

# Annual Progress Report: 2017-18

## 1. Breeding

### Contents

|  |           |
|--|-----------|
| Executive summary .....  | 5         |
| Detailed report .....  | 8         |
| I. Multi-location trials.....  | 9         |
| 1. Finger millet Initial Varietal Trial- South zone .....  | 9         |
| 2. Finger millet Initial Varietal Trial- North zone .....  | 13        |
| 3. Finger millet Advanced Varietal Trial- Early and Medium (AVT I & II) duration: South zone ..... | 15        |
| 4. Finger millet Advanced Varietal Trial- Early & Medium (AVT I & II) duration: North zone .....   | 18        |
| 5. Foxtail millet Initial and Advanced Varietal Trial (FIAVT): .....                               | 20        |
| 6. Kodo millet Initial and Advanced Varietal Trial: <i>Kharif 2017</i> .....                       | 23        |
| 7. Little millet Initial and Advanced Varietal Trial: <i>Kharif 2017</i> .....                     | 26        |
| 8. Barnyard millet Initial and Advanced Varietal Trial: <i>Kharif 2017</i> .....                   | 29        |
| 9. Proso millet Initial and Advanced Varietal Trial: <i>Kharif 2017</i> .....                      | 31        |
| II. Sharing of breeding materials .....  | 33        |
| III. DUS Testing in Small Millets .....  | 37        |
| IV. Genetic resources .....  | 38        |
| VI. Nucleus and Breeder seed production.....   | 39        |
| Breeding Tables .....  | 45 to 147 |

## 1. Breeding Report

### Executive summary

Basic and applied researches towards improvement of six small millets (Finger millet, Foxtail millet, Kodo millet, Little millet, Barnyard millet and Proso millet) were taken up during the year 2017-18.

- Applied researches dealt with multi-location yield trials. Basic and strategic researches focused on various aspects including development of high yielding varieties of all six millets with tolerance to diseases and insect-pests, etc.
- Zonal concept was adopted for evaluation of entries only in finger millet along with national, zonal check and local checks. Accordingly, North zone and Southern zones were formulated and continued in 2017-18.
- Total of nine multi-location yield trials of six millets were conducted across locations. Against total allocation of 121 trials, comprising six millet crops, to various centers all over India, 108 trials were conducted and the overall success was 89.26%. The percent success ranged from 80% in Proso millet to 100% in Barnyard millet.

#### I. Multi-location Trials

##### 1. Finger millet Initial Varietal Trial- South zone

In this trial 25 entries along with four checks were evaluated, across 14 locations spread over seven finger millet growing states, for grain yield, fodder yield and other agronomic traits.

- The entry FMV 1117 was significantly superior with VL 352, GPU 45, PR 202 and on par with GPU 67. The entries FMV 1118 & FMV 1116 were significantly superior to VL 352 & GPU 45 but inferior to GPU 67. FMV 1113 and FMV 1114 were significantly superior to VL 352.
- None of the entries gave superior fodder yield than the best check GPU 67, but the entry FMV 1130, FMV 1116 and FMV 1118 were significantly superior to all other checks.
- The entry FMV 1117 was superior by 24.81% over the check VL 352, 11.02% over the check GPU 45 and 4.55% over the check PR 202 in grain yield and on par with best check GPU 67. The entry FMV 1118 gave 24.42% & 10.12% more grain yield than VL 352 and GPU 45, respectively, but inferior to best check GPU 67. The entries FMV 1130 & FMV 1116 were on par with GPU 67 in fodder yield.

##### 2. Finger millet Initial Varietal Trial- North zone

In this trial 25 entries along with four checks were evaluated across 10 locations spread over six finger millet growing states for grain yield, fodder yield and other agronomic traits.

- The entry FMV 1116 was ranked first in the trial and performed superior than best check GPU 67 for grain yield. FMV 1118 and FMV 1120 performed better among the entries but inferior to all the checks.
- The entry FMV 1119 was performed significantly superior than the best check GPU 67 for fodder yield in the trial. FMV 1116, FMV 1113, FMV 1118 and FMV 1112 were superior to the best check.
- The entry FMV 1116 was superior by 5.14% grain yield over the best check GPU 67 and 8.09% over the check PR 202, 7.04% over the check GPU 45 then 6.91% over the check VL 352. No other test entries performed superior than the any checks.

##### 3. Finger millet Advanced Varietal Trial- Early & Medium (AVT I & II) duration: South zone

In this trial four entries and four checks were evaluated across 15 centres spread over seven finger millet growing states for grain and fodder yield and other agronomic traits.

- None of the entries were significantly superior to the best check GPU 67 in grain yield. However, the entry FMV 1103 was significantly superior than the VL-352 and on par in grain yield with best check.
- None of the entries were significantly superior to the checks in fodder yield. The check PR 202 was the top yielder, followed by GPU 67. The entry FMV 1103 was on par with check GPU 67.
- All the test entries gave more than 10% grain yield than the check VL 352. FMV 1103 is on par with the best check and gave 23.24% more grain yield than VL 352.
- The varietal performance of finger millet varieties over three years of testing indicated that FMV1101 was 9.58% superior in grain yield over the best check, but it gave less fodder yield (-7.11) over the best check GPU 45. In two year performance of varieties, entry FMV1106 gave 4.18% more grain yield than the best check VL 352 but it gave less fodder yield than the best check GPU45.

#### 4. Finger millet Advanced Varietal Trial- Early & Medium (AVT I & II) duration: North zone

In this trial four entries and four checks were evaluated across 10 centres spread over six finger millet growing states for grain and fodder yield and other agronomic traits.

- The entries FMV 1102 and FMV 1101 ranked first & second in the trial, respectively and significantly superior than best check VL 352. FMV 1106 was significantly superior to the checks GPU 45 & GPU 67 but inferior to VL 352.
- None of the test entries were significantly superior to the best check GPU 67 in fodder yield. However, FMV 1102 and FMV 1103 were on par with the best check.
- The entry FMV 1102 and FMV 1101 gave more than 20% grain yield than checks GPU 45, GPU 67 and PR 202 and more than 10% grain yield over check VL 352.

#### 5. Foxtail millet Initial and Advanced Varietal Trial (FIAVT):

In this trial thirteen entries and two checks were evaluated across 20 centres spread over eleven Foxtail millet growing states for grain and fodder yield and other agronomic traits.

- The entry FXV 603 was significantly superior to check SiA 326 in grain yield and on par with the best check SiA 3156. FXV 602 and FXV 611 were superior to check SiA 326 but inferior to best check SiA 3156.
- The entries FXV 603, ranked first in the trial for fodder yield, FXV 607 and FXV 612 were significantly superior in fodder yield than best check SiA 326.
- The entries FXV 603 and FXV 602 were superior by 6.95% & 4.0% over the check SiA 326 in grain yield, but inferior to check SiA 3156 by 1.4% & 4.62%, respectively. The entry FXV 603 was superior by 11.36% in fodder yield over the best check SiA 326. The entries FXV 607 and FXV 612 were superior over the best check by 9.01% and 8.65%, respectively.
- The varietal performance of foxtail millet entries over 3 and 2 years of testing indicated that none of the entries were superior over the checks. But the entry FXV601 gave more fodder yield of 3.39% over best check SiA326 over 3 years performance. Over 2 years performance the entry FXV603 gave 4.63% more fodder yield than the best check SiA 326.

#### 6. Kodo millet Initial and Advanced Varietal Trial: *Kharif*2017

In this trial seven entries and three checks were evaluated across 11 centres spread over nine Kodo millet growing states for grain and fodder yield and other agronomic traits.

- The entries KMV 542, KMV 545 and KMV 543 were top ranked in this trial and were significantly superior to all the checks in grain yield.
- The entries KMV 545 and KMV 542 were significantly superior in fodder yield over the best check TNAU 86. The entries KMV 542 and KMV 545 were significantly superior to best checks in grain yield and fodder yield.
- The entries KMV 542, KMV 545 and KMV 543 were significantly superior by more than 15% grain yield to best check RK 390-25.

- The varietal performance of Kodo millet varieties over two years of testing indicated that two entries KMV542 (19.22%) and KMV543 (18.35%) gave more grain yield than the best check TNAU86. In fodder yield the entry KMV542 gave higher fodder yield of 12.29% over best check TNAU86 and KMV543 gave 1.55% increased fodder yield over best check.

#### 7. Little millet Initial and Advanced Varietal Trial: *Kharif2017*

In this trial fifteen entries and three checks were evaluated across 18 centres spread over twelve Little millet growing states for grain and fodder yield and other agronomic traits.

- The entries LMV 513, LMV 512 and LMV 518 & LMV 514 were superior in grain yield to all the checks.
- The entries LMV 513 and LMV 512 were gave more than 10% grain yield over checks JK 8 and BL 6 and gave more than 5 % over the best check OLM 203. All test entries were inferior to best check OLM 203 in fodder yield production. However, the entries LMV 517, LMV 516 and LMV 514 were superior to checks JK 8 and BL 6 for fodder yield production.
- The varietal performance of Little millet varieties over three years of testing indicated that the entry LMV511 gave higher yield of 2.55% over the best check and was on par with the check for fodder yield. In two years performance of varieties, LMV513 was 8.33% superior in grain yield over the best check and LMV512 gave 4.3% more grain yield than best check. But both the entries LMV512 and LMV513 gave less fodder yield than the best check.

#### 8. Barnyard millet Initial and Advanced Varietal Trial: *Kharif 2017*

In this trial six entries and two checks were evaluated across 13 centres spread over seven Barnyard millet growing states for grain and fodder yield and other agronomic traits.

- The entry BMV 581 was ranked first in the trial and significantly superior in grain yield over the check best check VL 207. The entries BMV 582 and BMV 586 were superior to check VL 172 but inferior to best check VL 207.
- The entries BMV 584, BMV 582, BMV 583 and BMV 586 were significantly superior for fodder yield to the best check VL 207. The entry BMV 581 was superior in grain yield to the best check and on par with the best check for fodder yield.
- The entry BMV 581 was superior for grain yield by 14.34% over the check VL 172 and 10.13% over the check VL 207 but inferior in fodder yield by 2.19% over the best check. More than 15% fodder yield over the best check was recorded by the entries, BMV 584 and BMV 582.
- The varietal performance of Barnyard millet varieties over three years of testing indicated that the entry BMV 581 gave higher yield of 8.36% over the best check and was on par with the check for fodder yield. In two years performance of varieties, BMV 582 was on par with the best check in grain yield and superior by 16.98% in fodder yield over best check.

#### 9. Proso millet Initial and Advanced Varietal Trial: *Kharif2017*

In this trial four entries and three checks were evaluated across ten centres spread over seven proso millet growing states for grain and fodder yield and other agronomic traits.

- The entry PMV 444 is superior to all the checks in grain yield. PMV 441 and PMV 442 were on par with the best check TNAU 164. The entries PMV 444 was superior by 14.51% over the check TNAU 151, 6.96% over the check GPUP 21 for grain yield.
- The entries PMV 441 gave more fodder yield than all the entries and on par with the best check TNAU 164. PMV 441 is on par with best checks in grain yield and fodder yield.
- The varietal performance of Proso millet varieties over two years of testing indicated that the entry PMV 441 gave higher yield of 5.57% over the check and superior by 3.01% in fodder yield over best check. PMV 442 gave more grain yield than check but inferior to check in fodder yield than check.

## II. Sharing of breeding materials:

Breeding materials were shared among centres in all the crops and during this year, Breeding materials of 29 crosses (parents and segregating materials) contributed from 6 centres were shared among 10 centres. The centers namely Waghai, Bengaluru and Berhampur have utilized the shared materials for crop improvement and selections have been made.

## III. DUS testing in small millets:

During the *Kharif 2017*, DUS characterization has been done for Finger millet, Foxtail millet, Kodo millet and little millet lines at two locations, viz. Project Coordinating Unit, Bengaluru (Nodal centre) and Centre of Excellence, TNAU, Athiyandal (Co-Nodal centre). A number of testing entries in Finger millet and foxtail millet in replicated trials and DUS lines of Kodo millet and little millet were characterized for DUS traits along with reference varietal sets as per the DUS guidelines prescribed for each crop by PPV&FRA

## IV. Genetic resources

Project Coordinating Unit of All India Coordinated Project on Small Millets, Bengaluru is also National Active Germplasm Site (NAGS). Its main function is to collect, evaluate, conserve and supply germplasm accessions to needy scientists from different centres. The project Coordinating Unit has maintained 4450, 1413, 966, 1003, 611, 1750 and 28 of finger millet, Kodo millet, barnyard millet, little millet, Proso millet, foxtail millet and browntop millet accessions, respectively. Till now, about 275 accessions of different millets have been supplied to needy researchers.

## V. Nucleus and Breeder seed production

During the year, the indent of 33.25 quintals of breeder seed was made by DAC, Government of India for all the six crops of small millets. Against the indent, breeder seed allocation of 58.10q was made for production across 12 centres in 9 states. Accordingly, the total production of breeder seed was 67.13q and it is 201.89 % more than the allocation. A surplus breeder seed of 33.88q has been produced. Many centres produced not only the targeted quantity of breeder seed, but also produced breeder seeds of non-allotted varieties in addition

From *Kharif 2017*, the allocation for production of nucleus seed of 6 small millet crops was made in BSP-I to various centres for production along with breeder seed allocation. A total of 448.0 kgs of nucleus seed of varieties of 85 varieties of 6 crops of small millets (finger millet-48, kodo millet-17, 7 each of foxtail millet and little millet, and 3 each of barnyard millet and proso millet) were produced by 17 centres. The varieties included the old and newly released by centres over the years

## Detailed report

During 2017-18, both basic and applied researches towards improvement of six small millet crops namely Finger millet, Foxtail millet, Kodo millet, Little millet, Barnyard millet and Proso millet were taken up. Applied researches dealt with multi-location yield trials of finished or near finished products (varieties) from the centers of All India Coordinated Research Project on Small Millets (AICRP-SM). Basic and strategic researches focused on various aspects including development of high yielding varieties of six millets with tolerance to diseases and insect-pests, etc.

Applied researches dealt with multi-location yield trials. Basic and strategic researches focused on various aspects including development of high yielding varieties of all six millets with tolerance to diseases and insect-pests, etc. Zonal concept was adopted for evaluation of entries only in finger millet along with national, zonal check and local checks. Accordingly, North zone and Southern zones were formulated and continued in 2017-18. Total of nine multi-location yield trials of six millets were conducted across locations.

## I. Multi-location trials

During the year 2017-18, total of nine multi-location yield trials of six millets were conducted across locations. The number of entries and checks, locations and states covered are as below.

### Coordinated Breeding trial: *Kharif 2017*

| S. No. | Name of trial   | No. of entries | Checks | No. of locations | No. of states covered |
|--------|---|----------------|--------|------------------|-----------------------|
| 1      | Finger millet Initial Varietal Trial –South Zone (FM-IVT -SZ)         | 25             | 4      | 14               | 7                     |
| 2      | Finger millet Initial Varietal Trial –North Zone (FM-IVT-NZ)          | 25             | 4      | 10               | 6                     |
| 3      | Finger millet Advanced Varietal Trial –South Zone (FM-AVT I & II –SZ) | 4              | 4      | 15               | 7                     |
| 4      | Finger millet Advanced Varietal Trial –North Zone (FM-AVT I & II-NZ)  | 11             | 4      | 10               | 6                     |
| 5      | Foxtail millet Initial and Advanced Varietal Trial (FIAVT)            | 13             | 2      | 20               | 11                    |
| 6      | Kodo millet Initial and Advanced Varietal Trial (KIAVT)               | 7              | 3      | 11               | 9                     |
| 7      | Little millet Initial and Advanced Varietal Trial (LIAVT)             | 15             | 3      | 18               | 12                    |
| 8      | Barnyard millet Initial and Advanced Varietal Trial (BIAVT)           | 6              | 2      | 13               | 7                     |
| 9      | Proso millet Initial and Advanced Varietal Trial (PIAVT)              | 4              | 3      | 10               | 7                     |

Against total allocation of 121 trials, comprising six millet crops, to various centers all over India, 108 trials were conducted and the overall success was 89.26%. The percent success ranged from 80% in Proso millet to 100% in Barnyard millet. The numbers of trials assigned and conducted in six different millets across the country are as follows;

### Trials assigned, conducted and percent success

| Sl. No.      | Crop            | Trial assigned | Trial conducted | % Success    |
|--------------|-----------------|----------------|-----------------|--------------|
| 1            | Finger millet   | 49             | 45              | 91.83        |
| 2            | Foxtail millet  | 20             | 18              | 90.00        |
| 3            | Kodo millet     | 11             | 9               | 81.81        |
| 4            | Little millet   | 18             | 15              | 83.33        |
| 5            | Barnyard millet | 13             | 13              | 100.00       |
| 6            | Proso millet    | 10             | 8               | 80.00        |
| <b>Total</b> |                 | <b>121</b>     | <b>108</b>      | <b>89.26</b> |

#### 1. Finger millet Initial Varietal Trial- South zone

In this trial 25 entries along with four checks (GPU 45, VL 352, GPU 67, and PR 202) were evaluated across 14 locations spread over seven finger millet growing states for grain yield, fodder yield and other agronomic traits (Table 1, 1a, 1b and Tables 1.1 to 1.8).

- Days to 50% flowering and maturity: The entries took 67 to 92 days to 50% flowering and 106 to 125 days to maturity. The entry FMV 1128 flowered and matured earlier than all other entries and checks.

- Plant Height: The plant Height ranged from 80cm to 113cm.
- Grain yield: The entry FMV 1117 (3075 kg/ha) was significantly superior with VL 352 (2312 kg/ha), GPU 45 (2736 kg/ha), PR 202 (2935 kg/ha) and on par with GPU 67 (3059 kg/ha). The entries FMV 1118 (3044 kg/ha) and FMV 1116 (3025 kg/ha) were significantly superior to VL 352 and GPU 45 but inferior to GPU 67. FMV 1113 (2999 kg/ha) and FMV 1114 (2897 kg/ha) were significantly superior to VL 352.
- Fodder yield: None of the entries gave superior fodder yield than the best check GPU 67 (8385 kg/ha), but the entry FMV 1130 (8216 kg/ha), FMV 1116 (8200 kg/ha) and FMV 1118 (8121 kg/ha) were significantly superior to all other checks.

Remarks: The entry FMV 1117 and FMV 1118 were performed better for grain and fodder yields.

