

CAZRI Vishal: New pomegranate variety

The pomegranate variety, CAZRI Vishal has been released by Central Arid Zone Research Institute, Jodhpur in 2020. It is a cross between Ganesh and Khog varieties. Plants are medium in height and semi vigorous with spreading growth habit. It is an early maturing (120-130 days after anthesis) variety. The hybrid has potential for both internal and export market because of extra large sized fruits of about 350 g and attractive yellowish red colour fruit with very soft seeds. Aril recovery (60%) and juice content (40-45%) is significantly higher than other popular varieties. The TSS is about 17.5-18.6°B with low acidic juice (0.48-0.52%). The fruit yield is about 20-25 kg/plant after five years of planting onward under improved management practices.

POMEGRANATE is an important commercial fruit crop of the dry regions of world. India, Iran, China, USA and Turkey are the five major producers of pomegranate in the world. Recent growth trend have shown a rapid increase in area under pomegranate in India due to its versatile adaptability, higher economic return and export demand. The fruit is consumed fresh and as processed products, viz. juice, syrup, jam, wine etc. It is a good source of protein, carbohydrate, minerals, antioxidants, vitamin A, B and C. The fruit has been useful in controlling many medical complaints, viz. heart diseases, cancer, osteoarthritis, diarrhoea, hyperacidity, tuberculosis, leprosy, abdominal pain, fever, dysentery, diarrhoea etc.

The pomegranate variety, CAZRI Vishal has been released by Central Arid Zone Research Institute, Jodhpur in 2020. It is a F1 hybrid between Ganesh and Khog. It is an early maturing (120-130 days after anthesis) variety. Plants are medium headed with medium foliage density, leaf large and elliptical lanceolate in shape, leaf apex-acute. The fruits are large, attractive in shape and

yellowish red coloured rind. The seeds are soft with pink arils. Aril (60%) and juice content (40-45%) is significantly higher than other popular varieties. The TSS is about 17.5-18.6 °B with low acidic juice (0.48-0.52%). Plants start flowering and fruiting in second year of planting while economical yield starts in fourth years onwards. The fruit yield is about 20-25 kg/plant after 5 years of planting and onward under improved management practices.

Propagation

Air-layering and stem cutting are most easy and common vegetative methods of its propagation. However, under arid region, stem cutting is more successful. Six to nine month old previous season's shoot is suitable for making cuttings. About 20-25 cm long and 0.6-1.2 cm thick cuttings with 3-4 buds is ideal. Indole-3-butyric acid (IBA) @ 2000 ppm with the quick dip method (1 min dip) is optimum for higher rooting and field survival. The optimum time for raising of stem cuttings is June-July, however, it may be multiplied in February-March also. The stem cuttings are planted in the polythene



Branches laden with fruit



Mature fruits



Physico-chemical characters of CAZRI Vishal

| Character | CAZRI Vishal (Mean and Range) |
|------------------------|-------------------------------|
| Fruit weight (g) | 356.8 (280-550) |
| Fruit length (cm) | 8.3 (7.9-9.1) |
| Fruit breadth (cm) | 8.5 (8.1-9.5) |
| Aril weight /fruit (g) | 216.7 (185.5-340.6) |
| Aril length (mm) | 9.88 (8.4-12.2) |
| Aril breadth (mm) | 7.11 (6.5-8.5) |
| Rind weight/fruity (g) | 135.0 (120.5-205.0) |
| Rind thickness (mm) | 3.25 (2.8-4.2) |
| Rind colour value | |
| L | 76.52 (66.0-92.3) |
| *a | 28.85 (17.5-35.5) |
| *b | 19.22 (14.5-23.5) |
| Seed length (mm) | 6.1 (5.3-7.5) |
| Seed breadth (mm) | 3.2 (2.4-4.2) |
| Juice content (%) | 44.5 (45.0-52.5) |
| TSS (°B) | 17.5 (17.0-18.6) |
| Acidity (%) | 0.52 (0.48-0.56) |



bags (25 × 10 cm) filled with a mixture of compost, clay and sand (1:1:6). The rooted cuttings become ready for transplanting after about 2 months.

Planting

Pits of 2 × 2 × 2 ft are dug at 3.5 m × 4.0 m spacing 1 month prior to transplanting. Pits should be drenched

with 0.15% carbendazim and 0.2% chloropyriphos @ 4-5 litre/pit just before pit filling. Upper soil should be mixed with 10 kg well rotten FYM, 2 kg vermicompost, 0.5 kg neemcake, 25 g trichoderma, 25 g PSB, 30g Carbofuran and *Paecilomyces* culture for pit filling. July-August is ideal time of planting but it can also be done during February-March.

