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**Research Article**

# Rice MDU 6: A high yielding long slender grain variety

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**Abstract**
A short duration, high yielding, long slender grain rice culture, ACM 01010 was developed from Department of Plant Breeding and Genetics, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Madurai and was released as Rice MDU 6 during 2015. ACM 01010 is a derivative of MDU5 / ACM 96136. It has semi dwarf stature (95-105 cm), high tillering capacity, white long slender grain with superior grain quality. It matures in 110 - 115 days and it is suitable for short duration rice growing areas. This culture recorded a mean grain yield of 6118 kg/ha (9.7 per cent and 10.2 per cent increased yield over the checks, ADT 43 and ADT (R) 45 respectively) in different yield trials including MLTs and ARTs. In ART, this culture registered more than 7000 kg/ha in 29 locations out of 160 locations tested. The culture, ACM 01010, is moderately resistant to leaffolder, stem borer, GLH and WBPH under field conditions. It possesses intermediate amylose content, gelatinization temperature and soft gel consistency. It produces white long slender rice with desirable cooking quality. As raw rice, it is highly suitable for making pongal and variety rice besides it is also suitable for aval (flaked rice) and pori (parched paddy) making**.**

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**Key words**
Rice MDU 6, long slender grain, short duration, raw rice, parched paddy

## Introduction

Rice is one of the most important cereal crop of the world meeting the dietary requirements of the people living in the tropics and sub tropics. Traditionally rice plant breeders concentrated on breeding for high yield. In recent decades human demand for high quality rice is continuously on increase, which entailed in incorporation of preferred grain quality features as the most important objective next to enhancement in yield.

A paradigm shift in the rice breeding strategies from quantity centered approach to quality oriented effort was inevitable, since India has not only become self sufficient in food grain production but also is the second largest exporter of quality rice in the world (Sreedhar *et al.,* 2005). Improvement in grain quality that does not lower yield is the need of hour at present context in order to benefit all rice growers and consumers. Like grain yield, quality is not easily amenable to selection due to its complex nature. Lack of clear cut perception regarding the component traits of good quality rice is one of the important reasons for the tardy progress in breeding for quality rice varieties. With the increase in yield, there is also a need to look into the quality aspects to have a better consumer acceptance, which determines the profit margin of rice growers which in turn dictates the export quality and foreign exchange in India (Babu *et al*., 2012).

In Tamil Nadu, out of 21 lakh hectares, 5 lakh hectare area is covered with short duration rice varieties in all the seasons. Since, water has become a scarce commodity, short duration rice varieties maturing in 100-115 days are predominately cultivated in majority of the rice growing areas. During *Kuruvai* (June-July) season short duration rice varieties *viz*., ADT 43, ADT (R) 45, ASD 16 and MDU 5 are cultivated by the farmers of Periyar Vaigai River Project Area (PVRP). ADT 43 (1998) is one of the popular rice variety being cultivated for its grain type and high market value. ADT (R) 45 and ASD 16 have also found region specific position in rice cultivation. MDU 5 rice variety (released during 1996) is the one which is grown as contingent crop if water is delayed from PVRP. The farmers of Tamil Nadu prefer mostly an early duration rice variety to escape from water shortage and in addition they prefer slender/ fine grain varieties for cultivation because of its superior grain quality and high export value. Hence, need for an early duration rice variety with high commercial value is very much needed for the present day short duration rice scenario. With this background, the breeding work was initiated at Department of Plant Breeding and Genetics, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Madurai to evolve high yielding, short duration fine grain rice variety with desirable grain quality with resistance to major pests and diseases.

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**Materials and methods**

A high yielding rice culture ACM 01010 was evolved at Department of Plant Breeding and Genetics, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Madurai and released as Rice MDU 6 during 2015. It is a derivative of MDU5 /ACM 96136. Single plants with desirable grain qualities and high yield was selected in $F_2$ and was forwarded as single plants to progeny rows. The progenies were assessed for their performance in comparison with the checks ADT 43 and ADT (R) 45 under station trials during *Kharif*, 2005-08, Multi Location Trials during 2008-10, Adaptive Research Trials during 2011-12 and AICRIP and On Farm Trials during 2013 (196 trials) (Figure1).

Pest and disease performance was tested under artificial and field conditions at Aduthurai, Coimbatore and Madurai during 2009-10 and 2013 (Annual Rice Meet Report 2009-10 and 2013). Physical, cooking and biochemical properties of the culture was tested for its grain qualities and its end user acceptability along with the checks ADT 43 and ADT 45 as per IRRI, SES at Department of Rice, TNAU, Coimbatore (Annual Rice Meet Report, 2009) and at Home Science College & Research Institute (HSC & RI), Madurai. Thus, the culture ACM 01010 was finally selected and released as Rice MDU 6 during 2015. The morphological characters of the rice variety MDU 6 is recorded using DUS descriptors and given in Annexure I.

**Results and discussion**

Rice MDU 6 has recorded a overall mean grain yield of 6118 kg/ha at 196 locations which was 9.7 and 10.2 per cent increased grain yield over ADT 43 (5496 kg/ha) and ADT (R) 45 (5550 kg/ha) respectively (Table 1).

The culture ACM 01010 recorded a mean grain yield of 6794 kg/ha over three years of station trials with 20.08 per cent improved yield over ADT 43 and 28.85 per cent over ADT (R) 45. (Table 2). In Multi Location Trials (MLT) 2008-09 and 2009-10 the mean grain yield was 5236 kg/ha and 6120 kg/ha respectively which was 9.5 per cent (4782 kg/ha) and 11.7 per cent (5480 kg/ha) higher than the check variety ADT 43. (Table3A, 3B).

