Tomato - Fertigation

The nutrient requirement for hybrids is 200:250:250 kg of NPK per ha. 75 % of P (187.5 kg P which comes to 1172 kg of superphosphate) is applied as basal. The remaining quantity of 200:62.5:250 kg of NPK per ha is applied through fertigation. Every day irrigation should be given for one hour. Along with this, water soluble fertilizers have to be given. This dose is split and given once in 3 days for the entire crop period through fertigation as detailed below.

Stage	Crop stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient applied			% of requirement		
					N	P	K	N	P	K
1	Transplanting to plant establishment stage	10	19:19:19 13:0:45 Urea (46%N)	65.78 27.77 8.44	12.50 3.61 3.88	12.50 - -	12.50 12.50 -	10.00	5.00	10.00
					19.99	12.50	25.00			
2	Flower initiation to flowering	30	12:61:0 13:0:45 Urea (46%N)	40.98 222.22 100.27	4.92 28.89 46.12	25.00 - -	- 100.00 -	40.00	10.00	40.00
					79.93	25.00	100.00			
3	Flowering to fruit set	30	19:19:19 13.0:45 Urea (46%N)	65.78 138.88 63.90	12.50 18.05 29.39	12.50 - -	12.50 62.50 -	30.00	5.00	30.00
					59.94	12.50	75.00			
4	Alternate day from picking	80	12:61:0 13:0:45 Urea (46%N)	20.49 111.11 50.14	2.46 14.44 23.06	12.50 - -	- 50.00 -	20.00	5.00	20.00
					39.96	12.50	50.00			
					199.82 or 200.00	**62.50**	**250.00**	100	25	100

The total quantity of the requirement of 19:19:19 is 132 kg, 12:61:0 is 62 kg, 13:0:45 is 500 kg and Urea is 223 kg per ha.

Brinjal -Fertigation

The nutrient requirement for hybrids is 200:150:100 kg of NPK per ha. 75 % of P (112.5 kg P which comes to 703 kg of superphosphate) is applied as basal. The remaining quantity of 200:37.5:100 kg of NPK per ha is applied through fertigation. Every day irrigation should be given for one hour. Along with this, water soluble fertilizers have to be given. This dose is split and given once in 3 days for the entire crop period through fertigation as detailed below.

Stage	Crop stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient applied			% of requirement		
					N	P	K	N	P	K
1	Transplanting to plant establishment stage	10	19:19:19 13:0:45 Urea	39.47 5.50 25.65	7.50 0.70 11.80	7.50 - -	7.50 2.50 -	10.00	5.00	10.00
				Subtotal	20.00	7.50	10.00			
2	Vegetative stage	30	12:61:0 13:0:45 Urea	24.50 88.89 142.4	2.94 11.56 65.50	15.00 - -	40.00 - -	40.00	10.00	40.00
				Subtotal	80.00	15.00	40.00			
3	Flower initiation to first picking	30	19:19:19 13.0:45 Urea	39.47 50.00 100.00	7.50 6.50 46.00	7.50 - -	7.50 22.50 -	30.00	5.00	30.00
				Subtotal	60.00	7.50	30.00			
4	Harvesting	80	12:61:0 13:0:45 Urea	12.30 44.40 71.13	1.48 5.80 32.72	7.50 - -	- 20.00 -	20.00	5.00	20.00
					Subtotal	40.00	7.50	20.00		
					200.00	**37.50**	**100.00**	100	25	100

The total quantity of the requirement of 19:19:19 is 79 kg, 12:61:0 is 37 kg, 13:0:45 is 189 kg and Urea is 340 kg per ha.

3. Chilli

Fertigation

The nutrient requirement for hybrids is 120:80:80 kg of NPK per ha. 75 % of P (60 kg P which comes to 375 kg of superphosphate) is applied as basal. The remaining quantity of 120:20:80 kg of NPK per ha is applied through fertigation. Every day irrigation should be given for one hour. Along with this, water soluble fertilizers have to be given. This dose is split and given once in 3 days for the entire crop period through fertigation as detailed below.