Table 1: Summary Performance of varieties in Finger millet Initial Varietal Trial in South Zone: *Kharif 2017*

| S. No. | Entries        | Grain yield (kg/ha) |    | Fodder yield (kg/ha) |    | Days to 50 % Flowering | Days to Maturity | Plant height (cm) | No. of Productive tillers | Main ear length (cm) | No. of Fingers /ear |
|--------|----------------|---------------------|----|----------------------|----|------------------------|------------------|-------------------|---------------------------|----------------------|---------------------|
|        |                | Average             | R  | Average              | R  | Average                | Average          | Average           | Average                   | Average              | Average             |
| 1      | FMV 1112       | 2402                | 22 | 7378                 | 14 | 87                     | 121              | 109               | 4                         | 8                    | 8                   |
| 2      | FMV 1113       | 2999                | 5  | 7378                 | 15 | 83                     | 117              | 104               | 4                         | 7                    | 7                   |
| 3      | FMV 1114       | 2897                | 7  | 6765                 | 22 | 74                     | 110              | 96                | 4                         | 7                    | 7                   |
| 4      | FMV 1115       | 2865                | 8  | 7126                 | 20 | 77                     | 112              | 103               | 4                         | 7                    | 6                   |
| 5      | FMV 1116       | 3025                | 4  | 8200                 | 3  | 81                     | 116              | 103               | 4                         | 7                    | 7                   |
| 6      | FMV 1117       | 3075                | 1  | 7843                 | 7  | 81                     | 116              | 100               | 4                         | 7                    | 7                   |
| 7      | FMV 1118       | 3044                | 3  | 8121                 | 4  | 81                     | 117              | 106               | 4                         | 8                    | 7                   |
| 8      | FMV 1119       | 2569                | 16 | 7255                 | 17 | 74                     | 111              | 94                | 4                         | 6                    | 5                   |
| 9      | FMV 1120       | 2700                | 13 | 7182                 | 19 | 78                     | 112              | 98                | 4                         | 7                    | 7                   |
| 10     | FMV 1121       | 2479                | 20 | 7205                 | 18 | 83                     | 118              | 105               | 4                         | 8                    | 6                   |
| 11     | FMV 1122       | 1773                | 29 | 5672                 | 29 | 76                     | 111              | 80                | 3                         | 6                    | 7                   |
| 12     | FMV 1123       | 2373                | 23 | 6088                 | 28 | 77                     | 112              | 99                | 4                         | 7                    | 7                   |
| 13     | FMV 1124       | 2308                | 26 | 6743                 | 23 | 84                     | 119              | 102               | 4                         | 7                    | 7                   |
| 14     | FMV 1125       | 1931                | 27 | 6379                 | 26 | 86                     | 121              | 105               | 4                         | 8                    | 6                   |
| 15     | FMV 1126       | 2778                | 11 | 7572                 | 11 | 79                     | 115              | 103               | 4                         | 7                    | 6                   |
| 16     | FMV 1127       | 2674                | 14 | 7291                 | 16 | 81                     | 115              | 103               | 4                         | 8                    | 6                   |
| 17     | FMV 1128       | 1761                | 30 | 4930                 | 30 | 67                     | 106              | 81                | 3                         | 6                    | 6                   |
| 18     | FMV 1129       | 2558                | 17 | 7434                 | 13 | 78                     | 113              | 107               | 4                         | 7                    | 8                   |
| 19     | FMV 1130       | 2549                | 18 | 8216                 | 2  | 81                     | 116              | 101               | 4                         | 9                    | 7                   |
| 20     | FMV 1131       | 2826                | 9  | 8066                 | 5  | 86                     | 123              | 113               | 4                         | 7                    | 6                   |
| 21     | FMV 1132       | 2493                | 19 | 6524                 | 25 | 80                     | 116              | 101               | 4                         | 8                    | 8                   |
| 22     | FMV 1133       | 2451                | 21 | 7834                 | 8  | 85                     | 119              | 104               | 3                         | 8                    | 6                   |
| 23     | FMV 1134       | 1921                | 28 | 6238                 | 27 | 80                     | 115              | 95                | 4                         | 7                    | 6                   |
| 24     | FMV 1135       | 2651                | 15 | 7711                 | 10 | 85                     | 119              | 103               | 3                         | 7                    | 6                   |
| 25     | FMV 1136       | 2326                | 24 | 7010                 | 21 | 92                     | 125              | 100               | 3                         | 6                    | 7                   |
| 26     | GPU 45 (Check) | 2736                | 12 | 7717                 | 9  | 77                     | 113              | 100               | 3                         | 7                    | 6                   |
| 27     | VL 352 (Check) | 2312                | 25 | 6558                 | 24 | 72                     | 108              | 95                | 3                         | 6                    | 7                   |



|    |                   |             |    |             |    |           |            |            |          |          |          |
|----|-------------------|-------------|----|-------------|----|-----------|------------|------------|----------|----------|----------|
| 28 | GPU 67 (Check)    | 3059        | 2  | 8385        | 1  | 84        | 120        | 95         | 3        | 6        | 7        |
| 29 | PR 202 (Check)    | 2935        | 6  | 7898        | 6  | 80        | 117        | 102        | 4        | 6        | 6        |
| 30 | Local             | 2815        | 10 | 7498        | 12 | 82        | 120        | 104        | 4        | 8        | 7        |
|    | <b>Zonal mean</b> | <b>2576</b> |    | <b>7207</b> |    | <b>80</b> | <b>116</b> | <b>100</b> | <b>4</b> | <b>7</b> | <b>7</b> |
|    | C.D. (5%)         | 442         |    | 1282        |    | 4         | 5          | 5          | 1        | 1        | 1        |
|    | C.D. (1%)         | 582         |    | 1689        |    | 6         | 7          | 7          | 1        | 1        | 1        |
|    | C.V. (%)          | 20.17       |    | 17.8        |    | 6.83      | 5.14       | 6.61       | 18.4     | 10.68    | 13.66    |
|    | P-value           | 0           |    | 0           |    | 0         | 0          | 0          | 0.013    | 0        | 0        |

**Comparative performance of entries:** The entry FMV 1117 was superior by 24.81% over the check VL 352, 11.02% over the check GPU 45 and 4.55% over the check PR 202 in grain yield and on par with best check GPU 67. The entry FMV 1118 gave 24.42% and 10.12% more grain yield than VL 352 and GPU 45, respectively, but inferior to best check GPU 67. No entries produce significantly higher fodder yield than best check GPU 67. However, the entries FMV 1130 and FMV 1116 were on par with GPU 67.

Table 1a: Comparative performance of entries in finger millet Initial varietal trial: South Zone

| S. No. | Entries  | Mean Grain yield (kg/ha) | % Increase /decrease over checks for grain yield |        |        |        | Fodder yield (kg/ha) | % Increase /decrease over best check (GPU 67) | Days to maturity |
|--------|----------|--------------------------|--|--------|--------|--------|----------------------|---|------------------|
|        |          |                          | GPU 45   | VL 352 | GPU 67 | PR 202 |                      |   |                  |
| 1      | FMV 1112 | 2402                     | -13.91   | 3.75   | -27.35 | -22.19 | 7378                 | -13.65  | 121              |
| 2      | FMV 1113 | 2999                     | 8.77   | 22.91  | -2.00  | 2.13   | 7378                 | -13.65  | 117              |
| 3      | FMV 1114 | 2897                     | 5.56   | 20.19  | -5.59  | -1.31  | 6765                 | -23.95  | 110              |
| 4      | FMV 1115 | 2865                     | 4.50   | 19.30  | -6.77  | -2.44  | 7126                 | -17.67  | 112              |
| 5      | FMV 1116 | 3025                     | 9.55   | 23.57  | -1.12  | 2.98   | 8200                 | -2.26   | 116              |
| 6      | FMV 1117 | 3075                     | 11.02  | 24.81  | 0.52   | 4.55   | 7843                 | -6.91   | 116              |
| 7      | FMV 1118 | 3044                     | 10.12  | 24.05  | -0.49  | 3.58   | 8121                 | -3.25   | 117              |
| 8      | FMV 1119 | 2569                     | -6.50  | 10.00  | -19.07 | -14.25 | 7255                 | -15.58  | 111              |
| 9      | FMV 1120 | 2700                     | -1.33  | 14.37  | -13.30 | -8.70  | 7182                 | -16.75  | 112              |
| 10     | FMV 1121 | 2479                     | -10.37   | 6.74   | -23.40 | -18.39 | 7205                 | -16.38  | 118              |
| 11     | FMV 1122 | 1773                     | -54.31   | -30.40 | -72.53 | -65.54 | 5672                 | -47.83  | 111              |
| 12     | FMV 1123 | 2373                     | -15.30   | 2.57   | -28.91 | -23.68 | 6088                 | -37.73  | 112              |
| 13     | FMV 1124 | 2308                     | -18.54   | -0.17  | -32.54 | -27.17 | 6743                 | -24.35  | 119              |
| 14     | FMV 1125 | 1931                     | -41.69   | -19.73 | -58.42 | -51.99 | 6379                 | -31.45  | 121              |
| 15     | FMV 1126 | 2778                     | 1.51   | 16.77  | -10.12 | -5.65  | 7572                 | -10.74  | 115              |
| 16     | FMV 1127 | 2674                     | -2.32  | 13.54  | -14.40 | -9.76  | 7291                 | -15.00  | 115              |
| 17     | FMV 1128 | 1761                     | -55.37   | -31.29 | -73.71 | -66.67 | 4930                 | -70.08  | 106              |
| 18     | FMV 1129 | 2558                     | -6.96  | 9.62   | -19.59 | -14.74 | 7434                 | -12.79  | 113              |
| 19     | FMV 1130 | 2549                     | -7.34  | 9.30   | -20.01 | -15.14 | 8216                 | -2.06   | 116              |
| 20     | FMV 1131 | 2826                     | 3.18   | 18.19  | -8.24  | -3.86  | 8066                 | -3.95   | 123              |
| 21     | FMV 1132 | 2493                     | -9.75  | 7.26   | -22.70 | -17.73 | 6524                 | -28.53  | 116              |
| 22     | FMV 1133 | 2451                     | -11.63   | 5.67   | -24.81 | -19.75 | 7834                 | -7.03   | 119              |



|    |                       |             |        |        |        |        |             |        |            |
|----|-----------------------|-------------|--------|--------|--------|--------|-------------|--------|------------|
| 23 | FMV 1134              | 1921        | -42.43 | -20.35 | -59.24 | -52.79 | 6238        | -34.42 | 115        |
| 24 | FMV 1135              | 2651        | -3.21  | 12.79  | -15.39 | -10.71 | 7711        | -8.74  | 119        |
| 25 | FMV 1136              | 2326        | -17.63 | 0.60   | -31.51 | -26.18 | 7010        | -19.61 | 125        |
| 26 | GPU 45<br>(Check)     | 2736        | 0.00   | 15.50  | -11.81 | -7.27  | 7717        | -8.66  | 113        |
| 27 | VL 352<br>(Check)     | 2312        | -18.34 | 0.00   | -32.31 | -26.95 | 6558        | -27.86 | 108        |
| 28 | GPU 67<br>(Check)     | 3059        | 10.56  | 24.42  | 0.00   | 4.05   | 8385        | 0.00   | 120        |
| 29 | PR 202<br>(Check)     | 2935        | 6.78   | 21.23  | -4.22  | 0.00   | 7898        | -6.17  | 117        |
| 30 | Local                 | 2815        | 2.81   | 17.87  | -8.67  | -4.26  | 7498        | -11.83 | 120        |
|    | <b>Zonal<br/>Mean</b> | <b>2576</b> |        |        |        |        | <b>7207</b> |        | <b>116</b> |

Table 1b: Pedigree of varieties evaluated in Finger millet Initial Varietal Trial (FMIVT) Kharif 2017

| S. No. | Entries  | Centre code  | Trial Code | Centre         | Level of Testing | Pedigree  |
|--------|----------|--------------|------------|----------------|------------------|---|
| 1      | FMV 1112 | PR 1507      | FM IVT -1  | Peddapuram     | 1st year         | DM-7 × PR 202                                       |
| 2      | FMV 1113 | WN 550       | FM IVT -2  | Waghai         | 1st year         | Local Collection from Subir Taluka, Dangs District  |
| 3      | FMV 1114 | WN 585       | FM IVT -3  | Waghai         | 1st year         | Local Collection from Waghai Taluka, Dangs District |
| 4      | FMV 1115 | OEB 601      | FM IVT -4  | Berhampur      | 1st year         | Indaf 5 × Bhairabi                                  |
| 5      | FMV 1116 | VR 1101      | FM IVT -5  | Vizianagaram   | 1st year         | VL 330 × GE 532                                     |
| 6      | FMV 1117 | PR 1511      | FM IVT -6  | Peddapuram     | 1st year         | PR 1045 × PR 202                                    |
| 7      | FMV 1118 | WN 559       | FM IVT -7  | Waghai         | 1st year         | Local Collection from Waghai Taluka, Dangs District |
| 8      | FMV 1119 | OEB 602      | FM IVT -8  | Berhampur      | 1st year         | AKP 7 × Purnea                                      |
| 9      | FMV 1120 | RAuF 15      | FM IVT -9  | Dholi          | 1st year         |   |
| 10     | FMV 1121 | ML 181       | FM IVT -10 | Bengaluru      | 1st year         | IE 1012/I.5   |
| 11     | FMV 1122 | VL 390       | FM IVT -11 | Almora         | 1st year         | VL324 × L540  |
| 12     | FMV 1123 | IIMR FM 6655 | FM IVT -12 | IIMR Hyderabad | 1st year         | Selection from IE7161                               |
| 13     | FMV 1124 | KMR 633      | FM IVT -13 | Mandya         | 1st year         | PR 202 × GE 1409                                    |
| 14     | FMV 1125 | KWFM 49      | FM IVT -14 | Kolhapur       | 1st year         |   |
| 15     | FMV 1126 | RAuF 13      | FM IVT -15 | Dholi          | 1st year         |   |
| 16     | FMV 1127 | ML 322       | FM IVT -16 | Bengaluru      | 1st year         | IE 1012/I.5   |
| 17     | FMV 1128 | VL 389       | FM IVT -17 | Almora         | 1st year         | L-540 × VL 204                                      |
| 18     | FMV 1129 | PRS 38       | FM IVT -18 | Palem          | 1st year         | PR 2614 × RR230                                     |
| 19     | FMV 1130 | KMR 632      | FM IVT -19 | Mandya         | 1st year         | Indaf-5 × GE 1409/ IE-95001 × MR6                   |
| 20     | FMV 1131 | KOPN 1059    | FM IVT -20 | Kolhapur       | 1st year         |   |
| 21     | FMV 1132 | TNEc1292     | FM IVT -21 | Athiyandal     | 1st year         | CO(Ra)14 × TNAU900                                  |

|    |                |                       |            |            |          |  |
|----|----------------|-----------------------|------------|------------|----------|--|
| 22 | FMV 1133       | GPU 97                | FM IVT -22 | Bengaluru  | 1st year | GPU 67 x GPU 28  |
| 23 | FMV 1134       | TNEc 1294             | FM IVT -23 | Athiyandal | 1st year | CO(Ra)14 x TNAU950   |
| 24 | FMV 1135       | GPU 96                | FM IVT -24 | Bengaluru  | 1st year | GPU 67 x GPU 28  |
| 25 | FMV 1136       | Gossaigoan marubadhan | FM IVT -25 | Gossaigaon | 1st year | Local Collection from Haraputa area of Gossaigaon Sub Division under Kokrajhar District of Assam |
| 26 | GPU 45(Check)  | -                     | FM IVT -26 | Bengaluru  | check    | GPU 26 x L5  |
| 27 | VL 352 (Check) | -                     | FM IVT -27 | Almora     | check    | VR 708 x VL 149  |
| 28 | GPU 67(Check)  | -                     | FM IVT -28 | Bengaluru  | check    | Selection from GE 5331   |
| 29 | PR 202(Check)  | -                     | FM IVT -29 | Peddapuram | check    | Pure line selection from Mettachodiragi of Arakku valley   |
| 30 | Local check    | -                     | FM IVT -LC |            |          |  |

## 2. Finger millet Initial Varietal Trial- North zone

In this trial 25 entries along with five checks (GPU 45, VL 352, GPU 67, PR 202 and a local check) were evaluated across 10 locations spread over six finger millet growing states for grain yield, fodder yield and other agronomic traits (Table 2, 2a and Tables 2.1 to 2.8).

- Days to 50% flowering and maturity: The entries took 67 to 99 Days to 50% flowering and 107 to 138 days to maturity. The check VL 352 is flowered and matured earlier than all the entries in the evaluation and among the testing entries, FMV 1128 flowered and matured earlier than all the entries.
- Plant Height: The plant Height ranged from 84cm to 107cm.
- Grain yield: The entry FMV 1116 (3054 kg/ha) was ranked first in the trial and performed superior than best check GPU 67 (2897 kg/ha) for grain yield. FMV 1118 and FMV 1120 performed better among the entries but inferior to all the checks.
- Fodder yield: The entry FMV 1119 (13554 kg/ha) was performed significantly superior than the best check GPU 67 (11692) for fodder yield in the trial. FMV 1116 (12046 kg/ha), FMV 1113 (11915 kg/ha), FMV 1118 (11849 kg/ha) and FMV 1112 (11810 kg/ha) were superior to the best check.

**Remarks:** The entry FMV 1116 was performed better for grain and fodder yields.

**Table 2: Summary Performance of varieties in Finger millet Initial Varietal Trial in North Zone: Kharif 2017**

| S. No. | Entries  | Grain yield (kg/ha) |    | Fodder yield (kg/ha) |    | Days to 50 % Flowering | Days to Maturity | Plant height (cm) | No. of productive tillers | Main ear length (cm) | No. of Fingers /ear |
|--------|----------|---------------------|----|----------------------|----|------------------------|------------------|-------------------|---------------------------|----------------------|---------------------|
|        |          | Average             | R  | Average              | R  | Average                | Average          | Average           | Average                   | Average              | Average             |
| 1      | FMV 1112 | 2411                | 17 | 11810                | 5  | 93                     | 134              | 104               | 3                         | 9                    | 9                   |
| 2      | FMV 1113 | 2338                | 22 | 11915                | 3  | 94                     | 135              | 95                | 3                         | 8                    | 7                   |
| 3      | FMV 1114 | 2740                | 9  | 11613                | 7  | 72                     | 109              | 93                | 3                         | 8                    | 8                   |
| 4      | FMV 1115 | 2713                | 10 | 11559                | 11 | 82                     | 124              | 101               | 3                         | 8                    | 7                   |
| 5      | FMV 1116 | 3054                | 1  | 12046                | 2  | 85                     | 126              | 101               | 3                         | 8                    | 7                   |
| 6      | FMV 1117 | 2625                | 15 | 11319                | 16 | 89                     | 130              | 99                | 3                         | 8                    | 8                   |
| 7      | FMV 1118 | 2773                | 7  | 11849                | 4  | 88                     | 130              | 107               | 3                         | 9                    | 7                   |

|    |                |       |    |       |    |      |      |     |       |      |       |
|----|----------------|-------|----|-------|----|------|------|-----|-------|------|-------|
| 8  | FMV 1119       | 2654  | 12 | 13554 | 1  | 80   | 120  | 94  | 3     | 7    | 6     |
| 9  | FMV 1120       | 2746  | 8  | 11340 | 14 | 81   | 122  | 99  | 3     | 7    | 8     |
| 10 | FMV 1121       | 2203  | 26 | 10947 | 20 | 89   | 132  | 101 | 3     | 9    | 7     |
| 11 | FMV 1122       | 2376  | 19 | 9185  | 30 | 76   | 118  | 84  | 3     | 7    | 8     |
| 12 | FMV 1123       | 2640  | 14 | 10085 | 26 | 73   | 115  | 99  | 3     | 9    | 7     |
| 13 | FMV 1124       | 2268  | 24 | 9795  | 29 | 84   | 127  | 96  | 3     | 8    | 8     |
| 14 | FMV 1125       | 1890  | 29 | 10022 | 28 | 94   | 138  | 102 | 3     | 9    | 7     |
| 15 | FMV 1126       | 2654  | 11 | 11607 | 8  | 87   | 125  | 100 | 3     | 8    | 7     |
| 16 | FMV 1127       | 2459  | 16 | 10733 | 22 | 85   | 124  | 102 | 3     | 8    | 7     |
| 17 | FMV 1128       | 2382  | 18 | 10223 | 25 | 70   | 108  | 86  | 3     | 7    | 7     |
| 18 | FMV 1129       | 2646  | 13 | 10983 | 18 | 80   | 124  | 104 | 3     | 8    | 8     |
| 19 | FMV 1130       | 2298  | 23 | 10731 | 23 | 92   | 134  | 95  | 3     | 10   | 8     |
| 20 | FMV 1131       | 1955  | 28 | 10979 | 19 | 97   | 138  | 103 | 3     | 8    | 7     |
| 21 | FMV 1132       | 2074  | 27 | 10411 | 24 | 83   | 124  | 100 | 3     | 9    | 8     |
| 22 | FMV 1133       | 2352  | 20 | 11466 | 13 | 91   | 132  | 97  | 3     | 8    | 7     |
| 23 | FMV 1134       | 1864  | 30 | 10867 | 21 | 86   | 128  | 99  | 3     | 8    | 6     |
| 24 | FMV 1135       | 2221  | 25 | 11507 | 12 | 94   | 135  | 99  | 3     | 8    | 7     |
| 25 | FMV 1136       | 2352  | 21 | 11598 | 10 | 99   | 138  | 98  | 3     | 7    | 7     |
| 26 | GPU 45 (Check) | 2839  | 5  | 11327 | 15 | 85   | 125  | 98  | 3     | 8    | 7     |
| 27 | VL 352 (Check) | 2843  | 4  | 10083 | 27 | 67   | 107  | 96  | 3     | 8    | 8     |
| 28 | GPU 67 (Check) | 2897  | 3  | 11692 | 6  | 92   | 130  | 93  | 3     | 7    | 7     |
| 29 | PR 202 (Check) | 2807  | 6  | 11605 | 9  | 85   | 127  | 100 | 3     | 7    | 7     |
| 30 | Local          | 3049  | 2  | 11186 | 17 | 75   | 110  | 96  | 3     | 7    | 8     |
|    | Zonal mean     | 2504  |    | 11134 |    | 85   | 126  | 98  | 3     | 8    | 7     |
|    | C.D. (5%)      | 511   |    | 1624  |    | 6    | 8    | 6   | 0     | 1    | 1     |
|    | C.D. (1%)      | 673   |    | 2141  |    | 8    | 10   | 8   | 1     | 1    | 1     |
|    | C.V. (%)       | 20.68 |    | 15.71 |    | 7.74 | 6.51 | 6.8 | 15.95 | 9.31 | 11.96 |
|    | P-value        | 0     |    | 0.001 |    | 0    | 0    | 0   | 0.389 | 0    | 0     |

**Comparative performance of entries:** The entry FMV 1116 was superior by 5.14% grain yield over the best check GPU 67 and 8.09 % over the check PR 202, 7.04% over the check GPU 45 then 6.91% over the check VL 352. No other test entries performed superior than the any checks. FMV 1119 (13.74 %) produce significantly superior fodder yield than the best check GPU 67.FMV 1116(2.94%) and FMV 1113 (1.87%) gave more yield than the best check.

