

## **RESEARCH RECOMMENDATIONS 2011**

### **Crop Varieties developed and released**

During the year 2010-11 a total three new crop varieties in three different crops i.e. Osteen and Lily in mango, DA-199 in Greater Yam and KKVCI-03 in Undi have been recommended for release.

#### **1) Mango**

Exotic mango varieties namely Osteen and Lily having attractive colour, good yield, export value, maturing in April-May and sustaining in adverse agro-climatic conditions are recommended for cultivation in Konkan region.

#### **2) Greater yam**

Entry “*Da – 199*” of Greater Yam is recommended for cultivation in *Konkan* region of Maharashtra to obtain higher production during *Kharif* season. The shape of the tuber of this variety is cylindrical having pink skin and while flesh, 2.43 tubers per plant, girth 39.34 cm and length of tuber 28.67 cm. The average yield of this variety is 29.29 t/ha<sup>-1</sup> which is 19.05 per cent higher than local variety Konkan Ghorkand.

#### **3) Undi (*Calophyllum inophyllum*) clone KKVCI-03**

For obtaining higher oil yield, Undi (*Calophyllum inophyllum*) clone KKVCI-03 developed by this university by selection method is recommended for cultivation in Konkan coastal region. It is medium growing tree. The average yield of 15 year old tree is 28.63 kg/tree. The average weight of seed is 5.53 of having 79.34 per cent oil content.

### **Farm machineries developed and released**

#### **1) Hand operated Arecanut scarifier**

Hand operated arecanut scarifier developed by Dr. B. S. Konkan Krishi Vidyapeeth is recommended for arecanut scarifying.

In this machine the internal drum with pricks and conveying an arrangement was provided. The outer drum is kept stationery and the inner drum is rotated by the operator using handle provided on the machine. The pricks fitted on the periphery of internal drum scarifies the other shell of the arecanut superficially without making any damage to nut. The maximum scarifying percentage area was found to be 92.44 per

cent. The calculated capacity of machine was found to be 1623 nuts per hour. The nuts obtained by using this scarifier has better acceptability in terms of colour texture and test.

## **2) Hand operated green cashewnut sheller**

The green cashewnuts are used for vegetable purpose. In Konkan region the green cashewnuts are shelled by the labours with the help of small nail or stick. The shell of cashewnut contains oil and traditional shelling creates injuries to palm and skin. The removal of outer shell is not only time consuming but also resulting into the losses up to 25 per cent. The newly developed cashewnut sheller is suitable for shelling of green cashewnuts.

The green nuts one day after harvest have resulted into maximum capacity of 142 green nuts/hr (5.18 % higher over fresh nuts). The maximum shelling efficiency of 98.40 per cent and full kernels recovery 95.60 per cent was obtained with green cashew nuts one day after harvest which was 5.2 per cent and 2.40 per cent higher than fresh nuts, respectively.

## **Recommendations based on crop production technologies**

During the year a total of 25 technologies on various crops under different aspects have been developed.

### **A) Natural resources management**

- For obtaining higher rice production and to reduce the expenditure on fertilizer, use of rice husk ash @  $\frac{1}{2}$  kg m<sup>2</sup> in rice nursery be followed. It is recommended to use Konkan Annapurna briquettes (KAB-34:14:6) 625000 briquettes per hectare (NPK 58:24:10 kg/ha<sup>-1</sup>) along with 2.5 t/ha<sup>-1</sup> glyricidia.
- It is recommended to undertake three multi nutrient sprays of 0.5% (Urea, SOP, SSP each) + 0.25% (ZnSO<sub>4</sub>, Borax, CuSO<sub>4</sub> each) + 0.01% (Sodium molybdate), first spray at bud break, second on full bloom inflorescences and third at egg size fruit of Alphonso mango along with recommended dose of fertilizers in lateritic soil of Konkan to obtain maximum yield.

### **B) Weed control**

- Under condition of Konkan, direct seeded dibbled rice be sown in well drained soils before onset of monsoon and for effective weed management pretilochlor with safener (50 EC) be applied as pre-emergence @ 0.5 kg/ha<sup>-1</sup> for obtaining higher rice yield and net returns.

### **C) Cropping system**

- In north Konkan coastal zone, it is recommended to follow “Rice-Brinjal cropping sequence as profitable proposition.