| Stage | Nutrient |
|--|---|
| Leaf defoliation | <ul style="list-style-type: none"> Spraying of Ethrel @ 2.5 ml/L + 0:52:34 NPK @ 3 g/L Basal application of FYM +150 g:30 g:70 g NPK/plant Basal application of micronutrients, viz. ZnSO₄, FeSO₄, MnSO₄, Borax @ 25 g each + 1 kg neem cake +1 kg vermicompost/plant |
| Flower initiation stage | <ul style="list-style-type: none"> Basal application of 150 g nitrogen Application of NPK 12:61:00 @ 8 kg/ha through drip at alternate days for one month |
| Initiation of fruit development | <ul style="list-style-type: none"> Application of NPK 19:19:19 @ 8 kg/ha through drip at alternate days for one month |
| During fruit development | <ul style="list-style-type: none"> Spraying of boron @ 4 g/L Spraying of calcium nitrate @ 15 g/L in morning hours |
| 100% fruiting and fruit start increasing | <ul style="list-style-type: none"> Application of NPK 00:52:34 @ 2.5 kg/ha through drip at alternate days for one month Spraying of calcium nitrate @ 15 g/L in morning hours after 15 days |
| During fruit growth and development | <ul style="list-style-type: none"> Spraying of potassium nitrate @ 10 g/L in morning hours after 15 days |
| Fruit maturation stage | <ul style="list-style-type: none"> Apply twice calcium nitrate @ 12.5 kg/ha through drip at 15 days intervals |

| Crop stage | Month | Mrig bahar | |
|------------|--------------------|---|------------------------------|
| | | Water requirement (L/plant) at alternate days | |
| | | 4 th year | 5 th year & above |
| I | June | 10 | 15 |
| II | July-August | 26 | 29 |
| III | September-December | 33 | 39 |
| IV | January | 38 | 47 |

Management of insect-pests, diseases and physiological disorders

| Insect-pests | Management |
|---|---|
| Fruit borer | The affected fruits should be collected and destroyed Spray deltamethrin (1.5 ml/L) or methomyl (1 ml/L) or azadirachtin 1500 ppm (3 ml/L) at 15 days intervals |
| Thrips | Spray thiamethoxam (0.3 g/L) or acetamiprid (0.3 ml/L) at flowering and fruit setting stage |
| Aphid | Spray acetamiprid (0.5 ml/L) or imidacloprid (0.5 ml/L) at 15 days interval |
| Mites | Spray imidachloprid (0.04%) or Dicholrvos (0.05%) |
| Diseases | |
| Fungal spots <i>Cercospora</i> spots <i>Alternaria</i> spots Anthracnose Scab | At flower initiation, spray carbendazim 50WP (0.1%) or mancozeb 75WP (0.25%) or thio-phanate methyl 70WP (0.15%) and repeat at 15 days interval For scab, sprays of thio-phanate methyl 70 WP (0.15%) are essential |
| Fruit rots <i>Phytophthora</i> <i>Colletotrichum</i> <i>Penicillium</i> | For <i>Phytophthora</i> rot spray metalaxyl 8% + mancozeb (0.25%) or mancozeb (0.25%) or dimethomorph (0.1%). For other rots, sprays carbendazim (0.15%) altered with mancozeb (0.25%)/ thiophanate methyl (0.15%). |
| Physiological disorders | |
| Fruit cracking | Irrigate the plants with drip system from fruit setting to maturity with adequate quantity of water at regular intervals. Spray borax (0.4%) + ZnSO ₄ (0.5%) at 20 days interval during 8-10 weeks prior to harvesting along with black polythene mulching. Two sprays of calcium nitrate @ 15 g/L in morning hours at 10 days intervals |
| Sun scald | Protect the fruits from direct sunlight by bagging/ covering. Avoid very heavy pruning and develop good canopy by proper pruning to provide shade to fruits. Spray Kaolin thrice at 15 days interval during fruit growth, first spray of 5% and next two of 2.5%. |

Canopy management

The plants should be allowed to retain 4-5 main stems from the ground level. The plants are given a balanced shape during the initial 2-3 years by proper selection of secondary and tertiary branches. Pruning should be done twice during the year first after fruit harvesting and then after defoliation. Maximum fruits should be allowed on thick shoots. Shoot pinching and flower thinning is desired during fruit growth and development.

Nutrient management

Well rotten farmyard manure at the rate of 15 kg/plant/year should be given during monsoon period. Under arid condition, a dose of 625 g N, 200-250 g P and 250-350 g K micronutrients per plant per year for more than five years old trees is sufficient. However, given schedule may be followed through drip and foliar sprays for *Mrig bahar* season.

Water management

Regular irrigation is essential from flowering to fruit maturity. Drip irrigation is economical and saves 30-40% of water, reduce fruit cracking and increase production of marketable fruits.

Crop regulation and quality improvement

Pomegranate bears flower and fruits throughout the year if not regulated. To obtain better quality fruits, plants are regulated to bear once a year. *Mrig bahar* is recommended in arid regions which can be obtained by withholding irrigation 10-15 days prior to spray of ethrel 39% @ 2.5 ml + 0:52:34 NPK @ 3 g/L water in June-July. The manure and fertilizer are then applied followed by light irrigation. Flowering starts in July-August along with fruit formation process. The fruits ripen in December and continue up to February. Proper thinning of fruitlets to an optimum number helps to improve size of fruits. On an average 60-100 fruits should be retained on fully grown up trees.

Yield and economics

On an average fruit yield of 12-15 t/ha can be obtained from a well maintained orchard of five years onwards, which may fetch a net return ₹ 3.50-4.0 lakhs/ha/annum.

For further interaction please write to:

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