Stage	Crop stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient supplied			% requirement		
					N	P	K	N	P	K
1	Transplanting to plant establishment stage	10	19:19:19 13:0:45 Urea	21.05 8.88 14.86	4.00 1.15 6.83	4.00 - -	4.00 3.98 -	10.00	5.00	10.00
				Subtotal	11.98	4.00	7.98			
2	Flower initiation to flowering	30	12:61:0 13:0:45 Urea	13.11 71.04 80.72	1.57 9.24 37.13	8.00 - -	- 31.97 -	40.00	10.00	40.00
				Subtotal	47.94	8.00	31.97			
3	Flowering set to fruit picking	30	19:19:19 13.0:45 Urea	21.05 44.40 56.91	4.00 5.77 26.18	4.00 - -	4.00 19.98	30.00	5.00	30.00
				Subtotal	35.95	4.00	23.98			
4	Alternate day from picking	8	12:61:0 13:0:45 Urea	6.52 35.52 40.38	0.75 4.62 18.57	3.81 - -	- 15.98 -	20.00	5.00	20.00
				Subtotal	23.94	3.81	15.98			
					119.81 (or) 120.00	**19.81 (or) 20.00**	**79.91 (or) 80.00**	100.00	25.00	100.00

The total quantity of the requirement of 19:19:19 is 42 kg, 12:61:0 is 20 kg, 13:0:45 is 160 kg and Urea is 193 kg per ha.

4. Bhendi

Fertigation

The nutrient requirement for hybrids is 200:100:100 kg of NPK per ha. 75 % of P (75 kg P which comes to 469 kg of superphosphate) is applied as basal. The remaining quantity of 200:25:100 kg of NPK per ha is applied through fertigation. Every day irrigation should be given for one hour. Along with this, water soluble fertilizers have to be given. This dose is split and given once in 3 days for the entire crop period through fertigation as detailed below.

Stage	Crop stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient applied			% of requirement		
					N	P	K	N	P	K
1	Sowing to plant establishment stage	10	19:19:19 13:0:45 Urea	26.30 5.50 25.65	7.50 11.10 29.48	5.00 - -	5.00 5.00 -	10.00	5.00	10.00
				Subtotal	20.00	5.00	10.00			
2	Flower initiation to flowering stage	30	12:61:0 13:0:45 Urea	16.39 88.88 144.52	1.97 11.55 66.48	10.00 - -	- 40.00 -	40.00	10.00	40.00
				Subtotal	80.00	10.00	40.00			
3	Flowering to fruit set	30	19:19:19 13.0:45 Urea	26.30 55.55 103.87	5.00 7.22 47.78	5.00 - -	5.00 25.00 -	30.00	5.00	30.00
				Subtotal	60.00	5.00	30.00			
4	Alternate day from picking	30	12:61:0 13:0:45 Urea	8.20 44.44 72.26	0.98 5.78 33.24	5.00 - -	- 20.00 -	20.00	5.00	20.00
				Subtotal	40.00	5.00	20.00			
	Total duration	100			**200.00**	**25.00**	**100.00**	100	25	100

The total quantity of the requirement of 19:19:19 is 54 kg, 12:61:0 is 25 kg, 13:0:45 is 200 kg and Urea is 350 kg per ha.

5. Ash gourd and Pumkin

Fertigation

For Pumpkin, a dose of 60:30:30 kg NPK/ha is applied throughout the cropping period through split application. In phosphorous, 75% of the phosphorous is applied as super phosphate as basal dose.