Table 2a: Comparative performance of entries in finger millet Initial varietal trial: North Zone

| S. No. | Entries  | Mean Grain yield (kg/ha) | % Increase /decrease over checks for grain yield |        |        |        | Fodder yield (kg/ha) | % Increase /decrease over best check (GPU 67) | Days to maturity |
|--------|----------|--------------------------|--|--------|--------|--------|----------------------|---|------------------|
|        |          |                          | GPU 45   | VL 352 | GPU 67 | PR 202 |                      |   |                  |
| 1      | FMV 1112 | 2411                     | -17.75   | -17.92 | -20.16 | -16.42 | 11810                | 1.00  | 134              |
| 2      | FMV 1113 | 2338                     | -21.43   | -21.60 | -23.91 | -20.06 | 11915                | 1.87  | 135              |
| 3      | FMV 1114 | 2740                     | -3.61  | -3.76  | -5.73  | -2.45  | 11613                | -0.68   | 109              |

|    |                   |             |        |        |        |        |              |        |            |
|----|-------------------|-------------|--------|--------|--------|--------|--------------|--------|------------|
| 4  | FMV 1115          | 2713        | -4.64  | -4.79  | -6.78  | -3.46  | 11559        | -1.15  | 124        |
| 5  | FMV 1116          | 3054        | 7.04   | 6.91   | 5.14   | 8.09   | 12046        | 2.94   | 126        |
| 6  | FMV 1117          | 2625        | -8.15  | -8.30  | -10.36 | -6.93  | 11319        | -3.30  | 130        |
| 7  | FMV 1118          | 2773        | -2.38  | -2.52  | -4.47  | -1.23  | 11849        | 1.33   | 130        |
| 8  | FMV 1119          | 2654        | -6.97  | -7.12  | -9.16  | -5.76  | 13554        | 13.74  | 120        |
| 9  | FMV 1120          | 2746        | -3.39  | -3.53  | -5.50  | -2.22  | 11340        | -3.10  | 122        |
| 10 | FMV 1121          | 2203        | -28.87 | -29.05 | -31.50 | -27.42 | 10947        | -6.81  | 132        |
| 11 | FMV 1122          | 2376        | -19.49 | -19.65 | -21.93 | -18.14 | 9185         | -27.29 | 118        |
| 12 | FMV 1123          | 2640        | -7.54  | -7.69  | -9.73  | -6.33  | 10085        | -15.93 | 115        |
| 13 | FMV 1124          | 2268        | -25.18 | -25.35 | -27.73 | -23.77 | 9795         | -19.37 | 127        |
| 14 | FMV 1125          | 1890        | -50.21 | -50.42 | -53.28 | -48.52 | 10022        | -16.66 | 138        |
| 15 | FMV 1126          | 2654        | -6.97  | -7.12  | -9.16  | -5.76  | 11607        | -0.73  | 125        |
| 16 | FMV 1127          | 2459        | -15.45 | -15.62 | -17.81 | -14.15 | 10733        | -8.94  | 124        |
| 17 | FMV 1128          | 2382        | -19.19 | -19.35 | -21.62 | -17.84 | 10223        | -14.37 | 108        |
| 18 | FMV 1129          | 2646        | -7.29  | -7.45  | -9.49  | -6.08  | 10983        | -6.46  | 124        |
| 19 | FMV 1130          | 2298        | -23.54 | -23.72 | -26.07 | -22.15 | 10731        | -8.96  | 134        |
| 20 | FMV 1131          | 1955        | -45.22 | -45.42 | -48.18 | -43.58 | 10979        | -6.49  | 138        |
| 21 | FMV 1132          | 2074        | -36.89 | -37.08 | -39.68 | -35.34 | 10411        | -12.30 | 124        |
| 22 | FMV 1133          | 2352        | -20.71 | -20.88 | -23.17 | -19.35 | 11466        | -1.97  | 132        |
| 23 | FMV 1134          | 1864        | -52.31 | -52.52 | -55.42 | -50.59 | 10867        | -7.59  | 128        |
| 24 | FMV 1135          | 2221        | -27.83 | -28.01 | -30.44 | -26.38 | 11507        | -1.61  | 135        |
| 25 | FMV 1136          | 2352        | -20.71 | -20.88 | -23.17 | -19.35 | 11598        | -0.81  | 138        |
| 26 | GPU 45<br>(Check) | 2839        | 0.00   | -0.14  | -2.04  | 1.13   | 11327        | -3.22  | 125        |
| 27 | VL 352<br>(Check) | 2843        | 0.14   | 0.00   | -1.90  | 1.27   | 10083        | -15.96 | 107        |
| 28 | GPU 67<br>(Check) | 2897        | 2.00   | 1.86   | 0.00   | 3.11   | 11692        | 0.00   | 130        |
| 29 | PR 202<br>(Check) | 2807        | -1.14  | -1.28  | -3.21  | 0.00   | 11605        | -0.75  | 127        |
| 30 | Local             | 3049        | 6.89   | 6.76   | 4.99   | 7.94   | 11186        | -4.52  | 110        |
|    | <b>Zonal mean</b> | <b>2504</b> |        |        |        |        | <b>11134</b> |        | <b>126</b> |

### 3. Finger millet Advanced Varietal Trial- Early and Medium (AVT I & II) duration: South zone

In this trial four entries and four checks (GPU-45, VL-352, GPU 67 and PR 202) were evaluated across 15 centres spread over seven finger millet growing states for grain and fodder yield and other agronomic traits (Table 3, 3a, 3b, 3c, 3d and Tables 3.1 to 3.8).

- Days to 50 % flowering and maturity: The entries took 73 to 84 days to 50 % flowering and 105 to 119 days for maturity.
- Plant height: Plant height ranged from 86 to 104 cm.
- Grain Yield: None of the entries were significantly superior to the best check GPU 67 in grain yield. However, the entry FMV 1103 (3004 kg/ha) was significantly superior than the VL-352 and on par in grain yield with best check.

- Fodder yield: None of the entries were significantly superior to the checks in fodder yield. The check PR 202 was the top yielder with 8591 kg/ha followed by GPU 67 (8147 kg/ha). The entry FMV 1103 was on par with check GPU 67.

**Remarks:** The check GPU 67 stood first rank with grain yield and second with fodder yield. However, the entry FMV 1103 was on par with check GPU 67 in both grain and fodder yields.

**Table 3: Summary Performance of varieties in Finger millet Advanced Varietal Trial in South Zone: Kharif 2017**

| S No. | Entries           | Grain yield (kg/ha) |   | Fodder Yield (kg/ha) |   | Days to 50 % Flowering | Days to Maturity | Plant height (cm) | No. of Productive tillers | Main ear length (cm) | No. of Fingers /ear |
|-------|-------------------|---------------------|---|----------------------|---|------------------------|------------------|-------------------|---------------------------|----------------------|---------------------|
|       |                   | Average             | R | Average              | R | Average                | Average          | Average           | Average                   | Average              | Average             |
| 1     | FMV 1101          | 2682                | 6 | 6923                 | 7 | 76                     | 109              | 91                | 3                         | 7                    | 8                   |
| 2     | FMV 1102          | 2590                | 8 | 6876                 | 9 | 76                     | 109              | 86                | 3                         | 7                    | 7                   |
| 3     | FMV 1103          | 3004                | 2 | 8111                 | 3 | 82                     | 115              | 99                | 3                         | 7                    | 6                   |
| 4     | FMV 1104          | 2616                | 7 | 7906                 | 6 | 77                     | 112              | 102               | 3                         | 8                    | 7                   |
| 5     | GPU 45 (Check)    | 2715                | 5 | 8030                 | 4 | 77                     | 112              | 99                | 3                         | 7                    | 6                   |
| 6     | VL 352 (Check)    | 2306                | 9 | 6876                 | 8 | 73                     | 105              | 92                | 3                         | 7                    | 7                   |
| 7     | GPU 67 (Check)    | 3042                | 1 | 8147                 | 2 | 82                     | 116              | 95                | 3                         | 7                    | 7                   |
| 8     | PR 202 (Check)    | 2968                | 4 | 8591                 | 1 | 80                     | 115              | 102               | 4                         | 7                    | 6                   |
| 9     | Local             | 3002                | 3 | 7926                 | 5 | 84                     | 119              | 104               | 3                         | 8                    | 7                   |
|       | <b>Zonal mean</b> | <b>2769</b>         |   | <b>7710</b>          |   | <b>79</b>              | <b>112</b>       | <b>97</b>         | <b>3</b>                  | <b>7</b>             | <b>7</b>            |
|       | C.D. (5%)         | 372                 |   | 930                  |   | 6                      | 5                | 6                 | 0                         | 1                    | 1                   |
|       | C.D. (1%)         | 494                 |   | 1236                 |   | 8                      | 7                | 7                 | 1                         | 1                    | 1                   |
|       | C.V. (%)          | 14.57               |   | 11.96                |   | 8.88                   | 5.41             | 7.64              | 18.29                     | 9.52                 | 11.73               |
|       | P-value           | 0                   |   | 0                    |   | 0.01                   | 0                | 0                 | 0.314                     | 0                    | 0                   |

**Comparative performance of entries:** No entries gave more grain yield than best check. However, all the test entries gave more than 10% grain yield than the check VL 352. FMV 1103 is on par with the best check and gave 23.24% more grain yield than VL 352. None of the test entries gave more fodder yield than the best check.

**Table 3a: Comparative performance of entries in finger millet advanced varietal trial (AVT I & II) Early and medium duration: South Zone**

| S. No. | Entries  | Mean Grain yield (kg/ha) | % Increase /decrease over checks for grain yield |        |        |        | Fodder yield (kg/ha) | % Increase /decrease Over best check (PR 202) | Days to maturity |
|--------|----------|--------------------------|--|--------|--------|--------|----------------------|---|------------------|
|        |          |                          | GPU 45   | VL 352 | GPU 67 | PR 202 |                      |   |                  |
| 1      | FMV 1101 | 2682                     | -1.23  | 14.02  | -13.42 | -10.66 | 6923                 | -24.09  | 109              |
| 2      | FMV 1102 | 2590                     | -4.83  | 10.97  | -17.45 | -14.59 | 6876                 | -24.94  | 109              |
| 3      | FMV 1103 | 3004                     | 9.62   | 23.24  | -1.26  | 1.20   | 8111                 | -5.92   | 115              |

|   |                   |      |        |       |        |        |      |        |     |
|---|-------------------|------|--------|-------|--------|--------|------|--------|-----|
| 4 | FMV 1104          | 2616 | -3.78  | 11.85 | -16.28 | -13.46 | 7906 | -8.66  | 112 |
| 5 | GPU 45<br>(Check) | 2715 | 0.00   | 15.06 | -12.04 | -9.32  | 8030 | -6.99  | 112 |
| 6 | VL 352<br>(Check) | 2306 | -17.74 | 0.00  | -31.92 | -28.71 | 6876 | -24.94 | 105 |
| 7 | GPU 67<br>(Check) | 3042 | 10.75  | 24.19 | 0.00   | 2.43   | 8147 | -5.45  | 116 |
| 8 | PR 202<br>(Check) | 2968 | 8.52   | 22.30 | -2.49  | 0.00   | 8591 | 0.00   | 115 |
|   | Zonal<br>mean     | 2769 |        |       |        |        | 7710 |        | 112 |

**Performance of entries over three and two years in Finger millet Advanced Varietal Trial (AVT I & II):** The varietal performance of finger millet varieties over three years of testing indicated that FMV1101 was 9.58% superior in grain yield over the best check, but it gave less fodder yield (-7.11%) over the best check GPU 45. In two year performance of varieties, entry FMV1106 gave 4.18% more grain yield than the best check VL 352 but it gave less fodder yield than the best check GPU45.

**Table3b: Performance of entries over three years in finger millet advanced varietal trial (AVT I & II)**

| S. No | Entries           | Centre code | Grain yield (Kg/ha) |         |         | India Mean | % over best check | Fodder yield (Kg/ha) |         |         | % over best check |
|-------|-------------------|-------------|---------------------|---------|---------|------------|-------------------|----------------------|---------|---------|-------------------|
|       |                   |             | 2015-16             | 2016-17 | 2017-18 |            |                   | 2015-16              | 2016-17 | 2017-18 |                   |
| 1     | FMV1101           | VL 386      | 2991                | 3306    | 3637    | 3311       | 9.58              | 6300                 | 11678   | 10401   | -7.11             |
| 2     | GPU 45<br>(Check) |             | 2798                | 2772    | 2875    | 2815       |                   | 7400                 | 11951   | 11046   |                   |
| 3     | VL 352<br>(Check) |             | 2751                | 3092    | 3140    | 2994       |                   | 6600                 | 12003   | 9598    |                   |

**Table3c: Performance of entries over two years in finger millet advanced varietal trial (AVT I & II)**

| Sl. No. | Entries           | Centre code | Grain yield (Kg/ha) |         | India Mean | % over best check | Fodder yield (Kg/ha) |         | India Mean | % over best check |
|---------|-------------------|-------------|---------------------|---------|------------|-------------------|----------------------|---------|------------|-------------------|
|         |                   |             | 2016-17             | 2017-18 |            |                   | 2016-17              | 2017-18 |            |                   |
| 1       | FMV1102           | BR 14-3     | 2637                | 3686    | 3161       | 0.69              | 9954                 | 10983   | 10469      | -9.84             |
| 2       | FMV1103           | PR 10-35    | 2816                | 2896    | 2856       | -9.93             | 10818                | 11586   | 11202      | -2.65             |
| 3       | FMV1104           | KOPN 942    | 2794                | 3001    | 2898       | -8.35             | 9930                 | 11014   | 10472      | -9.80             |
| 4       | FMV1105           | DHFM 78-33  | 2599                | 2335    | 2467       | -27.26            | 10001                | 13633   | 11817      | 2.70              |
| 5       | FMV1106           | VL 387      | 2603                | 3950    | 3277       | 4.18              | 9536                 | 13031   | 11284      | -1.90             |
| 6       | FMV1107           | KMR 630     | 2553                | 2615    | 2584       | -21.50            | 9444                 | 12850   | 11147      | -3.15             |
| 7       | FMV1108           | GPU 93      | 2446                | 2308    | 2377       | -32.08            | 9754                 | 13404   | 11579      | 0.70              |
| 8       | FMV1109           | GPU 94      | 2481                | 2923    | 2702       | -16.19            | 9638                 | 13982   | 11810      | 2.64              |
| 9       | FMV1110           | TNEC 1281   | 2198                | 2333    | 2266       | -38.58            | 9546                 | 12103   | 10825      | -6.22             |
| 10      | FMV1111           | VL 503      | 2079                | 2764    | 2422       | -29.65            | 9402                 | 14122   | 11762      | 2.24              |
| 11      | GPU 45<br>(Check) |             | 2772                | 2979    | 2875       |                   | 11951                | 11046   | 11498      |                   |
| 12      | VL 352<br>(Check) |             | 3092                | 3187    | 3140       |                   | 12003                | 9598    | 10800      |                   |

Table 3d: Pedigree of varieties evaluated in Finger millet Advanced Varietal Trial I & II (South Zone): *Kharif*2017

| S. No. | Entries       | Centre code | Trial Code            | Centre     | Level of Testing | Pedigree   |
|--------|---------------|-------------|-----------------------|------------|------------------|--|
| 1      | FMV 1101      | VL 386      | FM AVT I & II (SZ)-1  | Almora     | 3rd year         | GEC 440 x VL 149   |
| 2      | FMV 1102      | BR 14-3     | FM AVT I & II (SZ)-2  | Jagdapur   | 2nd year         | VR 708 x GPU 48  |
| 3      | FMV 1103      | PR 10-35    | FM AVT I & II (SZ)-3  | Peddapuram | 2nd year         | GE 4971 x GPU 26   |
| 4      | FMV 1104      | KOPN 942    | FM AVT I & II (SZ)-4  | Kolhapur   | 2nd year         | Selection from IEC 190                                   |
| 5      | GPU 45(Che)   | -           | FM AVT I & II (SZ)-5  | Bengaluru  | check            | GPU 26 x L5  |
| 6      | VL 352(Check) | -           | FM AVT I & II (SZ)-6  | Almora     | check            | VR 708 x VL 149  |
| 7      | GPU 67(Check) | -           | FM AVT I & II (SZ)-7  | Bengaluru  | check            | Selection from GE 5331                                   |
| 8      | PR 202(Check) | -           | FM AVT I & II (SZ)-8  | Peddapuram | check            | Pure line selection from Mettachodiragi of Arakku valley |
| 9      | Local check   | -           | FM AVT I & II (SZ)-LC |            |                  |  |

#### 4. Finger millet Advanced Varietal Trial- Early & Medium (AVT I & II) duration: North zone

In this trial four entries and four checks (GPU-45, VL-352, GPU 67 and PR 202) were evaluated across 10 centres spread over six finger millet growing states for grain and fodder yield and other agronomic traits (Table 4, 4a, 4b, 4c, 4d and Tables 4.1 to 4.8).

- Days to 50 % flowering and maturity: The entries took 67 to 100 days to 50% flowering and 109 to 141 days for maturity.
- Plant height: Plant height ranged from 83 to 109 cm.
- Grain Yield: The entries FMV 1102 (4781 kg/ha) and FMV 1101 (4592 kg/ha) ranked first and second in the trial, respectively and significantly superior than best check VL 352 (4068 kg/ha). FMV 1106 (3950 kg/ha) was significantly superior to the checks GPU 45 and GPU 67 but inferior to VL 352.
- Fodder yield: None of the test entries were significantly superior to the best check GPU 67 (15311 kg/ha) in fodder yield. However, FMV 1102 and FMV 1103 were on par with the best check.

**Remarks:** The entries FMV 1102 and FMV 1101 were significantly superior to all the checks in grain yield wherein, FMV 1102 was on par with GPU 67 in fodder yield.

Table 4: Summary Performance of varieties in Finger millet Advanced Varietal Trial in North Zone: *Kharif* 2017

| S. No. | Entries  | Grain yield (kg/ha) |    | Fodder yield (kg/ha) |    | Days to 50 % Flowering | Days to Maturity | Plant Height (cm) | No. of Productive Tillers | Main Ear Length (cm) | No. of Fingers /ear |
|--------|----------|---------------------|----|----------------------|----|------------------------|------------------|-------------------|---------------------------|----------------------|---------------------|
|        |          | Average             | R  | Average              | R  | Average                | Average          | Average           | Average                   | Average              | Average             |
| 1      | FMV 1101 | 4592                | 2  | 13878                | 9  | 74                     | 112              | 95                | 3                         | 9                    | 9                   |
| 2      | FMV 1102 | 4781                | 1  | 15090                | 2  | 71                     | 110              | 90                | 3                         | 8                    | 8                   |
| 3      | FMV 1103 | 2788                | 11 | 15060                | 3  | 89                     | 128              | 103               | 3                         | 8                    | 7                   |
| 4      | FMV 1104 | 3386                | 7  | 14122                | 6  | 85                     | 125              | 99                | 3                         | 10                   | 8                   |
| 5      | FMV 1105 | 2335                | 14 | 13633                | 10 | 98                     | 141              | 109               | 2                         | 13                   | 7                   |



|    |                   |             |    |              |    |           |            |           |          |          |          |
|----|-------------------|-------------|----|--------------|----|-----------|------------|-----------|----------|----------|----------|
| 6  | FMV 1106          | 3950        | 4  | 13031        | 12 | 76        | 114        | 84        | 3        | 8        | 8        |
| 7  | FMV 1107          | 2615        | 13 | 12850        | 13 | 90        | 128        | 99        | 3        | 8        | 8        |
| 8  | FMV 1108          | 2308        | 16 | 13404        | 11 | 100       | 140        | 83        | 3        | 9        | 7        |
| 9  | FMV 1109          | 2923        | 10 | 13982        | 8  | 94        | 138        | 99        | 3        | 8        | 7        |
| 10 | FMV 1110          | 2333        | 15 | 12103        | 16 | 89        | 128        | 96        | 3        | 8        | 7        |
| 11 | FMV 1111          | 2764        | 12 | 14122        | 5  | 70        | 113        | 99        | 3        | 9        | 6        |
| 12 | GPU 45<br>(Check) | 3242        | 8  | 14061        | 7  | 86        | 123        | 99        | 3        | 8        | 7        |
| 13 | VL 352<br>(Check) | 4068        | 3  | 12319        | 15 | 67        | 112        | 99        | 3        | 9        | 8        |
| 14 | GPU 67<br>(Check) | 3054        | 9  | 15311        | 1  | 93        | 132        | 92        | 3        | 7        | 7        |
| 15 | PR 202<br>(Check) | 3648        | 6  | 14921        | 4  | 87        | 127        | 106       | 3        | 8        | 7        |
| 16 | Local             | 3687        | 5  | 12736        | 14 | 69        | 109        | 98        | 3        | 8        | 7        |
|    | <b>Zonal mean</b> | <b>3280</b> |    | <b>13789</b> |    | <b>83</b> | <b>124</b> | <b>97</b> | <b>3</b> | <b>9</b> | <b>7</b> |
|    | C.D. (5%)         | 1031        |    | 2165         |    | 6         | 7          | 7         | 0        | 1        | 1        |
|    | C.D. (1%)         | 1368        |    | 2861         |    | 8         | 9          | 10        | 1        | 1        | 1        |
|    | C.V. (%)          | 26.99       |    | 16.82        |    | 8.18      | 6.06       | 7.95      | 16.43    | 12.74    | 10.22    |
|    | P-value           |             |    | 0.065        |    | 0         | 0          | 0         | 0.164    | 0        | 0        |

**Comparative performance of entries:** The entry FMV 1102 and FMV 1101 gave more than 20% grain yield than checks GPU 45, GPU 67 and PR 202 and more than 10% grain yield over check VL 352. The entries FMV 1102 and FMV 1101 gave less fodder yield (-1.46% and -10.33%) than best check GPU 67.

