

## COLLECTING RICE GERMPLASM FROM PARTS OF TELANGANA REGION OF ANDHRA PRADESH, INDIA

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This paper communicates collection of 109 landraces of rice from Telangana region of Andhra Pradesh. The germplasm varied in grain type, husk colour, grain colour and in maturity period. Considerable variation was also observed in panicle structure, glume and awn colour, kernel colour, 1000 seed weight, length width and thickness of grain.

**Key words:** Rice, collection, germplasm, Telangana region

Rice is the principal crop of Andhra Pradesh cultivated in all the seven agro-climatic regions, in more than 75 farming situations, under varied physiographic, climatic and soil conditions. Rice is being grown in three distinct seasons viz., *Kharif* (May/June to November/December), *Rabi* (December to March/April) and Summer (April/May to July/August) and is rotated with pulses, oilseeds, millets and vegetables. Majority of the areas surveyed in the northern Telangana zone, the rice based cropping system followed was single crop rice, rice-rice, dry paddy, rice-groundnut etc.

Rice is being cultivated since time immemorial in this region of the state. Several local cultivars are still available in this region inspite of the introduction of improved cultivars. Based on our observations in several explorations undertaken, it has been found that the local cultivars/landraces of rice are confined to tribal pockets/villages in the interior places which are well adapted to the local conditions and stresses. In order to collect and conserve the available

endemic genetic diversity in rice, an exploration was undertaken during November-December, 1997 in the districts of Nizamabad, Karimnagar, Warangal and Khammam of Telangana region. In this region an exploration was undertaken in 1994 in the Adilabad district for sampling of rice germplasm which resulted in the collection of over 109 accessions (Pandravada *et al.*, 1996) and the variability in grain morphological characters described (Sivaraj and Pandravada, 1996).

Farmer's field was taken as an unit area and random samples of the population and biased sample of elite material were collected. Germplasm samples were also collected from threshing yards and farm stores. The IRRI descriptors for rice, *Oryza sativa* L. (IRRI, 1980) was used as a guideline for studying the variability in the collected germplasm. The survey resulted in the collection of 100 germplasm accessions of rice (*Oryza sativa*) including one accession of *oryza nivara*. Some of the characteristics of important germplasm accessions collected are given in Table 1.

Table 1. Characteristics of some of the collected rice germplasm

| Name of the local cultivar/landrace | IC. No. | Days to Maturity | Grain type     | Husk colour     | Grain colour | Others                    |
|-------------------------------------|---------|------------------|----------------|-----------------|--------------|---------------------------|
| Bobbiligantlu                       | 211222  | 140              | Medium slender | Brown           | Red          |                           |
| Bundamavadlu                        | 211231  | 90-100           | Medium bold    | Brown           | White        | Rainfed                   |
| Chalkabuchchivadlu                  | 211237  | 130              | Long slender   | Straw           | White        | Rainfed                   |
| Chalkavadlu                         | 211250  | 90-100           | Medium bold    | Straw           | Red          | Rainfed                   |
| Cherukulutchchalu                   | 211211  | 70-125           | Medium slender | Yellow          | White        | Rainfed crop              |
|                                     | 211215  |                  |                |                 |              |                           |
| Chinnasindhubayalu                  | 211210  | 175              | Medium slender | Yellow          | White        | Rainfed crop              |
| Chittimuchchalu                     | 211248  | 90-100           | Medium slender | Brownish yellow | White        | Rainfed                   |
|                                     | 211249  |                  |                |                 |              |                           |
| Chittimutyalu                       | 211206  | 130              | Fine           | Straw           | White        | Scented                   |
| Dubbabairagi                        | 211172  | 105              | Long slender   | Yellow          | Red          |                           |
| Duppitokalu                         | 211212  | 95               | Medium bold    | Yellow          | White/green  | Rainfed                   |
|                                     | 211209  |                  |                |                 |              |                           |
| Dusavadlu                           | 211207  | 180              | Medium bold    | Black           | Red          | Wild type                 |
| Erramallelu                         | 211193  | 136              | Long slender   | Straw           | White        |                           |
| Erramasoori                         | 211170  | 125              | Medium slender | Straw           | White        |                           |
| Erravadlu                           | 211158  | 120              | Medium slender | Brown Red       | Rainfed      |                           |
|                                     | 211141  |                  |                |                 |              |                           |
| Gandharivadlu                       | 211173  | 120              | Medium slender | Yellow          | Red          |                           |
| Godavari Iskalu                     | 211176  | 150              | Medium slender | Yellow          | White        |                           |
|                                     | 211203  |                  |                |                 |              |                           |
| Gorankamukkulu                      | 211225  | 120-130          | Medium slender | Black           | White        | Rainfed drought resistant |
|                                     | 211223  |                  |                |                 |              |                           |
| Karrebudamalu                       | 211224  | 90               | Medium bold    | Black           | Red          | Rainfed                   |
| Karevadlu                           | 211229  | 90               | Medium slender | Black           | White        | Rainfed                   |
| Kattakichchidi                      | 211238  | 150              | Fine           | Yellow          | White        | Rainfed                   |
| Kunkumbanthulu                      | 211205  | 120              | Medium slender | Brown           | Red          | Rainfed                   |
| Mettasannalu                        | 211253  | 90               | Long slender   | Yellow          | White        | Rainfed                   |
| Motikka                             | 211244  | 120              | Short bold     | Yellow          | White        | Rainfed                   |
| Nallavodlu                          | 211169  | 90-100           | Medium bold    | Black           | Red          | Rainfed                   |
| Orugallu                            | 211186  | 150              | Long bold      | Straw           | White        | Rainfed                   |
| Peddamasuri                         | 211179  | 150              | Medium bold    | Straw           | Green        | Susceptible to blast      |
| Peddavadlu                          | 211246  | 180              | Bold           | Yellow          | Red          | Rainfed                   |
| Ramabanalu                          | 211252  | 180              | Bold           | Yellow          | Red          | Rainfed                   |
| Richchalu                           | 211235  | 180              | Bold           | Yellow          | White        | Rainfed                   |
| Rottisingaralu                      | 211296  | 140              | Long bold      | Straw           | White        | Rainfed                   |
| Sindhubayalu                        | 211240  | 150              | Medium slender | Yellow          | White        | Rainfed                   |
| Sudivanja                           | 211242  | 90               | Medium bold    | Yellow          | White        | Rainfed                   |
| Surilu                              | 211251  | 150              | Long slender   | Yellow          | White        | Rainfed                   |
| Tharkavadlu                         | 211157  | 105              | Long slender   | Yellow          | White        | Rainfed                   |
| Vulliguththulu                      | 211236  | 130              | Medium bold    | Yellow          | White        | Rainfed                   |