Fertigation Schedule- Ash gourd (Hybrid)

Recommended Dose: 200:100:100 kg/ha

Stage	Crop stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient applied			% of requirement		
					N	P	K	N	P	K
1	Crop establishment stage	10	19:19:19 + 13-0-45 Urea	26.81 11.00 29.03	5.00 1.43 13.35	5.00 - -	5.00 4.95 -	10.00	5.00	10.00
				Subtotal	19.78	5.00	9.95			
2	Vegetative stage	30	12-61-0 13-0-45 Urea	12.28 66.00 109.00	1.47 8.58 50.14	7.50 - -	- 29.70	30.00	7.5	30.00
				Subtotal	60.19	7.50	29.70			
3	Flower initiation to first picking	30	12-61-0 13-0-45 Urea	12.28 44.00 115.00	1.47 5.72 52.90	7.50 - -	- 19.80 -	30.00	7.5	20.00
				Subtotal	60.09	7.50	19.80			
4	Harvesting stage	45	19:19:19 + 13-0-45 Urea	26.31 78.00 97.52	5.00 10.14 44.86	5.00 - -	5.00 35.10 -	30.00	5.00	40.00
	Total duration	**115 days**		Subtotal	60.00	5.00	40.10			
Total					**200.06**	**25.00**	**100.00**	**100**	**25**	**100**

*75% RD of Phosphorus applied as superphosphate = 469 Kg/ha.

1. 19:19:19 = 53 kg/ha

2. 13:0:45 = 199kg/ha

3. 12:61:0 = 25 kg/ha

4. Urea = 351 kg/ha

6. Bitter Gourd

Fertigation

For Bitter gourd, a dose of 200:100:100 kg NPK/ha is applied throughout the cropping period through split application. Fertigation is done once in every third day from date of sowing or transplanting.

Fertigation Schedule- Bitter gourd (Hybrid)

Recommended Dose: 200:100:100 kg/ha

Stage	Crop stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient applied			% of requirement		
					N	P	K	N	P	K
1	Crop establishment stage	10	19:19:19 + 13-0-45 Urea	26.81 11.00 29.03	5.00 1.43 13.35	5.00 - -	5.00 4.95 -	10.00	5.00	10.00
				Subtotal	19.78	5.00	9.95			
2	Vegetative stage	30	12-61-0 13-0-45 Urea	12.28 66.00 109.00	1.47 8.58 50.14	7.50 - -	- 29.70	30.00	7.5	30.00
				Subtotal	60.19	7.50	29.70			
3	Flower initiation to first picking	30	12-61-0 13-0-45 Urea	12.28 44.00 115.00	1.47 5.72 52.90	7.50 - -	- 19.80 -	30.00	7.5	20.00
				Subtotal	60.09	7.50	19.80			
4	Harvesting stage	45	19:19:19 + 13-0-45	26.31 78.00	5.00 10.14	5.00 -	5.00 35.10	30.00	5.00	40.00

			Urea	97.52	44.86	-	-			
	Total duration	**115 days**		Subtotal	60.00	5.00	40.10			
Total					**200.06**	**25.00**	**100.00**	**100**	**25**	**100**

*75% RD of Phosphorus applied as superphosphate = 469 Kg/ha.

1. 19:19:19 = 53 kg/ha
2. 13:0:45 = 199kg/ha
3. 12:61:0 = 25 kg/ha
4. Urea = 351 kg/ha

7. Ribbed gourd

Fertigation

For Ribbed gourd, a dose of 200:100:100 kg NPK/ha is applied throughout the cropping period through split application. Fertigation is done for every third day after transplanting or direct sowing.

Fertigation Schedule- Ribbed gourd (Hybrid)

Recommended Dose: 200:100:100 kg/ha

Stage	Crop stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient applied			% of requirement		
					N	P	K	N	P	K
1	Crop establishment stage	10	19:19:19 13-0-45 Urea	26.81 11.00 29.03	5.00 1.43 13.35	5.00 - -	5.00 4.95 -	10.00	5.00	10.00
				Subtotal	19.78	5.00	9.95			
2	Vegetative stage	30	12-61-0 13-0-45 Urea	12.28 66.00 109.00	1.47 8.58 50.14	7.50 - -	- 29.70 -	30.00	7.5	30.00