**Table 4a: Comparative performance of entries in finger millet advanced varietal trial (AVT I & II) Early and medium duration: North Zone**

| S. No. | Entries           | Mean Grain yield (kg/ha) | % Increase /decrease over checks for grain yield |        |        |        | Fodder yield (kg/ha) | % Increase /decrease over best check (GPU 67) | Days to maturity |
|--------|-------------------|--------------------------|--|--------|--------|--------|----------------------|---|------------------|
|        |                   |                          | GPU 45   | VL 352 | GPU 67 | PR 202 |                      |   |                  |
| 1      | FMV 1101          | 4592                     | 29.40  | 11.41  | 33.49  | 20.56  | 13878                | -10.33  | 112              |
| 2      | FMV 1102          | 4781                     | 32.19  | 14.91  | 36.12  | 23.70  | 15090                | -1.46   | 110              |
| 3      | FMV 1103          | 2788                     | -16.28   | -45.91 | -9.54  | -30.85 | 15060                | -1.67   | 128              |
| 4      | FMV 1104          | 3386                     | 4.25   | -20.14 | 9.81   | -7.74  | 14122                | -8.42   | 125              |
| 5      | FMV 1105          | 2335                     | -38.84   | -74.22 | -30.79 | -56.23 | 13633                | -12.31  | 141              |
| 6      | FMV 1106          | 3950                     | 17.92  | -2.99  | 22.68  | 7.65   | 13031                | -17.50  | 114              |
| 7      | FMV 1107          | 2615                     | -23.98   | -55.56 | -16.79 | -39.50 | 12850                | -19.15  | 128              |
| 8      | FMV 1108          | 2308                     | -40.47   | -76.26 | -32.32 | -58.06 | 13404                | -14.23  | 140              |
| 9      | FMV 1109          | 2923                     | -10.91   | -39.17 | -4.48  | -24.80 | 13982                | -9.51   | 138              |
| 10     | FMV 1110          | 2333                     | -38.96   | -74.37 | -30.90 | -56.37 | 12103                | -26.51  | 128              |
| 11     | FMV 1111          | 2764                     | -17.29   | -47.18 | -10.49 | -31.98 | 14122                | -8.42   | 113              |
| 12     | GPU 45<br>(Check) | 3242                     | 0.00   | -25.48 | 5.80   | -12.52 | 14061                | -8.89   | 123              |
| 13     | VL 352            | 4068                     | 20.30  | 0.00   | 24.93  | 10.32  | 12319                | -24.29  | 112              |

|    |                   |             |       |        |       |        |              |        |            |
|----|-------------------|-------------|-------|--------|-------|--------|--------------|--------|------------|
|    | (Check)           |             |       |        |       |        |              |        |            |
| 14 | GPU 67<br>(Check) | 3054        | -6.16 | -33.20 | 0.00  | -19.45 | 15311        | 0.00   | 132        |
| 15 | PR 202<br>(Check) | 3648        | 11.13 | -11.51 | 16.28 | 0.00   | 14921        | -2.61  | 127        |
| 16 | Local             | 3687        | 12.07 | -10.33 | 17.17 | 1.06   | 12736        | -20.22 | 109        |
|    | <b>Zonal mean</b> | <b>3280</b> |       |        |       |        | <b>13789</b> |        | <b>124</b> |

Table 4b: Pedigree of varieties evaluated in Finger millet Advanced Varietal Trial I & II (North Zone): *Kharif 2017*

| Sl. No. | Entries           | Centre code | Trial Code            | Centre       | Level of Testing | Pedigree   |
|---------|-------------------|-------------|-----------------------|--------------|------------------|--|
| 1       | FMV 1101          | VL 386      | FM AVT I & II (NZ)-1  | Almora       | 3rd year         | GEC 440 x VL 149   |
| 2       | FMV 1102          | BR 14-3     | FM AVT I & II (NZ)-2  | Jagdapur     | 2nd year         | VR 708 x GPU 48  |
| 3       | FMV 1103          | PR 10-35    | FM AVT I & II (NZ)-3  | Peddapuram   | 2nd year         | GE 4971 x GPU 26   |
| 4       | FMV 1104          | KOPN 942    | FM AVT I & II (NZ)-4  | Kolhapur     | 2nd year         | Selection from IEC 190                                   |
| 5       | FMV 1105          | DHFM 78-33  | FM AVT I & II (NZ)-5  | Hanumanmatti | 2nd year         | GE 1130 x GPU 28   |
| 6       | FMV 1106          | VL 387      | FM AVT I & II (NZ)-6  | Almora       | 2nd year         | VL 324 x L540  |
| 7       | FMV 1107          | KMR 630     | FM AVT I & II (NZ)-7  | Mandya       | 2nd year         | PR 202 x GE 1409   |
| 8       | FMV 1108          | GPU 93      | FM AVT I & II (NZ)-8  | Bengaluru    | 2nd year         | GPU 67 x GPU 28  |
| 9       | FMV 1109          | GPU 94      | FM AVT I & II (NZ)-9  | Bengaluru    | 2nd year         | GPU 67 x GPU 28  |
| 10      | FMV 1110          | TNEC 1281   | FM AVT I & II (NZ)-10 | Athiyandal   | 2nd year         | Selection from TNAU 900                                  |
| 11      | FMV 1111          | VL 503      | FM AVT I & II (NZ)-11 | Almora       | 2nd year         | WR 2 x VL 201  |
| 12      | GPU 45<br>(Check) | -           | FM AVT I & II (NZ)-12 | Bengaluru    | check            | GPU 26 x L5  |
| 13      | VL 352<br>(Check) | -           | FM AVT I & II (NZ)-13 | Almora       | check            | VR 708 x VL 149  |
| 14      | GPU 67<br>(Check) | -           | FM AVT I & II (NZ)-14 | Bengaluru    | check            | Selection from GE 5331                                   |
| 15      | PR 202<br>(Check) | -           | FM AVT I & II (NZ)-15 | Peddapuram   | check            | Pure line selection from Mettachodiragi of Arakku valley |
| 16      | Local check       | -           | FM AVT I & II (NZ)-LC |              |                  |  |

#### 5. Foxtail millet Initial and Advanced Varietal Trial (FIAVT):

In this trial thirteen entries and two checks (SiA 326 and SiA 3156) were evaluated across 20 centres spread over eleven Foxtail millet growing states for grain and fodder yield and other agronomic traits (Table 5, 5a, 5b, 5c, 5d and Tables 5.1 to 5.6).

- Days to 50% flowering and maturity: The entries took 46 to 53 days to 50% flowering and 78 to 87 days for maturity.
- Plant height: Plant height ranged from 120 to 140 cm.
- Grain Yield: The entry FXV 603 (2502 kg/ha) was significantly superior to check SiA 326 (2328 kg/ha) in grain yield and on par with the best check SiA 3156. FXV 602 and FXV 611 were superior to check SiA 326 but inferior to best check SiA 3156.
- Fodder yield: The entries FXV 603 (6233 kg/ha), ranked first in the trial for fodder yield, FXV 607 (6072 kg/ha) and FXV 612 (6048 kg/ha) were significantly superior in fodder yield than best check SiA 326 (5525 kg/ha).

**Remarks:** The entry FXV 603 was on par with the best check in grain yield and significantly superior in fodder than both the checks.

**Table 5: Summary performance of varieties in Foxtail millet Initial and Advanced Varietal Trial: Kharif 2017**

| S. No. | Entries               | Grain yield (kg/ha) |    | Fodder yield (kg/ha) |    | Days to 50 % Flowering | Days to Maturity | Plant Height (cm) | No. of Productive tillers |
|--------|-----------------------|---------------------|----|----------------------|----|------------------------|------------------|-------------------|---------------------------|
|        |                       | Average             | R  | Average              | R  | Average                | Average          | Average           | Average                   |
| 1      | FXV 601               | 2179                | 14 | 5320                 | 9  | 46                     | 78               | 124               | 4                         |
| 2      | FXV 602               | 2425                | 4  | 5147                 | 15 | 48                     | 80               | 126               | 3                         |
| 3      | FXV 603               | 2502                | 3  | 6233                 | 1  | 51                     | 84               | 131               | 4                         |
| 4      | FXV 604               | 2063                | 16 | 4532                 | 16 | 48                     | 80               | 120               | 3                         |
| 5      | FXV 605               | 2381                | 7  | 5170                 | 14 | 47                     | 80               | 123               | 4                         |
| 6      | FXV 606               | 2235                | 13 | 5648                 | 7  | 52                     | 84               | 140               | 3                         |
| 7      | FXV 607               | 2391                | 6  | 6072                 | 2  | 52                     | 86               | 133               | 5                         |
| 8      | FXV 608               | 2269                | 12 | 5823                 | 4  | 51                     | 84               | 137               | 3                         |
| 9      | FXV 609               | 2308                | 10 | 5285                 | 11 | 50                     | 83               | 136               | 3                         |
| 10     | FXV 610               | 2162                | 15 | 5662                 | 6  | 53                     | 87               | 129               | 5                         |
| 11     | FXV 611               | 2422                | 5  | 5257                 | 12 | 47                     | 81               | 127               | 3                         |
| 12     | FXV 612               | 2296                | 11 | 6048                 | 3  | 51                     | 84               | 128               | 4                         |
| 13     | FXV 613               | 2345                | 8  | 5789                 | 5  | 51                     | 83               | 132               | 4                         |
| 14     | SiA 326 (Check)       | 2328                | 9  | 5525                 | 8  | 49                     | 82               | 132               | 3                         |
| 15     | SiA 3156 (Check)      | 2537                | 2  | 5314                 | 10 | 49                     | 82               | 129               | 3                         |
| 16     | Local check           | 2722                | 1  | 5256                 | 13 | 48                     | 81               | 132               | 4                         |
|        | <b>All India mean</b> | <b>2335</b>         |    | <b>5506</b>          |    | <b>49</b>              | <b>82</b>        | <b>130</b>        | <b>4</b>                  |
|        | C.D. (5%)             | 253                 |    | 699                  |    | 2                      | 2                | 6                 | 1                         |
|        | C.D. (1%)             | 334                 |    | 923                  |    | 3                      | 3                | 7                 | 1                         |
|        | C.V. (%)              | 15.08               |    | 16.04                |    | 5.89                   | 4.09             | 6.48              | 22.9                      |
|        | P-value               | -                   |    |                      |    | 0                      | 0                | 0                 |                           |

**Comparative performance of entries:** The entries FXV 603 and FXV 602 were superior by 6.95% and 4.0% over the check SiA 326 in grain yield, but inferior to check SiA 3156 by 1.4% and 4.62%, respectively. The entry FXV 603 was superior by 11.36% in fodder yield over the best check SiA 326. The entries FXV 607 and FXV 612 were superior over the best check by 9.01% and 8.65%, respectively.

Table 5a: Comparative performance of entries in Foxtail millet Initial and Advanced varietal trial (FIAVT)

| S. No. | Entries          | Mean Grain Yield (kg/ha) | % Increase /decrease over checks for grain yield |          | Fodder Yield (kg/ha) | % Increase /decrease over best check (SiA 326) | Days to maturity |
|--------|------------------|--------------------------|--|----------|----------------------|--|------------------|
|        |                  |                          | SiA 326  | SiA 3156 |                      |  |                  |
| 1      | FXV 601          | 2179                     | -6.84  | -16.43   | 5320                 | -3.85  | 78               |
| 2      | FXV 602          | 2425                     | 4.00   | -4.62    | 5147                 | -7.34  | 80               |
| 3      | FXV 603          | 2502                     | 6.95   | -1.40    | 6233                 | 11.36  | 84               |
| 4      | FXV 604          | 2063                     | -12.85   | -22.98   | 4532                 | -21.91   | 80               |
| 5      | FXV 605          | 2381                     | 2.23   | -6.55    | 5170                 | -6.87  | 80               |
| 6      | FXV 606          | 2235                     | -4.16  | -13.51   | 5648                 | 2.18   | 84               |
| 7      | FXV 607          | 2391                     | 2.63   | -6.11    | 6072                 | 9.01   | 86               |
| 8      | FXV 608          | 2269                     | -2.60  | -11.81   | 5823                 | 5.12   | 84               |
| 9      | FXV 609          | 2308                     | -0.87  | -9.92    | 5285                 | -4.54  | 83               |
| 10     | FXV 610          | 2162                     | -7.68  | -17.35   | 5662                 | 2.42   | 87               |
| 11     | FXV 611          | 2422                     | 3.88   | -4.75    | 5257                 | -5.10  | 81               |
| 12     | FXV 612          | 2296                     | -1.39  | -10.50   | 6048                 | 8.65   | 84               |
| 13     | FXV 613          | 2345                     | 0.72   | -8.19    | 5789                 | 4.56   | 83               |
| 14     | SiA 326 (Check)  | 2328                     | 0.00   | -8.98    | 5525                 | 0.00   | 82               |
| 15     | SiA 3156 (Check) | 2537                     | 8.24   | 0.00     | 5314                 | -3.97  | 82               |
| 16     | Local check      | 2722                     | 14.47  | 6.80     | 5256                 | -5.12  | 81               |
|        | All India mean   | 2335                     |  |          | 5506                 |  | 82               |

**Performance of entries over three and two years in Foxtail millet Initial and Advanced Varietal Trial:** The varietal performance of foxtail millet entries over 3 and 2 years of testing indicated that none of the entries were superior over the checks. But the entry FXV601 gave more fodder yield of 3.39 % over best check SiA326 over 3 year performance. Over 2 year performance the entry FXV603 gave 4.63% more fodder yield than the best check SiA 326.

Table5b: Performance of entries over three years in Foxtail millet initial and advanced varietal trial (FIAVT)

| SL.No. | Entries          | Centre code | Grain yield (Kg/ha) |         |         | India Mean | % over best check | Fodder yield (Kg/ha) |         |         | India Mean | % over best check |
|--------|------------------|-------------|---------------------|---------|---------|------------|-------------------|----------------------|---------|---------|------------|-------------------|
|        |                  |             | 2015-16             | 2016-17 | 2017-18 |            |                   | 2015-16              | 2016-17 | 2017-18 |            |                   |
| 1      | FXV601           | DHFT 5-6    | 2507                | 2232    | 2179    | 2306       | -5.49             | 6400                 | 5084    | 5320    | 5601       | 3.39              |
| 2      | FXV602           | SiA 3179    | 2459                | 2111    | 2425    | 2332       | -4.33             | 5500                 | 4431    | 5147    | 5026       | -7.67             |
| 3      | SiA 326 (Check)  |             | 2217                | 1997    | 2328    | 2181       |                   | 5600                 | 5110    | 5525    | 5412       |                   |
| 4      | SiA 3156 (Check) |             | 2385                | 2376    | 2537    | 2433       |                   | 5700                 | 4389    | 5314    | 5134       |                   |

Table5c: Performance of entries over two years in foxtail millet initial and advanced varietal trial (FIAVT)

| SL.No. | Entries | Centre | Grain yield (Kg/ha) | India | % over | Fodder yield (Kg/ha) | India | % over |
|--------|---------|--------|---------------------|-------|--------|----------------------|-------|--------|
|--------|---------|--------|---------------------|-------|--------|----------------------|-------|--------|

|   |                  | code      | 2016-17 | 2017-18 | Mean | best check | 2016-17 | 2017-18 | Mean | best check |
|---|------------------|-----------|---------|---------|------|------------|---------|---------|------|------------|
| 1 | FXV603           | DHFT 77-3 | 2196    | 2502    | 2349 | -4.57      | 4921    | 6233    | 5577 | 4.63       |
| 2 | SiA 326 (Check)  |           | 1997    | 2328    | 2163 |            | 5110    | 5525    | 5318 |            |
| 3 | SiA 3156 (Check) |           | 2376    | 2537    | 2457 |            | 4389    | 5314    | 4852 |            |

Table 5d. Pedigree of varieties evaluated in Foxtail millet Initial and Advanced Varietal Trial (FIAVT) Kharif 2017

| S. No. | Entries         | Centre code | Trial Code | Centre        | Level of Testing | Pedigree                |
|--------|-----------------|-------------|------------|---------------|------------------|-------------------------|
| 1      | FXV 601         | DHFT 5-6    | FIAVT-1    | Hanumanamatti | 3rd year         | GPUS 26 x CO 7          |
| 2      | FXV 602         | SiA 3179    | FIAVT-2    | Nandyal       | 3rd year         | Srilakshmi x SiA 1378   |
| 3      | FXV 603         | DHFT 77-3   | FIAVT-3    | Hanumanamatti | 2nd year         | GPUS 26 x CO 7          |
| 4      | FXV 604         | PPSS-7      | FIAVT-4    | Perumallapale | 1st year         |                         |
| 5      | FXV 605         | PKS 22      | FIAVT-5    | Palem         | 1st year         | Selection from ISC 1820 |
| 6      | FXV 606         | SiA 3220    | FIAVT-6    | Nandyal       | 1st year         | SiA 2720 x SiA 2605     |
| 7      | FXV 607         | TNSi 337    | FIAVT-7    | Athiyandal    | 1st year         | CO 6 x Ise 198          |
| 8      | FXV 608         | SiA 3212    | FIAVT-8    | Nandyal       | 1st year         | NSR x SiA 2829          |
| 9      | FXV 609         | SiA 3219    | FIAVT-9    | Nandyal       | 1st year         | SiA 2323 x NSR          |
| 10     | FXV 610         | TNSi 345    | FIAVT-10   | Athiyandal    | 1st year         | CO(Te)7 x TNAU 51       |
| 11     | FXV 611         | DHFT 35-3   | FIAVT-11   | Hanumanamatti | 1st year         | Co-6 X GS-1919          |
| 12     | FXV 612         | DHFT 2-5-3  | FIAVT-12   | Hanumanamatti | 1st year         | Co-5 X PS-4             |
| 13     | FXV 613         | IIMR FiM-1  | FIAVT-13   | IIMRHydrabad  | 1st year         | Selection from Ise 1009 |
| 14     | SiA 326(Check)  | -           | FIAVT-14   | Nandyal       | check            | Pureline selection      |
| 15     | SiA 3156(Check) | -           | FIAVT-15   | Nandyal       | check            | Selection from SiA 2871 |
| 16     | Local check     | -           | FIAVT-LC   |               |                  |                         |

#### 6. Kodo millet Initial and Advanced Varietal Trial: Kharif 2017

In this trial seven entries and three checks (TNAU 86, RK 390-2 and GPK 35) were evaluated across 11 centres spread over nine Kodo millet growing states for grain and fodder yield and other agronomic traits ([Table 6, 6a, 6b, 6c Tables 6.1 to 6.6](#)).

- Days to 50% flowering and maturity: The entries took 67 to 73 days to 50% flowering and 103 to 110 days for maturity.
- Plant height: Plant height ranged from 61 to 77cm.
- Grain Yield: The entries KMV 542 (3010 kg/ha), KMV 545 (2992 kg/ha) and KMV 543 (2949 kg/ha) were top ranked, respectively in this trial and were significantly superior to all the checks in grain yield.
- Fodder yield: The entries KMV 545 (8366 kg/ha) and KMV 542 (8041 kg/ha) were significantly superior in fodder yield over the best check TNAU 86 (7263 kg/ha).