The duration of the collected rice germplasm falls under early, medium and late groups varying from 90 to 180 days of maturity. Majority of them are grown as a rainfed and a few under semi- irrigated/irrigated conditions also. Germplasm of collected rice germplasm can be classified into medium tall and tall groups up to 175 cm in plant height. Considerable variation was also observed in panicle structure, grain morphological characters viz., glume and awn colour (black/brown/gold/straw), shape of grain (slender/medium/bold), kernel colour (red/white/green), 1000-seed weight, length, width and thickness of grain (Table 2). Such type of

Table 2. Diversity in grain morphology and weight

| Character            | Range    | Mean | C.V.% |
|----------------------|----------|------|-------|
| Grain length (mm)    | 5.6-11.5 | 8.2  | 11.7  |
| Grain width (mm)     | 2.2-3.3  | 3.0  | 73.3  |
| Grain thickness (mm) | 1.5-2.3  | 2.0  | 80.0  |
| 1000-seed weight (g) | 9.0-30.0 | 20.7 | 25.0  |

variability in landraces of rice during genepool sampling were encountered earlier by many rice

workers from various parts of India (Chandel *et al.*, 1989; Richharia, 1979; Ray *et al.*, 1985).

The germplasm of rice collected from this region is being conserved in the National Gene Bank at National Bureau of Plant Genetic Resources, New Delhi, India

## REFERENCES

- Chandel, K.P.S., J.S. Chauhan, V.S. Chauhan and P.K. Sinha. 1989. Exploration and genepool sampling of landrace diversity in *Oryza* from Chhotanagpur region. *Indian J. Pl. Genet. Resources* 2(1): 1-8.
- IRRI. 1980. Description for rice *O. sativa* L. 21 p. IRRI, Los Banos, Philippines.
- Pandravada, S.R., N. Sivaraj and K.R.K. Murthy. 1996. Collection of rice germplasm from Adilabad district, Andhra Pradesh, India. *Indian J. Pl. Genet. Resources* 9(2): 255-259.
- Richharia, R.H. 1979. An aspect of genetic diversity in rice. *Oryza* 16(1): 1-31.
- Roy, J.K., D.P. Ghorai and A.R. Panda. 1985. Collection and evaluation of genetic resources of rice in India. *Phytobreedon* 1(2): 1-9.
- Sivaraj, N. and S.R. Pandravada. 1996. Variability in the landraces of rice collected from Adilabad district of Andhra Pradesh. *J. Swamy Bot. Cl.* 13: 13-18.