				Subtotal	60.19	7.50	29.70			
3	Flower initiation to first picking	30	12-61-0 13-0-45 Urea	12.28 44.00 115.00	1.47 5.72 52.90	7.50 - -	- 19.80 -	30.00	7.5	20.00
				Subtotal	60.09	7.50	19.80			
4	Harvesting stage	45	19:19:19 13-0-45 Urea	26.31 78.00 97.52	5.00 10.14 44.86	5.00 - -	5.00 35.10 -	30.00	5.00	40.00
	Total duration	**115 days**		Subtotal	60.00	5.00	40.10			
Total					**200.06**	**25.00**	**100.00**	**100**	**25**	**100**

*****75% RD of Phosphorus applied as superphosphate = 469 Kg/ha.

1. 19:19:19 = 53 kg/ha

2. 13:0:45 = 199kg/ha

3. 12:61:0 = 25 kg/ha

4. Urea = 351 kg/ha

8. Snake Gourd

Fertigation

For snake gourd a dose of 75:100:100 kg NPK/ha is applied throughout the cropping period through split application.

9. Watermelon

Fertigation

For watermelon / muskmelon a dose of 200: 100: 100 kg NPK/ha is applied throughout the cropping period through split application.

Fertigation Schedule- Watermelon

Recommended Dose: 200:100:100 kg/ha

Stage	Crop stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)	Nutrient applied			% of requirement		
					N	P	K	N	P	K
1	Crop establishment stage	10	19:19:19 13-0-45 Urea	26.81 11.00 29.03	5.00 1.43 13.35	5.00 - -	5.00 4.95 -	10.00	5.00	10.00
				Subtotal	19.78	5.00	9.95			
2	Vegetative stage	30	12-61-0 13-0-45 Urea	12.28 66.00 109.00	1.47 8.58 50.14	7.50 - -	- 29.70	30.00	7.5	30.00
				Subtotal	60.19	7.50	29.70			
3	Flower initiation to first picking	30	12-61-0 13-0-45 Urea	12.28 44.00 115.00	1.47 5.72 52.90	7.50 - -	- 19.80 -	30.00	7.5	20.00
				Subtotal	60.09	7.50	19.80			
4	Harvesting stage	45	19:19:19 13-0-45 Urea	26.31 78.00 97.52	5.00 10.14 44.86	5.00 - -	5.00 35.10 -	30.00	5.00	40.00
	Total duration	**115 days**		Subtotal	60.00	5.00	40.10			
Total					**200.06**	**25.00**	**100.00**	**100**	**25**	**100**

*****75% RD of Phosphorus applied as superphosphate = 469 Kg/ha.

1. 19:19:19 = 53 kg/ha

2. 13:0:45 = 199kg/ha

3. 12:61:0 = 25 kg/ha

4. Urea = 351 kg/ha

10. Aggregatum onion

Fertigation

The nutrient requirement is 60:60:.30 kg of NPK per ha. 75 % of P (45 kg P which comes to 281 kg of superphosphate) is applied as basal. The remaining quantity of 60:15:30 kg of NPK per ha is applied through fertigation. Every day irrigation should be given for one hour. Along with this, water soluble fertilizers have to be given. This dose is split and given once in 3 days for the entire crop period through fertigation.

Stage	Duration in days	Fertilizer grade	Total Fertilizer (kg/ha)
1	10	19:19:19 Urea	15.9 6.00
2	25	12-61-0 13-0-45 Urea	7.2 13.6 33.6
3	25	12-61-0 0:0:50 Urea	7.2 18.4 37.6
4	15	19:19:19 0:0:50 Urea	16.00 18.00 33.00

The total quantity of the requirement of 19:19:19 is 32 kg, 12:61:0 is 15 kg, 13:0:45 is 14 kg, 0:0:50 is 36 kg and Urea is 111 kg per ha.

11. Cabbage

Fertigation

The nutrient requirement for hybrids is 200:125:150 kg of NPK per ha. 75 % of P (93.75 kg P which comes to 586 kg of superphosphate) is applied as basal. The remaining quantity of 200:31.25:150 kg of NPK per ha is applied through fertigation. Every day irrigation should be given for one hour. Along with this, water soluble fertilizers have to be given. This dose is split and given once in 3 days for the entire crop period through fertigation as detailed below.

