Savage (Chlorfenapyr)	250 -300ml	Apply as full cover spray and repeat as necessary
	Delta-thrin (Deltamethrin)	300ml	Apply as a full cover spray and repeat as necessary
	Lambda cyhalothrin	200ml	Apply as a band spray soon after germination/transplanting
	Methomyl 90 SP	225-250g	Apply as full cover spray and repeat as necessary
	Acephate	400-800g	Apply during first incidence of larvae and repeat as necessary
	Emamectin benzoate	200-300g	Apply in 200 L water/ha and ensure proper coverage of the full plant
DOWNEY MILDEW ANTHRACNOSE	Advance (Indoxacarb)	250-300ml	Apply in 200 litres of water and repeat as necessary
	Chlorpyrifos	800-1000ml	Full cover spray on 7-10 days intervals
	Copper oxychloride WP	2.5- 10 kg	Repeat as necessary at 7 day intervals as field crop sprayer
POWDERY MILDEW	Benomyl WP	250-750g	Full cover spray on 7-10 days intervals
	Indicate 250 SC	800-1000ml	Full cover spray on 7-10 days intervals
	Difenozim SC	1.2-1.4L	Full cover spray on 7-10 days intervals
	Dithane 45 (Mancozeb)	400-500ml	Apply when young shoots are 10cm long. Repeat at 7-10 day intervals if necessary

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