**Remarks:** The entries KMV 542 and KMV 545 were significantly superior to best checks in grain yield and fodder yield.

Table 6: Summary performance of varieties in Kodomillet Initial and Advanced Varietal Trial: *Kharif 2017*

| S. No. | Entries               | Grain yield (kg/ha) |    | Fodder yield (kg/ha) |    | Days to 50 % Flowering | Days to Maturity | Plant Height (cm) | No. of productive tillers |
|--------|-----------------------|---------------------|----|----------------------|----|------------------------|------------------|-------------------|---------------------------|
|        |                       | Average             | R  | Average              | R  | Average                | Average          | Average           | Average                   |
| 1      | KMV 541               | 1576                | 11 | 3802                 | 11 | 72                     | 110              | 61                | 7                         |
| 2      | KMV 542               | 3010                | 1  | 8041                 | 2  | 70                     | 107              | 74                | 6                         |
| 3      | KMV 543               | 2949                | 3  | 7208                 | 4  | 71                     | 107              | 68                | 6                         |
| 4      | KMV 544               | 2048                | 9  | 5100                 | 10 | 69                     | 106              | 65                | 5                         |
| 5      | KMV 545               | 2992                | 2  | 8366                 | 1  | 73                     | 109              | 74                | 7                         |
| 6      | KMV 546               | 2458                | 5  | 6616                 | 6  | 67                     | 105              | 67                | 6                         |
| 7      | KMV 547               | 2578                | 4  | 6851                 | 5  | 69                     | 105              | 67                | 6                         |
| 8      | TNAU 86 (Check)       | 2410                | 7  | 7263                 | 3  | 68                     | 106              | 69                | 6                         |
| 9      | RK 390-25 (Check)     | 2455                | 6  | 6012                 | 7  | 69                     | 104              | 68                | 6                         |
| 10     | GPUK 3(Check)         | 2103                | 8  | 5680                 | 8  | 69                     | 105              | 70                | 5                         |
| 11     | Local check           | 2010                | 10 | 5288                 | 9  | 70                     | 103              | 77                | 7                         |
|        | <b>All India mean</b> | <b>2437</b>         |    | <b>6473</b>          |    | <b>70</b>              | <b>106</b>       | <b>69</b>         | <b>6</b>                  |
|        | C.D. (5%)             | 390                 |    | 1532                 |    | 4                      | 5                | 5                 | 1                         |
|        | C.D. (1%)             | 519                 |    | 2039                 |    | 5                      | 6                | 7                 | 2                         |
|        | C.V. (%)              | 15.25               |    | 22.51                |    | 5.82                   | 4.63             | 8.41              | 21.96                     |
|        | P-value               | 0                   |    | 0.001                |    | 0.14                   | 0.587            | 0.011             | 0.133                     |

**Comparative performance of entries:** The entries KMV 542, KMV 545 and KMV 543 were significantly superior by more than 15% grain yield to best check RK 390-25. KMV 542 was recorded 30.13% higher grain yield than the check GPUK 3, 19.93% than TNAU 86 and 18.44% than best check RK 390-25. KMV 545 and KMV 542 were superior by 13.18% and 9.68% in fodder yield over the best check TNAU 86.

Table 6a: Comparative performance of entries in Kodo millet Initial and Advanced varietal trial (KIAVT)

| S. No. | Entries         | Mean Grain yield (kg/ha) | % Increase /decrease over checks for grain yield |           |        | Fodder yield (kg/ha) | % Increase /decrease over best check (TNAU 86) | Days to maturity |
|--------|-----------------|--------------------------|--|-----------|--------|----------------------|--|------------------|
|        |                 |                          | TNAU 86  | RK 390-25 | GPUK 3 |                      |  |                  |
| 1      | KMV 541         | 1576                     | -52.92   | -55.77    | -33.44 | 3802                 | -91.03   | 110              |
| 2      | KMV 542         | 3010                     | 19.93  | 18.44     | 30.13  | 8041                 | 9.68   | 107              |
| 3      | KMV 543         | 2949                     | 18.28  | 16.75     | 28.69  | 7208                 | -0.76  | 107              |
| 4      | KMV 544         | 2048                     | -17.68   | -19.87    | -2.69  | 5100                 | -42.41   | 106              |
| 5      | KMV 545         | 2992                     | 19.45  | 17.95     | 29.71  | 8366                 | 13.18  | 109              |
| 6      | KMV 546         | 2458                     | 1.95   | 0.12      | 14.44  | 6616                 | -9.78  | 105              |
| 7      | KMV 547         | 2578                     | 6.52   | 4.77      | 18.43  | 6851                 | -6.01  | 105              |
| 8      | TNAU 86 (Check) | 2410                     | 0.00   | -1.87     | 12.74  | 7263                 | 0.00   | 106              |

|    |                   |      |        |        |       |      |        |     |
|----|-------------------|------|--------|--------|-------|------|--------|-----|
| 9  | RK 390-25 (Check) | 2455 | 1.83   | 0.00   | 14.34 | 6012 | -20.81 | 104 |
| 10 | GPUK 3 (Check)    | 2103 | -14.60 | -16.74 | 0.00  | 5680 | -27.87 | 105 |
| 11 | Local check       | 2010 | -19.90 | -22.14 | -4.63 | 5288 | -37.35 | 103 |
|    | All India mean    | 2437 |        |        |       | 6473 |        | 106 |

**Performance of entries over two years in Kodo millet Initial and Advanced Varietal Trial:** The varietal performance of Kodo millet varieties over two years of testing indicated that two entries KMV542 (19.22%) and KMV543 (18.35%) gave more grain yield than the best check TNAU86. In fodder yield the entry KMV542 gave higher fodder yield of 12.29% over best check TNAU86 and KMV543 gave 1.55% increased fodder yield over best check.

**Table 6b: Performance of entries over two years in Kodo millet initial and advanced varietal trial (KIAVT)**

| Sl. No. | Entries           | Centre code | Grain yield (Kg/ha) |         | India | % over best check | Fodder yield (Kg/ha) |         | India | % over best check |
|---------|-------------------|-------------|---------------------|---------|-------|-------------------|----------------------|---------|-------|-------------------|
|         |                   |             | 2016-17             | 2017-18 | Mean  |                   | 2016-17              | 2017-18 | Mean  |                   |
| 1       | KMV541            | BK 48       | 3048                | 1576    | 2312  | -3.29             | 7942                 | 3802    | 5872  | -21.94            |
| 2       | KMV542            | TNPSC 176   | 2902                | 3010    | 2956  | 19.22             | 8287                 | 8041    | 8164  | 12.29             |
| 3       | KMV543            | BK 36       | 2900                | 2949    | 2925  | 18.35             | 7339                 | 7208    | 7274  | 1.55              |
| 4       | KMV544            | RK 64       | 2445                | 2048    | 2247  | -6.30             | 5709                 | 5100    | 5405  | -32.49            |
| 8       | TNAU 86 (check)   |             | 2366                | 2410    | 2388  |                   | 7058                 | 7263    | 7161  |                   |
| 9       | RK 390-25 (check) |             | 2191                | 2455    | 2323  |                   | 4952                 | 6012    | 5482  |                   |
| 10      | GPUK 3 (check)    |             | 2189                | 2103    | 2146  |                   | 5436                 | 5680    | 5558  |                   |

**Table 6c: Pedigree of varieties evaluated in Kodo millet Initial and Advanced Varietal Trial (KIAVT): Kharif 2017**

| S. No. | Entries     | Centre code | Trial Code | Centre     | Level of Testing | Pedigree  |
|--------|-------------|-------------|------------|------------|------------------|---|
| 1      | KMV 541     | BK 48       | KIAVT-1    | Jagdalpur  | 2nd year         | Mutant of TNAU 51   |
| 2      | KMV 542     | TNPSC 176   | KIAVT-2    | Coimbatore | 2nd year         | Selection from DPS 63   |
| 3      | KMV 543     | BK 36       | KIAVT-3    | Jagdalpur  | 2nd year         | Mutant of CO-3  |
| 4      | KMV 544     | RK 64       | KIAVT-4    | Rewa       | 2nd year         | Selection from local germplasm number RPS 64 of Sindhi Dist, MP |
| 5      | KMV 545     | TNPSC 262   | KIAVT-5    | Athiyandal | 1st year         | Selection from DPS 63   |
| 6      | KMV 546     | RPS 520     | KIAVT-6    | Rewa       | 1st year         | Selection from local germplasm No. RPS 520                      |
| 7      | KMV 547     | RPS 694     | KIAVT-7    | Rewa       | 1st year         | Selection from local germplasm No. RPS 694                      |
| 8      | TNAU 86     |             | KIAVT-8    | Athiyandal | check            | Selection from Individual plant selection 85                    |
| 9      | RK 390-25   |             | KIAVT-9    | Rewa       | check            | Mutant of RK 390  |
| 10     | GPUK 3      |             | KIAVT-10   | Bengaluru  | check            | Selection from germplasm GPLM 826                               |
| 11     | Local check |             | KIAVT-LC   |            |                  |   |



**7. Little millet Initial and Advanced Varietal Trial: Kharif 2017**

In this trial fifteen entries and three checks (JK 8, OLM 203 and BL 6) were evaluated across 18 centres spread over twelve Little millet growing states for grain and fodder yield and other agronomic traits (Table 7, 7a, 7b, 7c, 7d and Tables 7.1 to 7.6).

- Days to 50% flowering and maturity: The entries took 54 to 95 days to 50% flowering and 85 to 123 days for maturity.
- Plant height: Plant height ranged from 96 to 138cm.
- Grain Yield: The entries LMV 513 (1599 kg/ha), LMV 512 (1593 kg/ha) and LMV 518 (1579 kg/ha) and LMV 514 (1575 kg/ha) were superior in grain yield to all the checks.
- Fodder yield: None of the test entries were significantly superior to the best check. LMV 517 (7355 kg/ha) was superior to the checks JK 8 and BL 6 but inferior to best check OLM 203.

**Remarks:** The entries LMV 513, LMV 512, LMV 518 and LMV 514 were superior in grain yield to all the checks but inferior in fodder yield to best check.

**Table 7: Summary performance of varieties in Little millet Initial and Advanced Varietal Trial: Kharif 2017**

| S. No. | Entries               | Grain yield (kg/ha) |    | Fodder yield (kg/ha) |    | Days to 50 % Flowering | Days to Maturity | Plant height (cm) | No. of productive tillers |
|--------|-----------------------|---------------------|----|----------------------|----|------------------------|------------------|-------------------|---------------------------|
|        |                       | Average             | R  | Average              | R  | Average                | Average          | Average           | Average                   |
| 1      | LMV 511               | 1550                | 5  | 6232                 | 9  | 76                     | 107              | 124               | 5                         |
| 2      | LMV 512               | 1593                | 2  | 5892                 | 10 | 83                     | 116              | 117               | 4                         |
| 3      | LMV 513               | 1599                | 1  | 6521                 | 6  | 64                     | 95               | 127               | 6                         |
| 4      | LMV 514               | 1575                | 4  | 6924                 | 4  | 84                     | 116              | 138               | 5                         |
| 5      | LMV 515               | 1462                | 9  | 5742                 | 11 | 86                     | 118              | 114               | 5                         |
| 6      | LMV 516               | 1421                | 10 | 7341                 | 3  | 80                     | 111              | 133               | 5                         |
| 7      | LMV 517               | 1412                | 12 | 7355                 | 2  | 93                     | 123              | 137               | 5                         |
| 8      | LMV 518               | 1579                | 3  | 6457                 | 7  | 70                     | 98               | 115               | 6                         |
| 9      | LMV 519               | 1338                | 17 | 5095                 | 14 | 59                     | 89               | 113               | 6                         |
| 10     | LMV 520               | 1379                | 14 | 5338                 | 13 | 57                     | 89               | 110               | 5                         |
| 11     | LMV 521               | 1464                | 8  | 6267                 | 8  | 63                     | 94               | 119               | 6                         |
| 12     | LMV 522               | 1249                | 18 | 4201                 | 15 | 55                     | 86               | 101               | 5                         |
| 13     | LMV 523               | 1491                | 7  | 5733                 | 12 | 84                     | 114              | 117               | 5                         |
| 14     | LMV 524               | 1356                | 15 | 3999                 | 17 | 54                     | 85               | 96                | 6                         |
| 15     | LMV 525               | 1344                | 16 | 3878                 | 18 | 55                     | 85               | 101               | 6                         |
| 16     | JK 8 (Check)          | 1406                | 13 | 4189                 | 16 | 54                     | 85               | 99                | 5                         |
| 17     | OLM 203 (Check)       | 1503                | 6  | 8019                 | 1  | 95                     | 128              | 140               | 5                         |
| 18     | BL 6 (Check)          | 1419                | 11 | 6592                 | 5  | 66                     | 99               | 123               | 5                         |
|        | <b>All India mean</b> | <b>1452</b>         |    | <b>5876</b>          |    | <b>71</b>              | <b>102</b>       | <b>118</b>        | <b>5</b>                  |
|        | C.D. (5%)             | 296                 |    | 1680                 |    | 10                     | 11               | 11                | 1                         |
|        | C.D. (1%)             | 391                 |    | 2217                 |    | 13                     | 14               | 15                | 1                         |
|        | C.V. (%)              | 25.32               |    | 35.09                |    | 16.51                  | 13.15            | 12.96             | 18.45                     |

|  |         |       |  |   |  |   |  |   |  |   |
|--|---------|-------|--|---|--|---|--|---|--|---|
|  | P-value | 0.572 |  | 0 |  | 0 |  | 0 |  | 0 |
|--|---------|-------|--|---|--|---|--|---|--|---|

**Comparative performance of entries:** The entries LMV 513 and LMV 512 were given more than 10% grain yield over checks JK 8 and BL 6 and gave more than 5% over the best check OLM 203. All test entries were inferior to best check OLM 203 in fodder yield production. However, the entries LMV 517, LMV 516 and LMV 514 were superior to checks JK 8 and BL 6 for fodder yield production.

**Table 7a: Comparative performance of entries in Little millet Initial and Advanced varietal trial (LIAVT)**

| S. No. | Entries               | Mean Grain Yield (kg/ha) | % Increase /decrease over checks for grain yield |         |        | Fodder Yield (kg/ha) | % Increase /decrease over best check (OLM 203) | Days to maturity |
|--------|-----------------------|--------------------------|--|---------|--------|----------------------|--|------------------|
|        |                       |                          | JK 8   | OLM 203 | BL 6   |                      |  |                  |
| 1      | LMV 511               | 1550                     | 9.29   | 3.03    | 8.45   | 6232                 | -28.67   | 107              |
| 2      | LMV 512               | 1593                     | 11.74  | 5.65    | 10.92  | 5892                 | -36.10   | 116              |
| 3      | LMV 513               | 1599                     | 12.07  | 6.00    | 11.26  | 6521                 | -22.97   | 95               |
| 4      | LMV 514               | 1575                     | 10.73  | 4.57    | 9.90   | 6924                 | -15.81   | 116              |
| 5      | LMV 515               | 1462                     | 3.83   | -2.80   | 2.94   | 5742                 | -39.66   | 118              |
| 6      | LMV 516               | 1421                     | 1.06   | -5.77   | 0.14   | 7341                 | -9.24  | 111              |
| 7      | LMV 517               | 1412                     | 0.42   | -6.44   | -0.50  | 7355                 | -9.03  | 123              |
| 8      | LMV 518               | 1579                     | 10.96  | 4.81    | 10.13  | 6457                 | -24.19   | 98               |
| 9      | LMV 519               | 1338                     | -5.08  | -12.33  | -6.05  | 5095                 | -57.39   | 89               |
| 10     | LMV 520               | 1379                     | -1.96  | -8.99   | -2.90  | 5338                 | -50.22   | 89               |
| 11     | LMV 521               | 1464                     | 3.96   | -2.66   | 3.07   | 6267                 | -27.96   | 94               |
| 12     | LMV 522               | 1249                     | -12.57   | -20.34  | -13.61 | 4201                 | -90.88   | 86               |
| 13     | LMV 523               | 1491                     | 5.70   | -0.80   | 4.83   | 5733                 | -39.87   | 114              |
| 14     | LMV 524               | 1356                     | -3.69  | -10.84  | -4.65  | 3999                 | -100.53  | 85               |
| 15     | LMV 525               | 1344                     | -4.61  | -11.83  | -5.58  | 3878                 | -106.78  | 85               |
| 16     | JK 8 (Check)          | 1406                     | 0.00   | -6.90   | -0.92  | 4189                 | -91.43   | 85               |
| 17     | OLM 203 (Check)       | 1503                     | 6.45   | 0.00    | 5.59   | <b>8019</b>          | 0.00   | 128              |
| 18     | BL 6 (Check)          | 1419                     | 0.92   | -5.92   | 0.00   | 6592                 | -21.65   | 99               |
|        | <b>All India mean</b> | <b>1452</b>              |  |         |        | <b>5876</b>          |  | <b>102</b>       |

**Performance of entries over three and two years in Little millet Initial and Advanced Varietal Trial:** The varietal performance of Little millet varieties over three years of testing indicated that the entry LMV511 gave higher yield of 2.55% over the best check and but was on par with the check for fodder yield. In two years performance of varieties, LMV513 was 8.33% superior in grain yield over the best check and LMV512 gave 4.3% more grain yield than best check. But both the entries LMV512 (-22.57%) and LMV513 (-16.91%) gave less fodder yield than the best check.

**Table 7b: Performance of entries over three years in Little millet initial and advanced varietal trial (LIAVT)**

| SL.No. | Entries | Centre code | Grain yield (Kg/ha) |         |         | India Mean | % over best check | Fodder yield (Kg/ha) |         |         | India Mean | % over best check |
|--------|---------|-------------|---------------------|---------|---------|------------|-------------------|----------------------|---------|---------|------------|-------------------|
|        |         |             | 2015-16             | 2016-17 | 2017-18 |            |                   | 2015-16              | 2016-17 | 2017-18 |            |                   |
| 1      | LMV511  | DLM         | 1596                | 1646    | 1550    | 1597       | 2.55              | 6200                 | 8017    | 6232    | 6816       | -8.62             |

|   |                 |    |      |      |      |      |  |      |      |      |      |
|---|-----------------|----|------|------|------|------|--|------|------|------|------|
|   |                 | 95 |      |      |      |      |  |      |      |      |      |
| 2 | JK 8 (Check)    |    | 1170 | 1380 | 1406 | 1319 |  | 5200 | 5639 | 4189 | 5009 |
| 3 | OLM 203 (Check) |    | 1385 | 1553 | 1503 | 1480 |  | 6000 | 8193 | 8019 | 7404 |
| 4 | BL 6 (Check)    |    |      | 1694 | 1419 | 1557 |  |      | 7259 | 6592 | 6926 |

Table 7c: Performance of entries over two years in Little millet initial and advanced varietal trial (LIAVT)

| SL.No. | Entries         | Centre code | Grain yield (Kg/ha) |         | India | % over best check | Fodder yield (Kg/ha) |         | India | % over best check |
|--------|-----------------|-------------|---------------------|---------|-------|-------------------|----------------------|---------|-------|-------------------|
|        |                 |             | 2016-17             | 2017-18 | Mean  |                   | 2016-17              | 2017-18 | Mean  |                   |
| 1      | LMV512          | WV 126      | 1661                | 1593    | 1627  | 4.3               | 7334                 | 5892    | 6613  | -22.57            |
| 2      | LMV513          | DHLT 28-4   | 1798                | 1599    | 1699  | 8.33              | 7345                 | 6521    | 6933  | -16.91            |
| 3      | JK 8 (Check)    |             | 1380                | 1406    | 1393  |                   | 5639                 | 4189    | 4914  |                   |
| 4      | OLM 203 (Check) |             | 1553                | 1503    | 1528  |                   | 8193                 | 8019    | 8106  |                   |
| 5      | BL 6 (Check)    |             | 1694                | 1419    | 1557  |                   | 7259                 | 6592    | 6926  |                   |

Table 7d: Pedigree of varieties evaluated in Little millet Initial and Advanced Varietal Trial (LIAVT) Kharif 2017

| S. No. | Entries        | Centre code   | Trial Code | Centre         | Level of Testing | Pedigree  |
|--------|----------------|---------------|------------|----------------|------------------|---|
| 1      | LMV 511        | DLM 95        | LIAVT -1   | Dindori        | 3rd year         | Selection from local of Sherajhar                     |
| 2      | LMV 512        | WV 126        | LIAVT -2   | Waghai         | 2nd year         | Local Collection from Dangs Taluka, Dangs District    |
| 3      | LMV 513        | DHLT 28-4     | LIAVT -3   | Hanumanamatti  | 2nd year         | CO 2 x TNAU 26  |
| 4      | LMV 514        | OLM 217       | LIAVT -4   | Berhampur      | 1st year         | OLM 217 Selection from Udayagiri Local Bhubaneswar    |
| 5      | LMV 515        | WV 167        | LIAVT -5   | Waghai         | 1st year         | Local Collection from Subir Taluka, Dangs District    |
| 6      | LMV 516        | IIMR LM 7012  | LIAVT -6   | IIMR Hyderabad | 1st year         | Selection from Ipmr 699                               |
| 7      | LMV 517        | OLM 233       | LIAVT -7   | Berhampur      | 1st year         | OLM 233 Selection from Kandhamal Local(L55) Berhampur |
| 8      | LMV 518        | IIMR LM 7162  | LIAVT -8   | IIMR Hyderabad | 1st year         | Selection from GPMR 1153                              |
| 9      | LMV 519        | TNPSu 183     | LIAVT -9   | Athiyandal     | 1st year         | CO 2 x MS 4729  |
| 10     | LMV 520        | GPUL 4 (MLT9) | LIAVT -10  | Bengaluru      | 1st year         | JK 8 x Peddasame                                      |
| 11     | LMV 521        | TNPSu 186     | LIAVT -11  | Athiyandal     | 1st year         | MS 507 x MS 1211                                      |
| 12     | LMV 522        | GPUL 5 (252)  | LIAVT -12  | Bengaluru      | 1st year         | JK 8 x Peddasame                                      |
| 13     | LMV 523        | WV 125        | LIAVT -13  | Waghai         | 1st year         | Local Collection from Waghai Taluka, Dangs District   |
| 14     | LMV 524        | RLM 37        | LIAVT -14  | Rewa           | 1st year         | Selection from local germplasm No. 37                 |
| 15     | LMV 525        | RLM 367       | LIAVT -15  | Rewa           | 1st year         | Selection from local germplasm No. 367                |
| 16     | JK 8 (Check)   | -             | LIAVT -16  | Rewa           | check            | Selection from local germplasm                        |
| 17     | OLM 203(Check) | -             | LIAVT -17  | Berhampur      | check            | Pureline selection from Lakshmi pur local             |

|    |                 |   |           |          |       |                   |
|----|-----------------|---|-----------|----------|-------|-------------------|
| 18 | BL 6<br>(Check) | - | LIAVT -18 | Jagdapur | check | Paiyur 1 x OLM 29 |
|----|-----------------|---|-----------|----------|-------|-------------------|

### 8. Barnyard millet Initial and Advanced Varietal Trial: *Kharif 2017*

In this trial six entries and two checks (VL 172 and VL 207) were evaluated across 13 centres spread over seven Barnyard millet growing states for grain and fodder yield and other agronomic traits (Table 8, 8a, 8b, 8c, 8d and Tables 8.1 to 8.6).