Stage	Crop stage	Duration in days	Fertilizer grade	Total fertilizer (kg/ha)	Nutrient supplied			% requirement		
					N	P	K	N	P	K
1	Transplanting to plant establishment	10	19:19:19 13-0-45 Urea	32.87 19.42 24.36	6.25 2.52 11.21	6.25 - -	6.25 8.74 -	10.00	5.00	10.00
				Subtotal	19.98	6.25	14.99			
2	Head initiation stage	30	12-61-0 13-0-45 Urea	20.37 133.20 130.74	2.44 17.32 60.14	12.50 - -	- 59.94 -	40.00	10.00	40.00
				Subtotal	79.90	12.50	59.54			
3	Head initiation to development stage	30	19:19:19 13-0.45 Urea	32.87 86.02 92.37	6.25 11.18 42.49	6.25 - -	6.25 38.71 -	30.00	5.00	30.00
				Subtotal	59.92	6.25	44.96			
4	Harvesting stage	35	12-61-0 13-0-45 Urea	10.18 66.60 65.38	1.22 8.66 30.07	6.25 - -	- 29.97 -	20.00	5.00	20.00
	Total duration	105		Subtotal	39.95	6.25	29.97			
Total					**199.75 (or) 200.00**	**31.25**	**149.85 (or) 150.00**	**100**	**25**	**100**

The total quantity of the requirement of 19:19:19 is 66 kg, 12:61:0 is 31 kg, 13:0:45 is 305 kg and Urea is 313 kg per ha.

3. Potato

Fertigation

For potato, 120: 240: 120 kg NPK/ha is applied throughout the cropping period in every once in three days interval.75% of the phosphorous in the recommendation is applied as super phosphate as a basal dose.

Fertigation schedule: Potato (Variety) Recommended dose: 120:240:120 kg/ha

No.	Crop Stage	Duration in days	Fertilizer grade	Total fertilizer (kg/ha)	Nutrient supplied			% Requirement		
					N	P	K	N	P	K
1	Planting to crop establishment	20	19:19:19	63.15	12.00	12.00	12.00	10.00	5.00	10.00
				subtotal	12.00	12.00	12.00			
2	Vegetative stage	30	12-61-0 13-0.45 Urea	39.34 106.67 63.82	4.72 13.87 29.36	24.00 - -	- 48.00 -	30.00	10.00	30.00
				subtotal	47.95	24.00	48.00			
3	Tuber formation stage	35	19:19:19 13-0-45 Urea	63.15 53.33 37.04	12.00 6.93 17.04	12.00 - -	12.00 24.00 -	40.00	5.00	30.00
				subtotal	35.97	12.00	36.00			
4	Tuber development stage	35	12-61-0 13-0-45 Urea	19.67 53.33 31.92	2.36 6.93 14.68	12.00 - -	- 24.00 -	20.00	5.00	30.00
				Sub total	23.97	12.00	24.00			
				Total	119.89	60.00	120.0 0	100	25	100.00

75% RD of Phosphorus applied as superphosphate = 1125 kg/ha as basal dose. In hills rock phosphate is the source for P

1. 19:19:19 = 126 kg/ha
2. 13:0:45=213kg/ha
3. 12:61:0=59kg

14. Tapioca

Fertigation

For tapioca, a dose of 90:90:240/ha is applied through out the cropping period as split application. Irrigate the field through drip system daily for one hour.

Fertigation schedule: Tapioca (variety)

