Aggregatum Onion

Multiplier onion (Aggregatum); Allium cepa var. aggregatum; Alliaceae

Varieties: CO 1, CO2, CO3, CO4 and MDU1. CO (On) 5 is a free flowering and seed setting type. KR Agro Farm developed two varieties on seed setting types i.e, Srika and Avatar both are high yielder and suitable for export.

Soil: Red loamy to black soils with good drainage facilities. The sprouting and bulb maturation are affected in clayey soil. It grows well in pH range of 6-7 and a mild season without extremes of heat and cold.

Season and Sowing: Sow the medium sized bulbs during April-May and October-November. It requires sufficient soil moisture during its growing period but heavy rains during bulb sprouting and formation affect the crop growth.

Raising seedling and transplanting: This is the most common method practiced for irrigated crop as it results in high yield and large size bulbs. In plains, sow the seeds during October-November for a rabi crop. In hills, sow from March to June. Sow the seeds in well prepares nursery beds of 90-120 cm width, 7.5-10.0 cm height and convenient length. Ratio between nursery area and main field is about 1:20. Seed rate varies from 8 to 10 kg/ha. Seedlings of 15 cm high and 0.8 cm neck diameter are ideal for transplanting and this is achieved in 8 weeks. However, it varies from 6-10 weeks depending on soil, climate and receipt of rain. There is a practice of topping seedlings at the time of transplanting if seedlings are over-grown.

Preparation of field & Application of basal fertilizer

- ✓ Plough the land four times to a fine tilth. Apply the basal fertilizers as below mentioned.
- ✓ Apply FYM 25t/ha, Azospirillum 2 kg and phosphobacteria 2 kg/ha
- ✓ N 30 kg, P 60 kg , 30 Kg K / ha
- ✓ Form ridges and furrows at 45cm spacing.

Planting

Sow the bulbs or plant the seedlings on both the sides of the ridges at 10 cm apart.

Irrigation: Irrigate at the time of planting of seedlings on third day and subsequently at weekly intervals. Withhold irrigation 10 days before harvest.

Top dressing : Apply 30 kg N / ha on 30^{th} day of planting

Fertigation:

Those who have drip irrigation system they can follow the below nutrient mentioned fertigation schedule

Apply a dose of 75% of the total recommended dose of superphosphate i.e. 285 kg / ha as basal dose. Azospirillum and Phosphobacteria each @ 2 kg / ha along with FYM 50 Kg and neem cake @ 100 kg are applied before last ploughing. Raised beds of 120 cm are formed at an interval of 30 cm and the laterals are placed at the centre of each bed. The width of the bed can be set up on the basis of the soil type

Fertigation Schedule for small onion (Recommended Dose 60:60:30 kg/ha)

Crop stage	Duration in days	Fertilizer grade	Total fertilizer(kg/ha)	Nutrient supplied			% of requirement		
				N	P	K	N	P	K
Sowing to establishment	10	19: 19: 19 Urea	15.79 6.50	3.00 3.00	3.00 -	3.00 -	10.0	5.00	10.0
			Sub total	**6.00**	**3.00**	**3.00**			
Vegetative	25	12: 61: 0 13: 0: 45 Amm.So4	7.46 13.20 76.67	0.89 1.72 15.33	4.55 - -	5.94	30.0	7.50	20.00
			Sub total	**17.94**	**4.55**	**5.94**			
Bulb formation	25	12: 61: 0 13: 0: 45 Amm.So4	7.46 19.80 72.33	0.89 2.57 14.47	4.55 - -	- 8.99 -	30.0	7.50	30.00
			Sub total	**17.93**	**4.55**	**8.99**			
Bulb development	30	19: 19: 19 MN Amm.So4	15.79 19.80 62.00	3.00 2.57 12.40	3.00 - -	3.00 8.91 -	30.0	5.00	40.00
			Sub total	**17.97**	**3.00**	**11.91**			
Total duration	90			59.84 Or 60.00	15.0	20.84 Or 30.00	10.0	25.0	100.0

75% of recommended dose of phosphorus applied as superphosphate = 281 kg / ha

1. 19: 19: !9 = 32 kg / ha

2. 12: 61: 0 = 14.92 Kg / ha (or) 15.00 kg / ha

3. 13: 0: 45 = 53 kg / ha

4. Urea = 7 kg / ha

5. Ammonium SO4 = 211 kg / ha

Planting design : Plant the bulbs or seedlings are planted in rows of 20 cm spacing and 12 cm between plants. Irrigate after transplanting or planting or planting bulbs. Complete wetting is necessary to maintain uniform moisture level.

Plant protection

Pests

Thrips and Onion fly: Spray any one of the following insecticides based on the ETL of 1 maggot / hill.

Insecticide	Dose
Dimethoate 30% EC	7.0 ml / 10 lit
Profenofos 50 EC	2.0 ml / lit
Fipronil	2.0 ml / lit
Spinosad	0.5 ml / lit

Cutworm: Drench the soil with chlorpyriphos 50 EC @ 2 ml / lit

Diseases

Purple blotch / Stemphylium blight: Spray Mancozeb 2 g / lit or copper Oxychloride 2.5 g / lit or chlorothalonil 2.0 g / lit or Probineb 3.0 g / lit. Add wetting agent 0.5 ml / lit of spray fluid.

Basal rot : Treat the seeds or bulbs with Trichoderma viride @ 4g / kg at the time of planting and apply basally T.viride @ 2.5 kg / ha along with VAM 12.5 kg / ha

(or)

Follow the following IPM practices for pest and disease management

- ✓ Grow two rows of maize as barrier crop around field border.
- ✓ Select healthy onion seed bulbs
- ✓ Treat the bulbs with Pseudomonas fluorescens (5g / kg) + Trichoderma viride (5g / Kg)
- ✓ Apply P.fluorescens (1.25 kg / ha) + T.viride (1.25 kg / ha) + VAM Fungi (12.5 kg / ha) + Azophos (4 kg / ha) + Neem cake 250 kg / ha in soil.
- ✓ Install yellow sticky traps 12 / ha for thrips and leaf minor
- ✓ Install pheromone traps 12 / ha for cutworm (S. litura)
- ✓ Spray P.fluorescens (5g / lit) + Beauveria bassiana (10g / lit) on 30 DAP
- ✓ Spray application of Azadairachin 1% (2 ml / lit) on 40 DAP.
- ✓ Apply need based Tebuconazole 1.5 ml/lit or mancozeb 2g/lit or zineb 0.2g/lit for purple blotch disease management.

Harvest and yield

Spray cycocel @200ppm + carbendazim @1000ppm 30 days before harvest to extend the shelf life of onion. Harvest by pulling out plants when tops are drooping but still green. During hot days when soil is hard, pull the bulbs with a hand hoe.

Bulb propagated types normally yields upto 12-18 t/ha in 70 to 90 days. Seed propagated type (CO (on) – 5) yields 18 tonnes / ha. The yield is 18t/ha in 90 days for CO (On) 5 Onion. Srika yields about 20 MT/ha. Avatar yields about 22 MT/ha