- Days to 50% flowering and maturity: The entries took 46 to 63 days to 50% flowering and 87 to 99 days for maturity.
- Plant height: Plant height ranged from 100 to 140cm.
- Grain Yield: The entry BMV 581 (2092 kg/ha) was ranked first in the trial and significantly superior in grain yield over the check best check VL 207 (1880 kg/ha). The entries BMV 582 and BMV 586 were superior to check VL 172 but inferior to best check VL 207.
- Fodder yield: The entries BMV 584 (8042 kg/ha), BMV 582 (7885 kg/ha), BMV 583 (7805 kg/ha) and BMV 586 (7203 kg/ha) were significantly superior for fodder yield to the best check VL 207 (6662 kg/ha).

**Remarks:** The entry BMV 581 was superior in grain yield to the best check and on par with the best check for fodder yield.

**Table 8: Summary performance of varieties in Barnyard millet Initial and Advanced Varietal Trial: *Kharif 2017***

| S. No. | Entries               | Grain yield (kg/ha) |   | Fodder yield (kg/ha) |   | Days to 50 % Flowering | Days to Maturity | Plant Height (cm) | No. of Productive tillers |
|--------|-----------------------|---------------------|---|----------------------|---|------------------------|------------------|-------------------|---------------------------|
|        |                       | Average             | R | Average              | R | Average                | Average          | Average           | Average                   |
| 1      | BMV 581               | 2092                | 1 | 6519                 | 6 | 50                     | 87               | 119               | 3                         |
| 2      | BMV 582               | 1842                | 3 | 7885                 | 2 | 60                     | 95               | 137               | 4                         |
| 3      | BMV 583               | 1740                | 8 | 7805                 | 3 | 63                     | 99               | 137               | 4                         |
| 4      | BMV 584               | 1767                | 6 | 8042                 | 1 | 60                     | 97               | 140               | 4                         |
| 5      | BMV 585               | 1763                | 7 | 5578                 | 9 | 46                     | 87               | 100               | 4                         |
| 6      | BMV 586               | 1822                | 4 | 7203                 | 4 | 56                     | 92               | 136               | 4                         |
| 7      | VL 172 (Check)        | 1792                | 5 | 6405                 | 7 | 51                     | 89               | 123               | 4                         |
| 8      | VL 207 (Check)        | 1880                | 2 | 6662                 | 5 | 55                     | 92               | 123               | 3                         |
| 9      | Local check           | 1464                | 9 | 6214                 | 8 | 55                     | 94               | 124               | 4                         |
|        | <b>All India mean</b> | <b>1843</b>         |   | <b>6959</b>          |   | <b>55</b>              | <b>92</b>        | <b>127</b>        | <b>4</b>                  |
|        | C.D. (5%)             | 355                 |   | 1247                 |   | 3                      | 3                | 8                 | 0                         |
|        | C.D. (1%)             | 471                 |   | 1652                 |   | 4                      | 5                | 10                | 1                         |
|        | C.V. (%)              | 23.78               |   | 22.79                |   | 6.41                   | 4.72             | 8                 | 10.91                     |
|        | P-value               |                     |   | 0.001                |   | 0                      | 0                | 0                 | 0.069                     |

**Comparative performance of entries:** The entry BMV 581 was superior for grain yield by 14.34% over the check and 10.13% over the check VL 207 but inferior in fodder yield by 2.19% over the best check. More than 15% fodder yield over the best check was recorded by the entries, BMV 584 and BMV 582.

Table 8a: Comparative performance of entries in Barnyard millet Initial and Advanced varietal trial (BIAVT)

| S. No. | Entry code     | Mean Grain yield (kg/ha) | % Increase /decrease over checks for grain yield |        | Fodder Yield (kg/ha) | % Increase /decrease over best check (VL 207) | Days to maturity |
|--------|----------------|--------------------------|--|--------|----------------------|---|------------------|
|        |                |                          | VL 172   | VL 207 |                      |   |                  |
| 1      | BMV 581        | 2092                     | 14.34  | 10.13  | 6519                 | -2.19   | 87               |
| 2      | BMV 582        | 1842                     | 2.71   | -2.06  | 7885                 | 15.51   | 95               |
| 3      | BMV 583        | 1740                     | -2.99  | -8.05  | 7805                 | 14.64   | 99               |
| 4      | BMV 584        | 1767                     | -1.41  | -6.40  | 8042                 | 17.16   | 97               |
| 5      | BMV 585        | 1763                     | -1.64  | -6.64  | 5578                 | -19.43  | 87               |
| 6      | BMV 586        | 1822                     | 1.65   | -3.18  | 7203                 | 7.51  | 92               |
| 7      | VL 172 (Check) | 1792                     | 0.00   | -4.91  | 6405                 | -4.01   | 89               |
| 8      | VL 207 (Check) | 1880                     | 4.68   | 0.00   | 6662                 | 0.00  | 92               |
| 9      | Local check    | 1464                     | -22.40   | -28.42 | 6214                 | -7.21   | 94               |
|        | All India mean | 1843                     |  |        | 6959                 |   | 92               |

**Performance of entries over three and two years in Barnyard millet Initial and Advanced Varietal Trial:**

The varietal performance of Barnyard millet varieties over three years of testing indicated that the entry BMV 581 gave higher yield of 8.36 % over the best check and was on par with the check for fodder yield. In two years performance of varieties, BMV 582 was on par with the best check in grain yield and superior by 16.98 % in fodder yield over best check.

Table 8b: Performance of entries over 3 year in Barnyard millet initial and advanced varietal trial (BIAVT)

| S.No. | Entries        | Centre code | Grain yield (Kg/ha) |         |         | India Mean | % over best check | Fodder yield (Kg/ha) |         |         | India Mean | % over best check |
|-------|----------------|-------------|---------------------|---------|---------|------------|-------------------|----------------------|---------|---------|------------|-------------------|
|       |                |             | 2015-16             | 2016-17 | 2017-18 |            |                   | 2015-16              | 2016-17 | 2017-18 |            |                   |
| 1     | BMV 581        | VL 249      | 2417                | 2147    | 2092    | 2219       | 8.36              | 5000                 | 5222    | 6519    | 5580       | -9.23             |
| 2     | VL 172 (Check) |             | 2220                | 2042    | 1792    | 2018       |                   | 5500                 | 4998    | 6405    | 5634       |                   |
| 3     | VL 207 (Check) |             | 2200                | 2019    | 1880    | 2033       |                   | 5600                 | 6025    | 6662    | 6096       |                   |

Table 8c: Performance of entries over 2 years in Barnyard millet initial and advanced varietal trial (BIAVT)

| Sl. No. | Entries        | Centre code | Grain yield (Kg/ha) |         | India Mean | % over best check | Fodder yield (Kg/ha) |         | India Mean | % over best check |
|---------|----------------|-------------|---------------------|---------|------------|-------------------|----------------------|---------|------------|-------------------|
|         |                |             | 2016-17             | 2017-18 |            |                   | 2016-17              | 2017-18 |            |                   |
| 1       | BMV 582        | DHBM 99-6   | 2121                | 1842    | 1982       | 1.61              | 7397                 | 7885    | 7641       | 16.98             |
| 2       | VL 172 (Check) |             | 2042                | 1792    | 1917       |                   | 4998                 | 6405    | 5702       |                   |
| 3       | VL 207 (Check) |             | 2019                | 1880    | 1950       |                   | 6025                 | 6662    | 6344       |                   |

Table 8d. Pedigree of varieties evaluated in Barnyard millet Initial and Advanced Varietal Trial (LIAVT) *Kharif 2017*

| Sl. No. | Entries        | Centre code | Trial code | Centre       | Level of Testing | Pedigree                              |
|---------|----------------|-------------|------------|--------------|------------------|---------------------------------------|
| 1       | BMV 581        | VL 249      | BIAVT -1   | Almora       | 3rd year         | VL 200 x VB 409                       |
| 2       | BMV 582        | DHBM 99-6   | BIAVT -2   | Hanumanmatti | 2nd year         | VL 14 x IEC -566                      |
| 3       | BMV 583        | TNEf 204    | BIAVT -3   | Athiyandal   | 1st year         | K 1 x VL 200                          |
| 4       | BMV 584        | DHBM 19-7   | BIAVT -4   | Hanumanmatti | 1st year         | K-52 XIEC-566                         |
| 5       | BMV 585        | RBM 36      | BIAVT -5   | Rewa         | 1st year         | Selection from local germplasm No. 36 |
| 6       | BMV 586        | DHBM 33     | BIAVT -6   | Hanumanmatti | 1st year         | VL-14 XIEC-566                        |
| 7       | VL 172 (Check) | -           | BIAVT -7   | Almora       | check            | VL 177 x GECH 506                     |
| 8       | VL 207 (Check) | -           | BIAVT -8   | Almora       | check            | VL 172 x GECH 504                     |

### 9. Proso millet Initial and Advanced Varietal Trial: *Kharif 2017*

In this trial four entries and three checks (TNAU 164, GPUP 21 and TNAU 151) were evaluated across ten centres spread over seven proso millet growing states for grain and fodder yield and other agronomic traits (Table 9, 9a, 9b, 9c and Tables 9.1 to 9.6).

- Days to 50% flowering and maturity: The entries took 46 to 52 days to 50% flowering and 79 to 84 days for maturity.
- Plant height: Plant height ranged from 79 to 111cm.
- Grain Yield: The entry PMV 444 (1882 kg/ha) is superior to all the checks in grain yield. PMV 441 (1822 kg/ha) and PMV 442 (1814 kg/ha) were on par with the best check TNAU 164.
- Fodder yield: The entries PMV 441 (5303 kg/ha) gave more yield than all the entries and on par with the best check TNAU 164 (5280 kg/ha).

**Remarks:** The entry PMV 444 was superior to the best check in grain yield but inferior in fodder yield with best check. PMV 441 is on par with best checks in grain yield and fodder yield.

Table 9: Summary performance of varieties in Proso millet Initial and Advanced Varietal Trial: *Kharif 2017*

| S. No. | Entries          | Grain Yield (kg/ha) |   | Fodder Yield (kg/ha) |   | Days to 50 % Flowering | Days to Maturity | Plant Height (cm) | No. of Productive tillers |
|--------|------------------|---------------------|---|----------------------|---|------------------------|------------------|-------------------|---------------------------|
|        |                  | Average             | R | Average              | R | Average                | Average          | Average           | Average                   |
| 1      | PMV 441          | 1822                | 4 | 5303                 | 1 | 46                     | 79               | 97                | 6                         |
| 2      | PMV 442          | 1814                | 5 | 4838                 | 7 | 47                     | 80               | 79                | 6                         |
| 3      | PMV 443          | 1521                | 8 | 4804                 | 8 | 47                     | 81               | 87                | 6                         |
| 4      | PMV 444          | 1882                | 2 | 4995                 | 5 | 47                     | 79               | 84                | 5                         |
| 5      | TNAU 164 (Check) | 1842                | 3 | 4966                 | 6 | 48                     | 80               | 85                | 6                         |
| 6      | GPUP 21 (Check)  | 1751                | 6 | 5280                 | 2 | 52                     | 84               | 88                | 5                         |

|   |                       |             |   |             |   |           |           |           |          |
|---|-----------------------|-------------|---|-------------|---|-----------|-----------|-----------|----------|
| 7 | TNAU 151 (Check)      | 1609        | 7 | 5173        | 3 | 48        | 80        | 88        | 4        |
| 8 | Local Check           | 2043        | 1 | 5155        | 4 | 46        | 81        | 111       | 14       |
|   | <b>All India mean</b> | <b>1774</b> |   | <b>5064</b> |   | <b>48</b> | <b>80</b> | <b>89</b> | <b>6</b> |
|   | C.D. (5%)             | 580         |   | 1044        |   | 5         | 5         | 18        | 2        |
|   | C.D. (1%)             | 789         |   | 1409        |   | 7         | 6         | 24        | 2        |
|   | C.V. (%)              | 21.63       |   | 15.92       |   | 8.81      | 5.46      | 18.57     | 28.04    |
|   | P-value               | 0.551       |   | 0.955       |   | 0.333     | 0.481     | 0.619     | 0.147    |

**Comparative performance of entries:** The entries PMV 444 was superior by 14.51% over the check TNAU 151, 6.96 over the check GPUP 21 for grain yield. PMV 441 and PMV 442 were gave more than 10% superior yield over the check TNAU 151 for grain yield. PMV 441 gave more fodder yield than best check GPUP 21.

**Table 9a: Comparative performance of entries in Proso millet Initial and Advanced varietal trial (PIAVT)**

| S. No. | Entries               | Mean Grain Yield (kg/ha) | % Increase /decrease over checks for grain yield |          | Fodder Yield (kg/ha) | % Increase /decrease Over Bestcheck (GPUP 21) | Days to maturity |
|--------|-----------------------|--------------------------|--|----------|----------------------|---|------------------|
|        |                       |                          | GPUP 21  | TNAU 151 |                      |   |                  |
| 1      | PMV 441               | 1822                     | 3.90   | 11.69    | 5303                 | 0.43  | 79               |
| 2      | PMV 442               | 1814                     | 3.47   | 11.30    | 4838                 | -9.14   | 80               |
| 3      | PMV 443               | 1521                     | -15.12   | -5.79    | 4804                 | -9.91   | 81               |
| 4      | PMV 444               | 1882                     | 6.96   | 14.51    | 4995                 | -5.71   | 79               |
| 5      | TNAU 164 (Check)      | 1842                     | 4.94   | 12.65    | 4966                 | -6.32   | 80               |
| 6      | GPUP 21(Check)        | 1751                     | 0.00   | 8.11     | 5280                 | 0.00  | 84               |
| 7      | TNAU 151 (Check)      | 1609                     | -8.83  | 0.00     | 5173                 | -2.07   | 80               |
| 8      | Local Check           | 2043                     | 14.29  | 21.24    | 5155                 | -2.42   | 81               |
|        | <b>All India mean</b> | <b>1774</b>              |  |          | <b>5064</b>          |   | <b>80</b>        |

**Performance of entries over two years in Proso millet Initial and Advanced Varietal Trial:**The varietal performance of Proso millet varieties over two years of testing indicated that the entry PMV 441gave higher yield of 5.57 % over the check and superior by 3.01 % in fodder yield over the best check. PMV 442 gave more grain yield (1.81%) than check but inferior to check in fodder yield (-3.19%) than check.

**Table 9b: Performance of entries over two years in Proso millet initial and advanced varietal trial (PIAVT)**

| S.No. | Entries          | Centre code | Grain yield (Kg/ha) |         | India Mean  | % over best check | Fodder yield (Kg/ha) |         | India Mean  | % over best check |
|-------|------------------|-------------|---------------------|---------|-------------|-------------------|----------------------|---------|-------------|-------------------|
|       |                  |             | 2016-17             | 2017-18 |             |                   | 2016-17              | 2017-18 |             |                   |
| 1     | PMV 441          | TNPm 238    | 1962                | 1822    | 1892        | 5.57              | 3992                 | 5303    | 4648        | 3.01              |
| 2     | PMV 442          | GPUP 25     | 1825                | 1814    | 1820        | 1.81              | 3898                 | 4838    | 4368        | -3.19             |
| 3     | GPUP 21 (Check)  |             | 1822                | 1751    | <b>1787</b> |                   | 3735                 | 5280    | <b>4508</b> |                   |
| 4     | TNAU 151 (Check) |             | 1720                | 1609    | 1665        |                   | 3409                 | 5173    | 4291        |                   |



Table 9c. Pedigree of varieties evaluated in Proso millet Initial and Advanced Varietal Trial (PIAVT)

| S. No. | Entries          | Centre code | Trial Code | Centre     | Level of Testing     | Pedigree              |
|--------|------------------|-------------|------------|------------|----------------------|-----------------------|
| 1      | PMV 441          | TNPm 238    | PIAVT -1   | Athiyandal | 2 <sup>nd</sup> year | Selection from IPM 19 |
| 2      | PMV 442          | GPUP 25     | PIAVT -2   | Bengaluru  | 2 <sup>nd</sup> year | GPMS 109 x GPMS 908   |
| 3      | PMV 443          | TNPm 244    | PIAVT -3   | Athiyandal | 1 <sup>st</sup> year | TNAU 145 x PV 4824    |
| 4      | PMV 444          | TNPm 247    | PIAVT -4   | Athiyandal | 1 <sup>st</sup> year | PV 1403 x PV 1673     |
| 5      | TNAU 164 (Check) | -           | PIAVT -5   | Athiyandal | check                | TNAU 137 x CO 4       |
| 6      | GPUP 21 (Check)  | -           | PIAVT -6   | Bengaluru  | check                | GPUP 14 x K1          |
| 7      | TNAU 151 (Check) | -           | PIAVT -7   | Athiyandal | check                | TNAU 96 x PV 1673     |

## II. Sharing of breeding materials

Breeding materials are being shared among centres in all the crops and during this year, Breeding materials of 29 crosses (parents and segregating materials) contributed from 6 centres were shared among 10 centres. The details of breeding materials contributed, distributed and utilized are as follows (Tables 10, a, 10b, 10c and 10d).

Table 10a: Details of breeding materials of all the six millets shared among centres during 2017-18

| S.No. | Centres   | Crop           | Generation     | Cross   | Contributing centre  |
|-------|-----------|----------------|----------------|---|--|
| 1     | Guntur    | Proso millet   | F <sub>3</sub> | GPUP 8 x K1   | PC Unit, Bengaluru   |
|       |           | Proso millet   | F <sub>2</sub> | TNAU151 x TNPm 259<br>TNAU 202 x TNPm 260<br>TNAU 145 x TNPm 256<br>TNAU164 x TNPm 254  | Athiyandal   |
|       |           |                | Parents        | TNPm 266 , TNpm 280   | Athiyandal   |
|       |           | Foxtail millet | F <sub>2</sub> | SiA 3156 x TNSi 362, SiA 3156 x TNSi 352, Co 5 x TNSi 363<br>Co 7 x TNSi 357, SiA 306 x TNSi 351, SiA 306 x TNSi 360<br>Co 6 x TNSi 368 | Athiyandal   |
|       |           |                | Parents        | TNSi 389, TNSi 403, TNSi 419<br>TNSi 363, TNSi 358, TNSi 386<br>TNSi 306, TNSi 395, TNSi 416<br>TNSi 408, TNSi 392, TNSi 404            | Athiyandal   |
|       |           | Vizianagaram   | Finger millet  | F <sub>6</sub>  | Indaf-5 x GE 2712(Cox)<br>Indaf-5 x GE 2625(Purple)<br>Indaf-5 x GE 2936(Long earhead) |
| 2     | Dholi     | Proso millet   | F <sub>3</sub> | GPUP 8 x K1   | PC Unit, Bengaluru   |
| 3     | Jagdalpur | Little millet  | F <sub>2</sub> | BL 6 x TNPSu 214,<br>BL 6 x TNPSu 206   | Athiyandal   |

|   |            |               |                  |  |                    |
|---|------------|---------------|------------------|--|--------------------|
|   |            | Finger millet | F <sub>6</sub>   | Indaf-5 x GE 2712(Cox)<br>Indaf-5 x GE 2625(Purple)<br>Indaf-5 x GE 2936(Long earhead) | Mandya             |
| 4 | Waghai     | Little millet | F <sub>4</sub>   | JK8 x Peddasame  | Bengaluru          |
|   |            | Finger millet | F <sub>6</sub>   | Indaf-5 x GE 2712(Cox)<br>Indaf-5 x GE 2625(Purple)<br>Indaf-5 x GE 2936(Long earhead) | Mandya             |
|   |            | Finger millet | F <sub>6</sub>   | KOPN 235 x IE 2340<br>KWFM 49 x KOPN 565   | Kolhapur           |
| 5 | Rewa       | Little millet | F <sub>2</sub>   | JK 8 x TNPSu 217<br>JK 8 X TNPSu 208   | Athiyandal         |
|   |            | Kodo millet   | Mutant of x-rays | DPS-14m  | Dindori            |
| 6 | Kolhapur   | Little millet | F <sub>4</sub>   | JK8 x Peddasame  | Bengaluru          |
|   |            | Finger millet | F <sub>6</sub>   | Indaf-5 x GE 2712(Cox)<br>Indaf-5 x GE 2625(Purple)<br>Indaf-5 x GE 2936(Long earhead) | Mandya             |
|   |            |               | F <sub>3</sub>   | VR 847 x VR 900<br>VR 847 x VR 708   | Vizianagaram       |
| 7 | Berhampur  | Little millet | F <sub>2</sub>   | OLM 203 x TNPSu 211<br>OLM 203 X TNPSu 219   | Athiyandal         |
| 8 | Athiyandal | Little millet | F <sub>4</sub>   | JK8 x Peddasame  | Bengaluru          |
|   |            | Proso millet  | F <sub>3</sub>   | GPUP 8 x K1  | PC Unit, Bengaluru |
|   |            | Finger millet | F <sub>3</sub>   | VR 847 x VR 900<br>VR 847 x VR 708   | Vizianagaram       |
|   |            |               | F <sub>6</sub>   | Indaf-5 x GE 2712(Cox)<br>Indaf-5 x GE 2625(Purple)<br>Indaf-5 x GE 2936(Long earhead) | Mandya             |
|   |            |               | F <sub>6</sub>   | KOPN 235 x IE 2340<br>KWFM 49 x KOPN 565   | Kolhapur           |
| 9 | Almora     | Finger millet | F <sub>6</sub>   | Indaf-5 x GE 2712(Cox)<br>Indaf-5 x GE 2625(Purple)<br>Indaf-5 x GE 2936(Long earhead) | Mandya             |

The reports on utilization from Waghai, Bengaluru and Berhampur have been received and the results on utilization are as follows.