S. No	Crop Stage	Duration in Days	Fertilizer Grade	Total Fertilizer (kg/ha)	Nutrient supplied			% Requirement		
					N	P	K	N	P	K
1	Planting to crop establishmentstage	20	19:19:19 13-0-45 0-0-50	23.57 34.67 7.87	4.48 4.50 -	4.48 - -	4.48 15.60 3.93	10.00	5.00	10.00
				subtotal	8.98	4.48	24.01			
2	Vegetative stage	70	12-61-0 13-0-45 Urea	11.40 105.33 26.80	1.34 13.69 12.33	6.80 - -	- 47.39 -	30.00	7.5	20.00
				subtotal	27.36	6.80	47.39			
3	Tuber formation stage	60	12-61-0 0-0-50 Urea	11.40 144.00 55.73	1.34 - 25.64	6.80 - -	- 72.00 -	30.00	7.5	30.00
				subtotal	26.98	6.80	72.00			
4	Tuber development stage	90	19:19:19 0-0-50 Urea	23.57 182.67 48.87	4.48 - 22.48	4.48 - -	4.48 92.34 -	30.00	5.00	40.00
	Total duration	240		sub total	26.96	4.48	96.82			
Total					90.28 (or) 90	22.56(or)22.50	240.2 2 (or)24 0	100	25	100

75% RD of Phosphorus applied as superphosphate 421.88 kg/ha.

19:19:19 = 47. kg / ha	13:0:45 = 140kg/ha	12:61:0 = 23kg/ha
0:0:50 = 335kg / ha	Urea = 132kg/ha	Chlorosis: Foliar spray of1% $FeSO_4$ + 0.5% $ZnSO_4$ at 60 and 90 DAP.

PRECISION PRODUCTION TECHNOLOGIES IN FRUIT CROPS

15.Banana Production Technology

Application of fertilizers

Details	Fertilizers g/plant/year		
	N	P	K
Garden land			
Varieties other than Nendran	110*	35*	330*
Nendran	150	90	300
Wet land	210	35	450
Nendran, Rasthali	210	50	390
Poovan,Robusta	160	50	390

Apply N as Neem coated urea. 3rd, 5th and 7th month, planting. Apply 20g of *Phosphobacteria* at planting (This should be applied prior to Phosphorous at 3rd month of *Azospirillum* and and five months after planting chemical fertilizer application). Apply N and K in 3 splits on

* For Tissue culture banana, apply 50% extra fertilizers at 2nd, 4th, 6th and 8th month after planting.

Fertigation

- For maximizing productivity follow fertigation technique - Apply 25 litres of water / day + 200:30:300 g N: P 2O5: K2O / plant using water soluble fertilizers.
- For economizing the cost of fertilizers, fertigate using normal fertilizers (Urea and Muriate of potash) with 50% of the recommended dose along with recommended dose of phosphorus as basal at 2nd month after planting. Fertigate at weekly intervals as per the following schedule:

Fertigation schedule

Weeks after planting	N (%)	P_2O_5 (%)	K_2O (%)
9-18 (10 weeks)	30	100	20
19-30 (12 weeks)	50	--	40
31-42 (12 weeks)	20	--	32
43-45 (3 weeks)	--	--	8
Total	100	100	100

PRECISION PRODUCTION TECHNOLOGIES IN SPICES

16. Turmeric

Botanical name :*Curcumalonga*Lin**.** **Family:** Zingiberaceae

Fertigation

The nutrient requirement is 150:60:108 kg of NPK per ha. 75 % of P (45 kg P which comes to 281 kg of superphosphate) is applied as basal. The remaining quantity of 150:15:108 kg of NPK per ha is applied through fertigation. Every day irrigation should be given for one hour. Along with this, water soluble fertilizers have to be given. This dose is split and given once in 3 days for the entire crop period through fertigation as detailed below.

Stage	Crop Stage	Duration (in days)	Nutrients requirement (%)			Quantity applied (kg/ha)	
1	Planting to establishment stage	15	10	20	10	19:19:19 Multi K Urea	15.78 17.33 21.20
2	Vegetative stage	60	40	30	20	19:19:19 Multi K Urea	9.83 96.00 100.57
3	Rhizome initiation stage	60	30	30	30	19:19:19 Multi K Urea	4.91 71.28 76.29
4	Rhizome maturation stage	135	20	20	40	19:19:19 Multi K Urea	15.78 40.42 47.06
	Total Duration	270	100	100	100		

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PRECISION PRODUCTION TECHNOLOGIES IN FLOWER CROPS

17. JASMINE

Gundumalli - *Jasminum sambac* Ait.; Oleaceae

100% of the recommended dose of fertilizers are applied through fertigation in splits at weekly intervals. For soil application in conventional method, straight fertilizers like SSP, Urea, DAP, MOP etc are used. But for fertigation, water soluble fertilizers life Poly-feed (19:19:19), KNO_3 (13:0:45), Urea, Mono Ammonium Phosphate (12:61:0), Sulphate of Potash etc.,are used.

