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**Four Decades of Cardamom Research at
AICRP (S) Centre, Mudigere**

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Cardamom is known as “Queen of spices”, came to India around 1000 years ago and it is often named as the 3rd expensive spice in the world next to saffron and vanilla. The production scenario changed completely after the establishment of All India co-ordinated research project for the cardamom in 1971 at ZAHRS, Mudigere by the ICAR. High yielding cardamom varieties and location specific agricultural practices were developed by the institute triggered rapid growth in cardamom production.

Preamble

1 Cardamom has a strong unique taste with an intensively aromatic and resinous fragrance. All forms of cardamom are used as flavouring agents in both food and drink, as a cooking spice and as a medicine.

2. Cardamom essential oil is a beautiful & intriguing oil to explore both aromatic and therapeutic blending. The essential oil is as high as 8% and contains α -terpinyl acetate (42%) and 1,8 cineol (36%) major constituents.

3. Cardamom is a rich source of vitamins and minerals such as potassium, calcium, magnesium, phosphorous.

Land mark varieties:

- Cardamom varieties developed by institute played an important role in the spread of cardamom cultivation in different parts of the Karnataka state (Cardamom growing areas like Kodagu and Chikkamagalur districts).

1. Mudigere-1 : It is a malabar type variety released in the year 1984, played an important role in popularizing cardamom cultivation among the farmers at zone-9 of Karnataka state. It is a prostrate and compact panicle, suitable for high density planting, tolerant to thrips, hairy caterpillars and white grubs.



The size of capsule is medium, oval in shape with an average yield of 275-300 kg/ha and its potential yield of 675-700 kg/ha

2. Mudigere-2 : It was released in the year 1994. It is a clonal selection from clone-683. Early maturing type suitable for high density planting, rich in oil content (8%) and cineol (45%) and α -terpenyl acetate (38%)



3. Mudigere-3 : It is a high yielding variety is released in the year 2009, it is a clonal selection from CL-692.



It is a Malabar type and the capsules are oblong in shape. The potential yield of 850 kg/ha.

Technologies developed:

- Application of water at the rate of 9 litres/clump/day along with 100% Rec. Dose of fertilizer through drips recorded highest capsule yield (316.16 kg/ha), followed by conventional method with 100% Rec. Dose of fertilizers. From this experiment it has been concluded that 25% of NPK along with 42.85% irrigation water can be saved.
- Application of organics along with *Azospirillum* + PSB + Trichoderma recorded highest capsule yield (321.98 kg/ha) followed by Jeevamrutha (301.25 kg/ha).
- Spacing of 1.8 X 1.8 m with a plant density of 3025 plants/ha was found optimum for cardamom cultivation.

- Studies on various mulches tried for covering the seed beds, in which paddy straw was found best and economical method of mulching for conservation of moisture.
- Comprehensive studies on shade in the relation to cardamom productivity have revealed that one third of sunlight in the form of filtered light was found optimum for growth and production of cardamom.
- Application of 25ppm NAA or 2.5 ppm 2-4 D twice at monthly intervals soon after fruit set (June-July) found to minimize fruit drop in cardamom.
- Application of 1% Bordeaux mixture once before the onset of monsoon and again after the end of monsoon effectively control the clump rot disease in cardamom.
- Application of *Trichoderma harzianum* + Consortium bacteria + Neem cake recorded lowest tiller and panicle infection and effectively there is an increase in capsule yield (296.8 kg/ha) when compared with Copper oxychloride for the control of rhizome and panicle rot in cardamom.
- Application of Dithane-M-45 (0.25%) + Ridomyl (0.1%) was found most effective fungicides for controlling damping off and leaf spot disease in cardamom nursery.
- The gall wasp resistant strain namely *Erythrina subumbrans* as standard for betel vine gardens has been identified.

- Spraying Carbosulfan 25 EC @ 2 ml as alternate for monocrotophos for management of cardamom thrips and shoot & capsule borers in the month of March was found effective.
- Spraying three times during March, April and May (carbosulfan at rate of 2ml) and Phosalone during August @ 2ml/l were effective for management of cardamom thrips and shoot & capsule borer.
- Spraying of Carbosulfan 2ml/l water in the month of November against hairy caterpillars and shoot borer is effective.
- Application of Phorate 10G 20g + 500g neem cake/ clump in the month of December, January and April is effective against cardamom shoot fly.
- Spraying of Acetamiprid 0.5g /l of water in the month of March is effective against thrips, shoot and capsule borer in cardamom.
- Spraying 1g of Thiamethoxam / l of water from onset of shoot fly infestation and same has to be repeated 20 days after first spray for control of shoot fly.
- Studies indicated that an increase in yield up to 9% in cardamom could be obtained by keeping two or three honey bee boxes.

General view of CVT of drought tolerance series



Close up view of drought tolerance series



Panicle with racemous cluster arising from underground stem and also terminal in MCC-12 (unique characteristics)



Further details

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