**Table 10b: Details of breeding materials evaluated for utilization at Waghai**

| S. No. | Cross/<br>Entry Name       | Days to 50<br>%<br>flowering | Days to<br>maturity | Grain<br>yield<br>(kg/plot) | Straw<br>yield<br>(kg/plot) | Remarks/ Utilization in further crop<br>improvement    |
|--------|----------------------------|------------------------------|---------------------|-----------------------------|-----------------------------|--|
| 1      | Indaf-5 x GE<br>2712 (Cox) | 90                           | 120                 | 1.250                       | 4.000                       | Open type earhead as character with<br>medium duration |

|   |                                  |     |     |       |       |  |
|---|----------------------------------|-----|-----|-------|-------|--|
| 2   | Indaf-5 x GE 2625 (Purple)       | 80  | 110 | 3.160 | 3.600 | Semi-Compact Purple colour earhead as marker character with bold grain size and early maturing |
| 3   | Indaf-5 x GE 2936 (Long earhead) | 97  | 128 | 2.170 | 3.900 | Long earhead as marker character with long duration  |
| 4   | KOPN 235 x IE 2340               | 103 | 134 | 2.030 | 4.920 | Semi-Compact type earhead as character with long duration                                      |
| 5   | KWFM 49 x KOPN 565               | 100 | 131 | 1.430 | 4.000 | Open earhead as character with long duration   |
| 6.  | GNN-6 (local check)              | 80  | 125 | 3.20  | 4.60  | Compact type earhead as character with long duration and reddish brown seeded                  |
| 7.  | GNN-7 (local check)              | 79  | 127 | 2.88  | 4.20  | Semi-Compact type earhead as character with long duration and white seeded                     |
| <b>Results:</b> The crosses viz, Indaf-5 x GE 2625 (Purple), Indaf-5 x GE 2936 (Long earhead), KOPN 235 x IE 2340 will be continued for further evaluation in <i>Kharif</i> , 2018 due to its higher yield as well as better character. |                                  |     |     |       |       |  |

Table 10c: Details of breeding materials evaluated for utilization at Waghai

| S. No.  | Cross/Entry Name*                   | Days to 50 % flowering | Days to maturity | Grain yield (kg/plot) | Straw yield (kg/plot) | Remarks/ Utilization in further crop improvement   |
|---|-------------------------------------|------------------------|------------------|-----------------------|-----------------------|--|
| 1   | 420                                 | 48                     | 79               | 0.980                 | 5.500                 | Open type earhead with most early duration which are not suitable for Waghai location due to heavy rainfall pattern which long lasting up to four-five months. |
| 2   | 522                                 | 44                     | 75               | 0.830                 | 3.700                 |  |
| 3   | 523                                 | 79                     | 109              | 1.000                 | 6.300                 |  |
| 4   | 318                                 | 84                     | 114              | 0.480                 | 2.200                 |  |
| 5   | 321                                 | 43                     | 74               | 0.960                 | 1.600                 |  |
| 6   | 328                                 | 77                     | 107              | 0.600                 | 2.600                 |  |
| 7   | 329                                 | 43                     | 74               | 1.000                 | 2.400                 |  |
| 8   | 331                                 | 42                     | 73               | 0.770                 | 2.400                 |  |
| 9   | 356                                 | 42                     | 73               | 0.810                 | 1.100                 |  |
| 10  | 378                                 | 43                     | 74               | 0.920                 | 1.400                 |  |
| 11  | 380                                 | 72                     | 102              | 0.750                 | 3.000                 |  |
| 12  | 401                                 | 74                     | 104              | 0.920                 | 4.000                 |  |
| 13  | 405                                 | 42                     | 73               | 0.940                 | 1.400                 |  |
| 14  | 431                                 | 67                     | 97               | 1.130                 | 4.000                 |  |
| 15  | JK-8 (Parent 1)                     | 42                     | 73               | 0.700                 | 0.800                 |  |
| 16  | Peddasame purple (Early) (Parent 2) | 94                     | 125              | 1.210                 | 9.000                 |  |
| 17  | Peddasame purple (Late) (Parent 2)  | 107                    | 138              | 1.420                 | 9.700                 |  |
| 18  | GV-2                                | 85                     | 136              | 1.52                  | 8.70                  | Local check  |
| 19  | GNV-3                               | 91                     | 140              | 1.46                  | 9.60                  | Local check  |
| <b>Results:</b> The parents viz, Peddasame purple (Early) and Peddasame purple (Late) will be used for improvement in |                                     |                        |                  |                       |                       |  |

further crossing programme with our local released varieties in *Kharif*, 2018 due to its higher yield as well as better character as mentioned above

\*These breeding materials were received from PC Unit, Bengaluru last year.

Table 10d: Details of breeding materials evaluated for utilization at Bengaluru

| S. No. | Crop           | Cross              | No. of lines selected | Generation                     | Centre (Received from) |
|--------|----------------|--------------------|-----------------------|--------------------------------|------------------------|
| 1      | Finger millet  | VR 847 x VR 900    | 10                    | F <sub>7</sub> -F <sub>8</sub> | Vizianagaram           |
| 2      | Finger millet  | VR 847 x VR 708    | 8                     | F <sub>7</sub> -F <sub>8</sub> | Vizianagaram           |
| 3      | Finger millet  | KWFM 45 x KoPN 565 | 9                     | F <sub>7</sub> -F <sub>8</sub> | Kolhapur               |
| 4      | Finger millet  | KoPN 235 x IE2346  | 7                     | F <sub>7</sub> -F <sub>8</sub> | Kolhapur               |
| 5      | Finger millet  | Indaf 5 x GE2656   | 13                    | F <sub>7</sub> -F <sub>8</sub> | Mandya                 |
| 6      | Finger millet  | Indaf 5 x GE2712   | 13                    | F <sub>7</sub> -F <sub>8</sub> | Mandya                 |
| 7      | Finger millet  | Indaf 5 x GE2936   | 4                     | F <sub>7</sub> -F <sub>8</sub> | Mandya                 |
| 8      | Foxtail millet | Co 6 x TNSi 359    | 6                     | F <sub>3</sub> -F <sub>4</sub> | Athiyandal             |
| 9      | Foxtail millet | Co 7 x TNSi 365    | 2                     | F <sub>3</sub> -F <sub>4</sub> | Athiyandal             |
| 10     | Foxtail millet | CO 6 x TNSi 355    | 6                     | F <sub>3</sub> -F <sub>4</sub> | Athiyandal             |
| 11     | Little millet  | CO 4 x TNPSu 213   | 2                     | F <sub>3</sub> -F <sub>4</sub> | Athiyandal             |
| 12     | Little millet  | CO 4 x TNPSu 221   | 7                     | F <sub>3</sub> -F <sub>4</sub> | Athiyandal             |
| 13     | Proso millet   | CO 5 x TNPM 255    | 4                     | F <sub>3</sub> -F <sub>4</sub> | Athiyandal             |

**Utilization at Berhampur:** F<sub>2</sub> generation seeds of 5 single plants each of two crosses (OLM 203 x TN PSU-211 and OLM 203 x TN PSU-219) received from PC unit during *Kharif* 2017. A total 69 single plants from OLM 203 x TN PSU-211 and 63 single plants from OLM 203 x TN PSU-219 cross have been selected basing on desirable plant types and yield.

#### Utilization at Athiyandal

**Finger millet:** Farmers growing finger millet during *kharif* season under rainfed condition especially in Dharpuri, Krishnagiri and Erode districts in the western and north western zones of the state prefer medium to long duration varieties. They require good fodder yield and hence, go for varieties with palatable straw of high quality. The earheads should be large, incurved or top curved with non-shattering trait. The colour of the grains needs to be copper red or dark in colour with high bulk density which would result in good flouing capacity. Hence, the segregating materials from Indaf 5 x GE 2625 were very useful. Since the materials are in F<sub>6</sub> generation only 3 homogeneous populations were derived. The cross, Indaf 5 x GE 2712 (Cox) gave good grain yield. However, the high girth of the culm and irregular head shape might not be preferred by the farmers for want of straw palatability and ease for manual harvesting. So, only two homogenous populations were selected. Though the third cross Indaf 5 x GE 2936 (Long earhead) from mandya had good fodder yield and long duration, the progenies are more susceptible to lodging and the earheads also toppled. Hence, only 1 family was selected.

The progenies of the crosses from Kolhapur *viz.*, KOPN 235 x IE 2340 and KWFM 49 x KOPN 565 were of short duration types with small sized earheads. They were susceptible to finger and neck blasts. However, a few traits such as bold seeds, red seed colour and up-right flag leaf (expected to be drought tolerant), 2 and 1 families were chosen respectively.

The F<sub>3</sub> progenies of two crosses *viz.*, VR 847 x VR 900 and VR 847 x VR 708 received from vizianagaram were segregating in the F<sub>4</sub> generation sown at CEM, Athiyandal. Based on mean  $\pm 2SE$  values for plant height, number of productive tillers/plant, duration, number of fingers/earhead, length of the finger and single plant grain and straw yield a total of 38 and 41 plants were selected respectively for further studies. From each cross, 300 single plants per cross were studied for yield and yield attributing traits.

**Little millet:** The F<sub>5</sub> generations were raised from JK8 x PP (Late) and JK8 x PP (Early) crosses received from PC Unit, Bengaluru. The populations were more homogenous revealing their homozygosity in the F<sub>5</sub> generation itself except for plant and panicle pigmentation. However, the shoot fly incidence was found to be high (8 to 12.5%). The simultaneous emergence of the panicles and incomplete exertion of the panicle were the difficulties noticed in the progenies. In spite of it, 11 and 3 families were selected for further studies in the two crosses respectively based on panicle size, boldness of the seeds, lodging tolerance and fodder yield.

**Proso millet:** The F<sub>3</sub> progenies of the cross GPU8 x K1 were sown (13 families) to raise F<sub>4</sub> generation. Since they are seeds of single plants, no variation was seen in the progenies. Between the lines also there is not much variation. All the families had loose and spreading panicles. The 13 families are chosen based on bold seeds and lodging resistance.

### III. DUS Testing in Small Millets

#### Progress report

During the *Kharif 2017*, DUS characterization has been done for Finger millet, Foxtail millet, Kodo millet and little millet lines at two locations, viz. Project Coordinating Unit, Bengaluru (Nodal centre) and Centre of Excellence, TNAU, Athiyandal (Co-Nodal centre). A number of testing entries in Finger millet and foxtail millet in replicated trials and DUS lines of Kodo millet and little millet were characterized for DUS traits along with reference varietal sets as per the DUS guidelines prescribed for each crop by PPV&FRA. The description of the progress report in different millets has been mentioned below.

**Finger millet:** DUS testing for finger millet has been conducted in PC unit Small millets, AICRP on Small Millets, Bengaluru and Athiyandal, Tamilnadu during *Kharif 2017*. For Finger millet, a total of 5 testing entries in replicated trial and 19 farmer's varieties from Jharkhand along with 77 reference varieties have been characterized as per the DUS guidelines prescribed for finger millet by PPV&FRA. The 5 testing entries include Jibra open type, Jibra semi compact, Amrith pigmented, Amrith non-pigmented and VL 386. The DUS testing entries were sown 4 replications, four rows each of 3.0 m length with spacing of 22x10 cm. Among 19 farmer's varieties, 2 lines did not germinate. For remaining entries DUS characterization has been carried out along with reference set.

For finger millet, a total of 26 characters have considered for DUS characterization. For each character, the range of values was recorded in the coded form. Further, these 26 characters have been grouped in to 18 distinctness characters and 14 grouping characters as per the DUS guidelines prescribed for finger millet crop by PPV&FRA.

**Foxtail millet:** DUS testing for Foxtail millet has been conducted in PC unit Small millets, AICRP on Small Millets, Bengaluru and Athiyandal, Tamilnadu during *Kharif 2017*. For Foxtail millet, a total of 8 testing entries, along with 28 reference varieties have been considered for DUS characterization as per the DUS guidelines prescribed for each crop by PPV @FRA. The 8 testing entries include Chhamar, Chhahar, sephuk, shayam, Juneshe, Panchami, SiA 3179 and DHFT 5-6. The DUS testing entries were sown 4 replications, four rows each of 3.0 m length with spacing of 22x10 cm. For remaining entries, DUS characterization has been carried out. All the entries germinated, except Juneshe and sephuk which are not germinated properly.

For Foxtail millet, a total of 23 characters have been considered for DUS characterization. For each character, the ranges of values were recorded in the coded form. Further, these 23 characters have been grouped in to 15 distinctness characters and 13 grouping characters as per the DUS guidelines prescribed for foxtail millet by PPV&FRA.

**Kodomillet:** A total of 92 kodo millet lines along with 26 reference varieties were tested in the field for DUS characterization during *Kharif 2017*. The DUS lines were sown in 2 rows each of 3.0 m length with spacing of 22x10 cm. Among total 92 lines sown, 44 lines did not germinate. For remaining 48 entries, DUS characterization is carried out as per the DUS guidelines prescribed for Kodo millet by PPV&FRA. According to DUS guidelines, a total of 30 Characters

were recorded in kodo millet for both DUS observation lines and reference variety set. For each character, the ranges of values were recorded in the coded form.

**Little millet:** A total of 93 little millet (kutki) lines along with 17 reference varieties were tested in the field for DUS characterization during *Kharif*2017. The little millet entries were sown with a spacing of 22 x 10 cm with 2 lines each of 3 m length. Among total 93 lines sown 8 lines did not germinate. For remaining 85 entries, DUS characterization has been carried out as per the DUS guidelines prescribed for little millet by PPV&FRA. According to DUS guidelines, a total of 20 characters were recorded in little millet for both little millet observation lines and reference variety set. For each character, the range of values were recorded in the coded form.

**Kutki lines:** A total of 21 DUS lines were tested in the field for DUS characterization during *Kharif*2017. The lines were sown with a spacing of 22 x 10 cm with 2 lines each of 3 m length. Among total 21 testing entries sown, 7 entries did not germinate. For remaining 14 entries, which includes 2 little millet lines, 1 bajra, 6 barnyard millet and 5 foxtail millet lines DUS characterization has been carried out as per the DUS guidelines prescribed for each crop by PPV&FRA. According to DUS guidelines, a total of 20 characters for little millet, 23 characters for bajra, 17 characters for barnyard millet and 23 characters for foxtail millet were tested for DUS characterization. For each character, the range of values were recorded in the coded form.

**Monitoring of DUS experiments:** The Monitoring of DUS experiments was conducted at PC Unit of AICRP on Small Millets, Bengaluru and Athiyandal, Tamilnadu on 3<sup>rd</sup> and 4<sup>th</sup> November 2017, respectively. The monitoring team consisted of Dr. MV. ChannaByregowda, as Chairman, Dr. TG Nagaratna, Registrar, PPV &FRA and Dr. Prabhakar, Project Coordinator (Small Millets) as members.

#### IV. Genetic resources

**Germplasm Conservation:** Project Coordinating Unit of All India Coordinated Project on Small Millets, Bengaluru is also National Active Germplasm Site (NAGS). Its main function is to collect, evaluate, conserve and supply germplasm accessions to needy scientists from different centres. The project Coordinating Unit has maintained 4450, 1413, 966, 1003, 611, 1750 and 28 of finger millet, kodo millet, barnyard millet, little millet, proso millet, foxtail millet and browntop millet accessions respectively. Till now, about 275 accessions of different millets have been supplied to needy researchers (Table 11).

Table 11: Germplasm maintained, collected, supplied and used in breeding programme

| S. No. | Crop            | Total No. of germplasm maintained | Exotic collections | No. of germplasm supplied |
|--------|-----------------|-----------------------------------|--------------------|---------------------------|
| 1      | Finger Millet   | 4450                              | 175                | 18                        |
| 2      | Kodo Millet     | 1413                              | 10                 | -                         |
| 3      | Barnyard Millet | 966                               | 14                 | -                         |
| 4      | Little millet   | 1003                              | -                  | 35                        |
| 5      | Proso Millet    | 611                               | 106                | -                         |
| 6      | Foxtail Millet  | 1750                              | 339                | 222                       |
| 7      | Browntop millet | 28                                |                    | -                         |
|        | <b>Total</b>    | <b>10,221</b>                     | <b>644</b>         | <b>275</b>                |

## VI. Nucleus and Breeder seed production

### Breeder seed production

During the year, the indent of 33.25 quintals of breeder seed was made by DAC, Government of India for all the six crops of small millets. Against the indent, breeder seed allocation of 58.10q was made for production across 12 centres in 9 states. Accordingly, the total production of breeder seed was 67.13q and it is 101.89 % more than the allocation. A surplus breeder seed of 33.88q has been produced. Many centres produced not only the targeted quantity of breeder seed, but also the produced breeder seeds of non-allotted varieties in addition (Tables 12, 13 and 14). The crop-wise breeder seed produced is as below. Details of breeder seed produced state-wise and crop wise are mentioned in Tables

Table 12: Breeder seed production during *Kharif 2017*: Crop-wise

| S. No. | Crop            | DAC Indent   | Production   | Surplus/Deficit over DAC Indent |
|--------|-----------------|--------------|--------------|---------------------------------|
| 1      | Finger millet   | 17.69        | 43.78        | 26.09                           |
| 2      | Kodo millet     | 6.85         | 8.80         | 1.95                            |
| 3      | Foxtail millet  | 5.99         | 10.35        | 4.36                            |
| 4      | Proso millet    | 0.50         | 0.50         | 0.0                             |
| 5      | Barnyard millet | 2.00         | 2.80         | 0.80                            |
| 6      | Little millet   | 0.22         | 0.90         | 0.68                            |
|        | <b>Total</b>    | <b>33.25</b> | <b>67.13</b> | <b>33.88</b>                    |