Fertigation schedule (100% RDF – 500:1000:1000 kg/ha)

S. No	Crop stage	Duration in weeks	Fertilizer grade	Total fertilizer (kg /ha)	Nutrient supplied			% requirement		
					N	P	K	N	P	K
1	Planting to establishment stage (1st – 4th week) (Sep.)	4	19:19:19	132	25	25	25	10	10	10
			13:0:45	166	22	--	75			
			Urea	7.2	3.3	--	--			
			Sub total		**50**	**25**	**100**			
2.	Vegetative stage (5th – 20th week) (Oct.-Jan.)	16	19:19:19	395	75	75	75	30	30	30
			13:0:45	800	65	--	225			
			Urea	22	10	--	--			
			Sub total		**150**	**75**	**300**			
3	Flowering & Harvesting stage (21st – 42nd week) (Feb.-May)	20	19:19:19	658	125	125	125	50	50	50
			13:0:45	833	108	--	375			
			Urea	108	16	--	--			
			Sub total		**250**	**125**	**500**			
4.	Rest period (42nd – 52nd week) (June-Aug.)	12	19:19:19	132	25	25	25	10	10	10
			13:0:45	166	22	--	75			
			Urea	7.2	3.3	--	--			
			Sub total		**50**	**25**	**100**			
	Total	52	**--**		**500**	**250**	**1000**	**100**	**100**	**100**

75% recommended 'P' applied as super phosphate = 4600 Kg/ha (Basal dose)

Abstract

S. No	Fertilizer	Quantity required (kg/ha)
1	*75 % of P applied as super phosphate	736kg x 6.25 =4600
2	19:19:19	1317
3	13:0:45	1965
4	Urea	144.4

Biofertilizer

18. ROSE (*Rosa sp)*

Family: Rosaceae

Manuring

After pruning in October and again in July the plants are manured with FYM 10 kg and fertilized with 178:178:356kg of NPK per ha. Fertigation is given once in a week as per schedule.

Fertigation schedule

Recommended dose of fertilizer: 178:178: 356 kg/ha (75 % of p is applied as basal)

S. No	Crop stage	Duration in weeks	Fertilizer grade	Total fertilizer (kg/ha)	Nutrient supplied			% requirement		
					N	P	K	N	P	K
1	Planting to establishment stage (1 to 4 weeks)	4	19:19:19 13-0-45 + Urea	23.42 69.15 9.46	17.80	4.45	35.60	10.00	10.00	10.00
2	Vegetative stage (5-8 weeks)	4	19:19:19 13-0-45 + Urea	23.42 69.15 9.46	17.80	4.45	35.60	10.00	10.00	10.00
3	Flowering & harvesting stage (9-30 weeks)	22	19:19:19 13-0-45 +	93.68 276.60	71.20	17.80	142.40	40.00	40.00	40.00

			Urea	37.84						
4	Flowering & harvesting stage (9-30 weeks)	22	19:19:19 13-0-45 + Urea	93.68 276.60 37.84	71.20	17.80	142.40	40.00	40.00	40.00
Total					**178.00**	**44.50**	**356.00**	**100**	**100**	**100**

Abstract:

S. No	Fertilizer	Quantity required (kg/ha)
1	*75 % of P applied as super phosphate	133.50 kgx 6.25 =834
2	19:19:19	234.20 or 235.00
3	13:0:45	691.50 or 692.00
4	Urea	94.60 or 95

19.TUBEROSE

Manuring

The following fertigation schedule can be followed for improving yield & quality of flowers.