### **D) Water management**

- It is recommended that in lateritic soil of Konkan region, the green chilli crop be grown under micro-sprinkler irrigation system and irrigation should be scheduled on alternate day with 100 % PE (total water 30 cm) should be applied with recommended dose (NPK 150:50:50 kg/ha<sup>-1</sup>) of fertilizer to get maximum production.

### **E) Horticulture crops**

#### **i) Spices**

- For black pepper propagation from orthotropic shoots two node cutting without leaves are treated with *Pseudomonas fluorescens*-10<sup>8</sup> or dipped in common sugar (2%) solution for one minute is recommended.
- For obtaining higher bark yield in cinnamon it is recommended to harvest 5 to 6 cm thick branches.

#### **ii) Post-harvest technology**

- For getting good and early ripening of mangoes the newly developed zero energy fruit ripening chamber developed by Dr. B. S. Konkan Krishi Vidyapeeth, Dapoli is recommended.

### **F) Animal science and fisheries**

#### **i) Dairy technology**

- For preparation of low fat and low sugar lassi, use of skim milk powder and 1.2 per cent sucralose an artificial sweetener is recommended.

#### **ii) Marine and Inland fisheries**

- It is recommended to stock fry of *Liza parsia* at the rate of 50 fry per m<sup>-2</sup> with a feeding rate of 6% of body weight per day for achieving better growth and survival in cages for a period of 36 days.
- *Paphia malabarica* (Local name: Tisarya) of size smaller than 20 mm should not be harvested during September to January months.
- A ratio of 10:90 (Acetes: Corn flour) is recommended for the preparation of Acetes Ready-to-Eat snack extruded product using twine screw extruder. It is

recommended to pack Acetes Ready-to-Eat snack extruded product in aluminium film lined polyester-poly with nitrogen flushing to get acceptability for two months at ambient conditions.

- It is recommended to use the low cost feed developed by Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth using locally available ingredients, during culture of *Penaeus monodon*.

## **G) Plant protection**

### **i) Agril. Entomology**

- For management of mango thrips, spray of 0.0113 per cent Spinosad 45 SC (2.5 ml/10 litre water) at the time of appearance of mango thrips and if needed the second spray of 0.005 per cent Thiamethoxam 25 WG (2 g/10 litre water) are recommended.
- Drenching of Azadirachtin 0.03 per cent plus micronutrient mixture at the rate of 250 ml in 20 lit. of water per palm at the interval of three months is recommended for the management of coconut eriophyid mite.
- For management of coconut red palm weevil use of pheromone trap is recommended.

## **H) Plant pathology**

- The application of Azolla @ 10 kg/ha before puddling for the control of growth of green algae in rabi rice is recommended.

## **I) Agril. Engineering**

### **i) Soil and Water Conservation Engineering**

- The rainfall intensity-duration-frequency relationship equations for Dapoli, Wakawali and Mulde centres developed by this university are recommended for preparation proposal plan of flood control, rain water harvesting and run off control measures.

$$\text{Dapoli } I_D = \frac{7.9932 T^{0.1689}}{(t + 1.0)^{0.811}}$$

$$\text{Wakawali } I_W = \frac{5.6456 T^{0.1689}}{(t + 1.0)^{0.906}}$$

$$\text{Mulde } I_M = \frac{3.729 T^{0.1558}}{(t + 0.5)^{0.7138}}$$

Where,

I = Intensity, cm/hr

t = Duration of storm (up to 24 hrs)

T = Return period (10-100 yr)

## **ii) Agril. Processing Engineering**

- Dr. BSKKV Dapoli developed GI pipe nursery polyshed having approximate area 96 m<sup>2</sup> (length 18 m, width 5.34 m and height 3.2 m), installed with 50 % black and white shednet inside the polyshed with opening and closing facility and having provision of collapsible curtains for ventilation, is recommended for quick and reliable production of mango and cashew seedlings and grafts in the Konkan region.
- Dr. BSKKV Dapoli developed bamboo nursery polyshed having area 81 m<sup>2</sup> (length 18 m, width 4.5 m and height 3.3 m), installed with 50 % black and white shednet inside the polyshed with opening and closing facility, with provision of PVC pipe casing for side columns and having provision of collapsible curtains for ventilation, is recommended for quick and reliable production of mango and cashew seedlings and grafts in the Konkan region.
- The distillation of ethanol (up to 30 % concentration) from fermented cashew apple juice using Parabolic concentrating solar cooker (SK-14) is recommended.