Table 13: Breeder seed production during 2017-18: State-wise

| S. No.                | Name of the Producing Centre | Name of Variety    | Year of notification | DAC Indent  | Allotment BSP-I | Production  | Surplus/Deficit over DAC indent |
|-----------------------|------------------------------|--------------------|----------------------|-------------|-----------------|-------------|---------------------------------|
| <b>1. Uttarakhand</b> |                              |                    |                      |             |                 |             |                                 |
|                       | <b>Almora</b>                |                    |                      |             |                 |             |                                 |
|                       | Finger millet                | VL 352             | 2013                 | 0.84        | 1.50            | 0.60        | -0.24                           |
|                       |                              | VL 315             | 2006                 | 0.25        | 0.50            | 0.40        | 0.15                            |
|                       |                              | VL 347             | 2012                 | 0.75        | 1.25            | 0.60        | -0.15                           |
|                       |                              | VL 348             | 2017                 | 0.50        | 1.00            | 0.50        | 0.0                             |
|                       | Barnyard millet              | VL Madira 207      | 2008                 | 1.50        | 2.50            | 2.30        | 0.80                            |
|                       |                              |                    |                      | <b>3.84</b> | <b>6.75</b>     | <b>4.40</b> | <b>0.56</b>                     |
|                       | <b>Ranichauri</b>            |                    |                      |             |                 |             |                                 |
|                       | Barnyard millet              | PRJ 1              | 2009                 | 0.50        | 1.00            | 0.50        | 0.0                             |
|                       |                              |                    |                      | <b>0.50</b> | <b>1.00</b>     | <b>0.50</b> | <b>0.0</b>                      |
|                       |                              | <b>State Total</b> |                      |             | <b>4.34</b>     | <b>7.75</b> | <b>4.90</b>                     |
| <b>2. Karnataka</b>   |                              |                    |                      |             |                 |             |                                 |
|                       | <b>Bengaluru</b>             |                    |                      |             |                 |             |                                 |
|                       | Finger millet                | GPU 28             | 1998                 | 2.32        | 4.00            | 5.00        | 2.68                            |
|                       |                              | GPU 48             | 2009                 | 0.35        | 0.50            | 5.00        | 4.65                            |
|                       |                              | GPU 67             | 2010                 | 5.12        | 10.00           | 6.00        | 0.88                            |
|                       |                              | ML 365             | 2009                 | 3.75        | 6.00            | 10.00       | 6.25                            |
|                       |                              | L 5                | 1999                 |             |                 | 0.60        | 0.60                            |



|                          |                      |                       |      |              |              |              |              |
|--------------------------|----------------------|-----------------------|------|--------------|--------------|--------------|--------------|
|                          |                      |                       |      | 11.54        | 32.04        | 26.60        | 15.06        |
|                          | <b>Mandya</b>        |                       |      |              |              |              |              |
|                          | Finger millet        | MR 6                  | 2008 | 0.60         | 1.00         | 1.50         | 0.90         |
|                          |                      | KMR 301               | 2012 | 0.10         | 0.20         | 1.50         | 1.40         |
|                          |                      | MR 1                  | 1998 | 0.15         | 0.25         | 1.00         | 0.85         |
|                          |                      | Indaf 7               | 1984 | 0.05         | 0.10         | 3.00         | 2.95         |
|                          |                      | KMR 204               | 2017 | 0.08         | 0.20         | 2.00         | 1.92         |
|                          |                      |                       |      | <b>0.98</b>  | <b>1.75</b>  | <b>9.00</b>  | <b>8.02</b>  |
|                          | <b>Hanumanamatti</b> |                       |      |              |              |              |              |
|                          | Foxtail millet       | HMT 100-1             | 2009 | 0.04         | 0.10         | 0.10         | 0.06         |
|                          |                      |                       |      | <b>0.04</b>  | <b>0.10</b>  | <b>0.10</b>  | <b>0.06</b>  |
|                          |                      | <b>State Total</b>    |      | <b>12.56</b> | <b>22.40</b> | <b>35.70</b> | <b>23.14</b> |
| <b>3. Maharashtra</b>    |                      |                       |      |              |              |              |              |
|                          | <b>Kolhapur</b>      |                       |      |              |              |              |              |
|                          | Finger millet        | Phulenachini          | 2013 | 0.03         | 0.05         | 1.50         | 1.47         |
|                          |                      | Dapoli-1              | 1994 | 0.02         | 0.05         | 0.05         | 0.03         |
|                          |                      |                       |      | <b>0.05</b>  | <b>0.10</b>  | <b>1.55</b>  | <b>1.50</b>  |
|                          | Little millet        | Phuleekadashi         | 2016 | 0.02         | 0.05         | 0.10         | 0.08         |
|                          |                      |                       |      | <b>0.07</b>  | <b>0.05</b>  | <b>0.10</b>  | <b>0.08</b>  |
|                          |                      | <b>State total</b>    |      | <b>0.07</b>  | <b>0.15</b>  | <b>1.65</b>  | <b>11.58</b> |
| <b>4. Jharkhand</b>      |                      |                       |      |              |              |              |              |
|                          | <b>Ranchi</b>        |                       |      |              |              |              |              |
|                          | Finger millet        | A 404                 | 1993 | 0.01         | 0.05         | 0.16         | 0.15         |
|                          |                      | BM 2                  | 1996 | 0.02         | 0.05         | 0.07         | 0.05         |
|                          |                      | <b>State Total</b>    |      | <b>0.03</b>  | <b>0.10</b>  | <b>0.23</b>  | <b>0.15</b>  |
| <b>5. Bihar</b>          |                      |                       |      |              |              |              |              |
|                          | <b>Dholi</b>         |                       |      |              |              |              |              |
|                          | Finger millet        | RAU 8                 | 1989 | 0.25         | 0.50         | 0.50         | 0.25         |
|                          | Proso millet         | BR 7                  | 1984 | 0.50         | 0.50         | 0.50         | 0.0          |
|                          |                      | <b>State Total</b>    |      | <b>0.75</b>  | <b>1.00</b>  | <b>1.00</b>  | <b>0.25</b>  |
| <b>6. Andhra Pradesh</b> |                      |                       |      |              |              |              |              |
|                          | <b>Nandyal</b>       |                       |      |              |              |              |              |
|                          | Foxtail millet       | SiA 3085              | 2013 | 3.50         | 6.00         | 7.35         | 3.85         |
|                          |                      | <b>State Total</b>    |      | <b>3.50</b>  | <b>6.00</b>  | <b>7.35</b>  | <b>3.85</b>  |
| <b>7. Chhattisgarh</b>   |                      |                       |      |              |              |              |              |
|                          | <b>Jagdalpur</b>     |                       |      |              |              |              |              |
|                          | Finger millet        | Chattisgarh -2        | 2015 | 1.00         | 2.00         | 1.50         | 0.50         |
|                          |                      | Indira Ragi -1 (BR 7) | 2012 | 1.50         | 2.50         | 2.30         | 0.80         |
|                          |                      |                       |      | <b>2.50</b>  | <b>4.50</b>  | <b>3.80</b>  | <b>1.30</b>  |
|                          | Kodo millet          | Indira Kodo 1 (BK 1)  | 2012 | 2.25         | 4.00         | 2.50         | 0.25         |
|                          |                      |                       |      | <b>2.25</b>  | <b>4.00</b>  | <b>2.50</b>  | <b>0.25</b>  |
|                          |                      | <b>State Total</b>    |      | <b>4.75</b>  | <b>8.50</b>  | <b>6.30</b>  | <b>1.55</b>  |
| <b>8. Madhya Pradesh</b> |                      |                       |      |              |              |              |              |
|                          | <b>Rewa</b>          |                       |      |              |              |              |              |
|                          | Kodo millet          | JK 155                | 2000 | 0.75         | 1.25         | 0.70         | -0.05        |
|                          |                      | JawaharKodo 13(JK 13) | 2007 | 1.50         | 2.50         | 0.25         | -1.25        |
|                          |                      | JK 106                | 2009 | 0.90         | 1.50         | 2.00         | 1.10         |

|   |                |                    |      |       |       |       |       |
|---|----------------|--------------------|------|-------|-------|-------|-------|
|   |                | JawaharKodo<br>439 | 2005 | 1.45  | 2.50  | 3.35  | 1.90  |
|   |                |                    |      | 4.60  | 12.35 | 4.60  | 1.70  |
|   | Little millet  |                    |      |       |       |       | 0.0   |
|   |                | JK 36              | 2009 | 0.20  | 0.40  | 0.40  | 0.20  |
|   |                | JK-8               |      | -     | -     | 0.40  | 0.40  |
|   |                |                    |      | 0.20  | 0.40  | 0.80  | 0.60  |
|   |                | State total        |      | 4.80  | 7.75  | 7.10  | 1.90  |
| 9 | Tamilnadu      |                    |      |       |       |       |       |
|   | Athiyandal     |                    |      |       |       |       |       |
|   | Foxtail millet | Co-7               | 2005 | 2.45  | 4.00  | 2.90  | 0.45  |
|   |                | State total        |      | 2.45  | 4.00  | 2.90  | 0.45  |
|   |                |                    |      |       |       |       |       |
|   |                | Grand total        |      | 33.25 | 58.10 | 67.13 | 33.88 |

Table 14: Breeder seed production during 2017-18: Variety-wise

| S. No.               | Name of Variety            | Year of Notification | DAC Indent   | Production   | Surplus/Deficit over DAC Indent |
|----------------------|----------------------------|----------------------|--------------|--------------|---------------------------------|
| <b>Finger Millet</b> |                            |                      |              |              |                                 |
| 1.                   | Chhattisgarh – 2           | 2015                 | 1.00         | 1.50         | 0.50                            |
| 2.                   | PhuleNachani               | 2013                 | 0.03         | 1.50         | 1.47                            |
| 3.                   | VL Mandua 352              | 2013                 | 0.84         | 0.60         | -0.24                           |
| 4.                   | Indira Ragi-1 (BR-7)       | 2012                 | 1.50         | 2.30         | 0.80                            |
| 5.                   | KMR-301                    | 2012                 | 0.10         | 1.50         | 1.40                            |
| 6.                   | VL Mandua 347 (VL 347)     | 2012                 | 0.75         | 0.60         | -0.15                           |
| 7.                   | GPU 67                     | 2010                 | 5.12         | 6.00         | 0.88                            |
| 8.                   | ML-365                     | 2009                 | 3.75         | 10.00        | 6.25                            |
| 9.                   | RATHNA (GPU-48)            | 2009                 | 0.35         | 5.00         | 4.65                            |
| 10.                  | Divya (MR-6)               | 2008                 | 0.60         | 1.50         | 0.90                            |
| 11.                  | VL Mandua-315              | 2006                 | 0.25         | 0.40         | 0.15                            |
| 12.                  | GPU-28                     | 1998                 | 2.32         | 5.00         | 2.68                            |
| 13.                  | VL-348                     | 2017                 | 0.50         | 0.50         | 0.00                            |
| 14.                  | MR-1                       | 1998                 | 0.15         | 1.00         | 0.85                            |
| 15.                  | BM 2                       | 1996                 | 0.02         | 0.07         | 0.05                            |
| 16.                  | DAPOLI-1                   | 1994                 | 0.02         | 0.05         | 0.03                            |
| 17.                  | A-404                      | 1993                 | 0.01         | 0.16         | 0.15                            |
| 18.                  | RAU-8                      | 1989                 | 0.25         | 0.50         | 0.25                            |
| 19.                  | HASTA (INDAF-7)            | 1984                 | 0.05         | 3.00         | 2.95                            |
| 20.                  | L 5                        | 1999                 | -            | 0.60         | 0.60                            |
| 21.                  | KMR 204                    | 2017                 | 0.08         | 2.00         | 1.92                            |
|                      | <b>Total</b>               |                      | <b>17.69</b> | <b>43.78</b> | <b>26.09</b>                    |
| <b>Kodo Millet</b>   |                            |                      |              |              |                                 |
| 1.                   | Jawahar Kodo-155 (RBK-155) | 2000                 | 0.75         | 0.70         | -0.05                           |
| 2.                   | JawaharKodo 13 (JK-13)     | 2007                 | 1.50         | 0.25         | 0-1.25                          |
| 3.                   | JawaharKodo - 439          | 2005                 | 1.45         | 3.35         | 1.90                            |
| 5.                   | JawaharKodo -106           | 2009                 | 0.90         | 2.00         | 1.10                            |
| 6.                   | Indira Kodo -1 (BK-1)      | 2012                 | 2.25         | 2.50         | 0.25                            |

|                        | Total              |      | 6.85         | 8.80         | 1.95         |
|------------------------|--------------------|------|--------------|--------------|--------------|
| <b>Foxtail Millet</b>  |                    |      |              |              |              |
| 1.                     | Co- 7              |      | 2.45         | 2.90         | 0.45         |
| 2.                     | HMT-100-1          | 2009 | 0.04         | 0.10         | 0.06         |
| 3.                     | SiA 3085           | 2013 | 3.50         | 7.35         | 3.85         |
|                        | <b>Total</b>       |      | <b>5.99</b>  | <b>10.35</b> | <b>4.36</b>  |
| <b>Proso Millet</b>    |                    |      |              |              |              |
| 1.                     | BR-7               | 1984 | 0.50         | 0.50         | 0.0          |
|                        | <b>Total</b>       |      | <b>0.50</b>  | <b>0.50</b>  | <b>0.0</b>   |
| <b>Barnyard Millet</b> |                    |      |              |              |              |
| 1.                     | VL Madira 207      | 2008 | 1.50         | 2.30         | 0.80         |
| 2.                     | PRJ-1              | 2009 | 0.50         | 0.50         | 0.0          |
|                        | <b>Total</b>       |      | <b>2.00</b>  | <b>2.80</b>  | <b>0.80</b>  |
| <b>Little millet</b>   |                    |      |              |              |              |
| 1                      | JK 36              | 2009 | 0.20         | 0.40         | 0.20         |
| 2                      | PhuleEkadashi      | 2016 | 0.02         | 0.10         | 0.08         |
| 3                      | JK-8               |      | -            | 0.40         | 0.40         |
|                        | <b>Total</b>       |      | <b>0.22</b>  | <b>0.90</b>  | <b>0.68</b>  |
|                        | <b>Grand Total</b> |      | <b>33.25</b> | <b>67.13</b> | <b>33.88</b> |

### Nucleus seed production

From *Kharif 2017*, the allocation for production of nucleus seed of 6 small millet crops was made in BSP-I to various centres for production along with breeder seed allocation. A total of 450.30 kgs of nucleus seed of varieties of 85 varieties of 6 crops of small millets (finger millet-48, kodo millet-17, 7 each of foxtail millet and little millet, and 3 each of barnyard millet and proso millet) were produced by 17 centres. The varieties included the old and newly released by centres over the years (Table 15).

Table 15: Nucleus seed production during *Kharif 2017*: Centre-wise

| S. No. | Centre             | Crop            | Name of Variety | Year of notification | Nucleus seed (kg) |
|--------|--------------------|-----------------|-----------------|----------------------|-------------------|
| 1      | Almora             | Finger millet   | VL 352          | 2013                 | 2.0               |
|        |                    |                 | VL 315          | 2006                 | 2.0               |
|        |                    |                 | VL 347          | 2012                 | 2.0               |
|        |                    |                 | VL-348          | 2016                 | 2.0               |
|        |                    | Barnyard millet | VL Madira 207   | 2008                 | 2.0               |
|        |                    | Finger millet   | PRM 2           | 2011                 | -                 |
| 2      | Ranichauri         | Barnyard millet | PRJ 1           | 2009                 | 1.0               |
|        |                    | Finger millet   | PRB-903         | -                    | 1.0               |
|        |                    |                 | PRM-1           | 2009                 | 0.5               |
|        |                    |                 | PRM-2           | 2011                 | 0.5               |
|        |                    | Proso millet    | PRC-1           | 2010                 | 0.250             |
|        |                    | Foxtail millet  | PRK-1           | -                    | 0.250             |
| 3      | PC Unit, Bengaluru | Finger millet   | GPU 28          | 1998                 | 37.1              |
|        |                    |                 | GPU 48          | 2009                 | 20.0              |
|        |                    |                 | GPU 45          | 2001                 | 18.0              |

|               |                         |                |                       |                |                         |      |     |
|---------------|-------------------------|----------------|-----------------------|----------------|-------------------------|------|-----|
|               |                         |                | GPU 67                | 2010           | 23.5                    |      |     |
|               |                         |                | ML 365                | 2009           | 5.0                     |      |     |
|               |                         |                | GPU-26                | 2000           | 17.2                    |      |     |
|               |                         |                | GPU-66                | 2018           | 24.3                    |      |     |
| 4             | Mandya                  |                | MR 6                  | 2008           | 5.0                     |      |     |
|               |                         |                | KMR 301               | 2012           | 5.0                     |      |     |
|               |                         |                | Indaf 7               | 1984           | 5.0                     |      |     |
|               |                         |                | KMR 204               | 2012           | 5.0                     |      |     |
|               |                         |                | KMR-340               | 2017           | 5.0                     |      |     |
|               |                         |                | MR-1                  | 1998           | 5.0                     |      |     |
|               |                         |                | L-5                   | 2002           | 3.0                     |      |     |
|               |                         |                | Indaf-5               | 1985           | 3.0                     |      |     |
|               |                         |                | Indaf-9               | 1988           | 5.0                     |      |     |
|               |                         | 5              | Hanumanamatti         | Foxtail millet | HMT 100-1               | 2009 | 0.5 |
|               |                         | 6              | Kolhapur              | Finger millet  | PhuleNachini (KOPN-235) | 2013 | 2.0 |
| Little millet | PhuleEkadashi (KOPN-83) |                |                       | 2016           | 1.0                     |      |     |
|               | Phule Bharti-1          |                |                       |                | 10.0                    |      |     |
| 7             | Dapoli                  | Finger millet  | Dapoli-1              | 1994           | 0.5                     |      |     |
|               |                         |                | Dapoli-2 (SCN-6)      |                | 1.0                     |      |     |
| 8             | Ranchi                  | Finger millet  | A 404                 | 1993           | 10.0                    |      |     |
|               |                         |                | BM 2                  | 1996           | 6.0                     |      |     |
|               |                         |                | BM-3                  |                | 8.0                     |      |     |
|               |                         |                | JWM-1                 |                | 5.0                     |      |     |
|               |                         |                | Gundli                |                | 2.0                     |      |     |
| 9             | Dholi                   | Finger millet  | RAU 8                 | 1989           | 0.5                     |      |     |
|               |                         | Foxtail millet | RAU-2                 | 2017           | 1.0                     |      |     |
|               |                         | Proso millet   | BR-7                  | 1984           |                         |      |     |
| 10            | Berhampur               | Finger millet  | Bhairabi (BM-9-1)     | 1999           | 4.0                     |      |     |
|               |                         |                | Suvra (OUAT-2)        | 1999           | 2.0                     |      |     |
|               |                         |                | Chilka (OEB-10)       | 2001           | 2.0                     |      |     |
|               |                         |                | OEB-526               | 2011           | 4.0                     |      |     |
|               |                         |                | OEB-532               | 2016           | 3.0                     |      |     |
| 11            | Nandyal                 | Foxtail millet | SiA 3085              | 2011           | 1.0                     |      |     |
|               |                         |                | SiA 3088              | 2012           | 1.0                     |      |     |
|               |                         |                | SiA 3156              | 2012           | 1.0                     |      |     |
| 12            | Vizianagaram            | Finger millet  | VR-936                | 2012           | 5.0                     |      |     |
|               |                         |                | VR 847                | 2010           | 31.0                    |      |     |
|               |                         |                | VR 762                | 2007           | 5.0                     |      |     |
| 13            | Jagdalpur               | Finger millet  | Chhattisgarh -2       | 2015           | 1.5                     |      |     |
|               |                         |                | Indira Ragi -1 (BR 7) | 2012           | 1.5                     |      |     |
|               |                         | Kodo millet    | Indira Kodo 1 (BK 1)  | 2012           | 2.0                     |      |     |
|               |                         |                | Chhattisgarh Kodo-2   | 2014           | 1.3                     |      |     |
|               |                         | Little millet  | BL-4                  | 2016           | 1.0                     |      |     |
|               |                         |                | BL-6                  | 2014           | 1.0                     |      |     |
| 14            | Rewa                    | Kodo millet    | Jawahar Kodo 65       | 2009           | 3.6                     |      |     |

|          |            |                 |                         |      |      |
|----------|------------|-----------------|-------------------------|------|------|
|          |            |                 | JK 155                  | 2000 | -    |
|          |            |                 | Jawahar Kodo 13 (JK 13) | 2007 | 3.5  |
|          |            |                 | JK-98                   | 2010 | 2.5  |
|          |            |                 | JK-106                  | 2009 | 3.5  |
|          |            |                 | JK-439                  | 2005 | 3.0  |
|          |            |                 | RK-390-25               | 2012 | 2.5  |
|          |            |                 | Jawahar Kodo-137        | 2016 | 4.0  |
|          |            |                 | JK-41                   | 1986 | 3.5  |
|          |            |                 | JK-48                   | 2001 | 3.5  |
|          |            |                 | JK-136                  | -    | 4.5  |
|          |            |                 | JNK-101                 | -    | 2.0  |
|          |            |                 | JNK-364                 | -    | 2.5  |
| 15       | Dindori    | Kodo millet     | DPS-9-1                 | 2011 | 2.9  |
| 16       | Waghai     | Finger millet   | GNN-6                   | 2016 | 12.5 |
|          |            |                 | GN-5                    | 2016 | 10.5 |
|          |            |                 | GN-4                    | 2006 | 8.5  |
|          |            |                 | GNN-7                   | 2017 | 6.5  |
|          |            | Little millet   | GV-2                    | 2016 | 8.8  |
|          |            |                 | GV-3                    | 2018 | 10.0 |
| 17       | Athiyandal | Finger millet   | CO(Ra)14                | 1995 | 4.00 |
|          |            |                 | CO 15                   | 1996 | 4.00 |
|          |            | Foxtail millet  | CO (Te) 7               | 2005 | 4.00 |
|          |            | Kodo millet     | CO 3                    | 2012 | 4.00 |
|          |            |                 | TNAU 86                 | 2005 | 2.00 |
|          |            | Little millet   | CO (Samai)4             | 2008 | 4.00 |
|          |            | Barnyard millet | CO (KV) 2               | 2008 | 4.00 |
|          |            | Proso millet    | CO (PV) 5               | 2007 | 2.00 |
|          |            |                 | TNAU 145                | 2007 | 2.00 |
|          |            |                 | TNAU 151                | 2008 | 2.00 |
|          |            |                 | TNAU 164                | 2009 | 2.00 |
| TNAU 202 | 2017       |                 | 2.00                    |      |      |
|          |            |                 | TNPm230                 | 2017 | 2.00 |