FERTIGATION SCHEDULE FOR TUBEROSE PER HECTARE

Recommended Dose: 200:200:200 kg/ha 100% of TRD: 200:50:200 kg/ha

S. NO	Crop stage	Duration in Days	Fertilizer Grade	Total Fertilizer (kg/ha)	Nutrient supplied			% Requirement		
					N	P	K	N	P	K
1.	Bulb planting to establishment	1-3 weeks (3 weeks)	19:19:19 13:0:45 Urea	26 33 24	5 4.33 10.64	5 - -	5 - -	10	10	10
				Total	20	5	5			

2.	Vegetative stage	4-13 weeks (9 weeks)	19:19:19 13:0:45 Urea	53 111 121	10 14.14 55.56	10 - -	10 50 -	40	20	30
				Total	80	10	60			
3.	Spike emergence and flowering stage	14-52 weeks (40 weeks)	19:19:19 13:0:45 Urea	184 189 88	35 25 40	35 - -	35 85 -	50	70	60
				Total	100	35	120			
	Total	52 weeks	-	-	200	50	200	100	100	100

Abstract

S. NO	Fertilizer	Quantity required
1.	75% of RD of P applied as Super Phosphate	150 x 6.25= 937.50 kg/ha
2.	19:19:19	263 kg/ha
3.	13:0:45	333 kg/ha
4.	Urea	233 kg/ha

20. MARIGOLD (AFRICAN MARIGOLD)

***Tagetes erecta* L.; Asteraceae**

Fertigation schedule

Recommended dose of fertilizer: 90:90: 75 kg/ha (75 % of P is applied as Super phosohate)

S. No	Crop stage	Duration in days	Fertilizer grade	Total fertilizer (kg/ha)	Nutrient supplied			% requirement		
					N	P	K	N	P	K
1	Transplanting to establishment stage	20	19:19:19 + MN 13-0-45 + Urea	11.80 11.70 11.60	2.25 1.50 5.25	2.25 0 0	2.25 5.25 0	10.00	10.00	10.00
			Subtotal		**9.00**	**2.25**	**7.50**			

2	Vegetative stage	55	19:19:19 + MN 13-0-45 + Urea	47.30 46.60 46.60	9.00 6.00 15.00	9.00 0 0	9.00 21.00 0	40.00	40.0 0	40. 00
			Subtotal		**36.0**	**9.00**	**30.00**			
3	Flowering stage	45	19:19:19 + MN 13-0-45 + Urea	59.20 58.30 57.50	11.25 7.50 26.25	11.25 0 0	11.25 26.25 0	50.00	50.0 0	50. 00
Total		120	**Subtotal**		**45.0**	**11.25**	**37.5**			
					90.00	**22.50**	**75**	**100**	**100**	**10 0**

Abstract:

S. No	Fertilizer	Quantity required (kg/ha)
1	*75 % of P applied as super phosphate	422
2	19:19:19	118.30
3	13:0:45	116.60
4	Urea	115.70

Nutrition:

Fertigation schedule - Recommended dose of fertilizer: 100:200:200 kg/ha (75% of 'P' is applied basally as super phosphate)

S. No	Crop stage	Duration in days	Fertilizer grade	Total fertilizer (kg/ha)	Nutrient supplied			% requirement		
					N	P	K	N	P	K
1	Transplanting to establishment stage	15	19:19:19 + MN 13-0-45 + Urea	26.30 33.00 1.56	10.00	5.00	20.00	10.00	10.00	10.00
2	Vegetative stage (5-8 weeks)	35	19:19:19 + MN 13-0-45 + Urea	105.20 132.00 6.24	40.00	20.00	80.00	40.00	40.00	40.00
3	Flowering stage	55	19:19:19 + MN 13-0-45 +	131.50 165.00	25.00	25.00	100.00	50.00	50.00	50.00

			Urea	7.80						
	Total	**105**	**-**	**-**	**100.00**	**50.00**	**200.00**	**100**	**100**	**100**

Abstract:

S. No	Fertilizer	Quantity required (kg/ha)
1	*75 % of P applied as super phosphate	150.00 kg x 6.25 =937.50
2	19:19:19	263.00
3	13:0:45	330.00
4	Urea	16.00