## **Irrigation and Drainage Engineering**

- It is recommended to grow coloured and green capsicum under protective cover i.e. shade net house recommended for Konkan region coupled with 1.0 PE water depth and 120 per cent RD through WSF with drip irrigation in equal split per week to get the maximum production and returns.
- It is recommend banana (*Cv. Grand Naine*) to grow on lateritic soils of Konkan region with planting density 1.75 m x 1.75 m with 0.6PE level of irrigation, that is 7 to 11 lit/plant/day for the month of September to June and 120 % RD through WSF level of fertigation in ten equal doses for getting the maximum benefits.
- It is recommended to grow kholrabi (*Navalkol*) under protective cover i.e. shade net house recommended for Konkan region coupled with 1.0 PE water depth 120 per cent RD through WSF in equal split at every week through drip irrigation to get the maximum production and returns.
- It is recommended to grow broccoli (*Cv. Ganesh*) under protective cover i.e. shade net house in Konkan region coupled with 1.0 PE water depth 0.5 lit/plant/day from September to November and application of 120 per cent RD through WSF in equal split at every week through drip irrigation to get the maximum production and returns.

## **RESEARCH RECOMMENDATIONS 2011**

### **Crop Varieties developed and released**

During the year 2010-11 the following new crop varieties in three different crops have been recommended.

#### **1) Mango**

Exotic mango varieties namely Osteen and Lily having attractive colour, good yield, export value, maturing in April-May and sustaining in adverse agro-climatic conditions are recommended for cultivation in Konkan region.

#### **2) Greater yam**

Entry “*Da – 199*” of Greater Yam is recommended for cultivation in *Konkan* region of Maharashtra to obtain higher production during *Kharif* season. The shape of the tuber of this variety is cylindrical having pink skin and white flesh, 2.43 tubers per plant, girth 39.34 cm and length of tuber 28.67 cm. The average yield of this variety is 29.29 t/ha<sup>-1</sup> which is 19.05 per cent higher than local variety Konkan Ghorkand.

#### **3) Undi (*Calophyllum inophyllum*) clone KKVCI-03**

For obtaining higher oil yield, Undi (*Calophyllum inophyllum*) clone KKVCI-03 developed by this university by selection method is recommended for cultivation in Konkan coastal region. It is medium growing tree. The average yield of 15 year old tree is 28.63 kg/tree. The average weight of seed is 5.53 of having 79.34 per cent oil content.

### **Farm machineries developed and released**

The following two farm equipments/machineries were developed and released by the University

#### **1) Hand operated Arecanut scarifier**

Hand operated arecanut scarifier developed by Dr. B. S. Konkan Krishi Vidyapeeth is recommended for arecanut scarifying.

In this machine the internal drum with pricks and conveying an arrangement was provided. The outer drum is kept stationery and the inner drum is rotated by the operator using handle provided on the machine. The pricks fitted on the periphery of internal drum scarifies the other shell of the arecanut superficially without making any

damage to nut. The maximum scarifying percentage area was found to be 92.44 per cent. The calculated capacity of machine was found to be 1623 nuts per hour. The nuts obtained by using this scarifier has better acceptability in terms of colour texture and taste.

## **2) Hand operated green cashewnut sheller**

The green cashewnuts are used for vegetable purpose. In Konkan region the green cashewnuts are shelled by the labours with the help of small nail or stick. The shell of cashewnut contains oil and traditional shelling creates injuries to palm and skin. The removal of outer shell is not only time consuming but also resulting into the losses up to 25 per cent. The newly developed cashewnut sheller is suitable for shelling of green cashewnuts.

The green nuts one day after harvest have resulted into maximum capacity of 142 green nuts/hr (5.18 % higher over fresh nuts). The maximum shelling efficiency of 98.40 per cent and full kernels recovery 95.60 per cent was obtained with green cashew nuts one day after harvest which was 5.2 per cent and 2.40 per cent higher than fresh nuts, respectively.

Besides this 25 technologies on various crops under different aspects have been developed.