Based on its performance in MLT, ACM 01010 was promoted to evaluate in Adaptive Research Trials (ART) during 2011-12 and 2012-13 in 25 districts (160 locations) across Tamil Nadu. In the first year of Adaptive Research Trial (ART) during, 2011-12 in 15 districts (77 locations) of which the culture, out yielded the check varieties, ADT 43 (7.8 per cent higher yield) (5652 kg/ha) and ADT (R) 45 (5.5 per cent higher yield) (5791 kg/ha) in ten districts (Table 4). During 2011-12, the culture tested in 18 districts (83 locations) and it out yielded the check varieties ADT 43 (11.6 per cent higher yield) (5378 kg/ha) and ADT (R) 45(9.0 per cent higher yield) (5506 kg/ha) in 16 districts. (Table 5). Among the 160 locations of ART conducted, the culture recorded the mean grain yield of 6093 kg/ha which was 9.21 and 6.82 per cent increased yield than ADT 43 (5579 kg/ha) and ADT (R) 45 (5704 kg /ha) respectively. (Table 6). In AICRIP trials conducted during *kharif* 2013 across 25 locations in the country in Initial Varietal Trial - Early, the culture was evaluated as IET 23994 and it has recorded 4212kg/ha which is 16.5 per cent increased yield over the regional check,Tulasi(Table 7).

In OFT (2013), the culture ACM01010 recorded a mean grain yield of 7200 kg/ha which was 15.4 per cent higher yield than ADT 45 (Table 8). The culture was found to perform better (7186 kg/ha) with 47 per cent yield advantage over ADT (R) 45 (4766 kg/ha) in Large Scale Demonstration trials.

The culture ACM 01010 is moderately resistant to leaf folder ,stemborer, GLH and WBPH (Table 9).

The grain size and shape are the first criteria for rice quality that breeders consider in developing new varieties for release and commercial production (Adair *et al.,* 1966). Preferences for grain size and shape vary from one group of consumers to another. In general, medium to long grains are preferred in the Indian subcontinent while the country is also replete with hundreds of short grain aromatic types and long grain basmati types the latter commanding highest premium in both domestic and international markets. There is a strong demand for long-grain rice in the international market (Shobarani *et al*., 2006)

Rice grain quality traits encompass the totality of all characteristics and features of rice or the rice products that meets the consumer demands and preference. Different rice genotypes have diverse physicochemical and physical properties, which influences the grain quality properties (Chemutai *et al*., 2016)

Cooking quality of rice is mainly determined by water uptake, volume expansion and kernel elongation. These traits are primarily influenced by the alkali value and amylose content of the kernels (Adilakshmi and Upendra.2014).

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The rice culture, ACM 01010 has white long slender rice with intermediate amylase (21.8%) soft gel consistency (82 ml) and moderate gelatinization temperature. As a raw rice it is suitable for making soft, tasty pongal and variety rices besides it is also suitable for aval and pori making. (Table 10).

Considering the higher yield, short duration, long slender white rice, good cooking quality besides suitable for aval (flaked rice) and pori (parched paddy) making when compared to the checks ADT 43 and ADT (R) 45, the culture ACM 01010 was released as a new variety, **Rice MDU 6** by SVRC for general cultivation during *Kar*/ *Kuruvai*/ *Sornavari*/ *Navarai* seasons wherever short duration rice varieties are cultivated throughout Tamil Nadu . The morphological characters of the rice variety MDU 6 is given in Annexure I.

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**ANNEXURE I Morphological characters of Rice MDU 6 (ACM 01010)**

## Description of variety / hybrid :

| | | | |
|---|---|---|---|
| a. | Plant height | : | 95 - 105 cm |
| b. | Distinguishing morphological characters | : | DUS descriptors |
| | • Early plant vigour | : | Good |
| | • Coleoptile | : | Green |
| | • Basal leaf sheath colour | : | Green |
| | • Leaf sheath | : | Green |
| | • Leaf blade colour | : | Green |
| | • Leaf pubescence | : | Intermediate |
| | • Boot leaf | : | Erect |
| | • Leaf length | : | 39 - 40 cm |
| | • Leaf width | : | 1.1 to 1.2 cm |
| | • Days to 50% flowering | : | 80 to 85 days |
| | • Panicle exertion | : | Well exerted panicle |
| | • Stigma colour | : | White |
| | • Apiculus colour | : | Light green |
| | • Number of productive tillers | : | 15 - 18 |
| | • Panicle length | : | 24 - 28 cm |
| | • No. of grains / panicle | : | 230 - 280 |
| | • Panicle type | : | Intermediate, droopy |
| | • Awning | : | Absent |
| | • Days to maturity | : | 110 – 115 days |
| | • Seed coat colour (Kernel) | : | White |
| | • Junction of auricle | : | Pale green |
| | • 1000 grain weight (g) | : | 17.3 |
| | • Hull (husk) colour | : | Straw |
| | • Threshability | : | Good |
| | • Aroma | : | Absent |
| | • Grain yield per plant (g) | : | 25 - 35 |
| | • Grain | : | Long slender |
| | • L x B | : | 6.8 x 2.2 mm |
| | • L/B ratio | : | 3.09 |
| | • Rice grade | : | Long slender |
| | • Milled rice colour | : | White |
| | • Abdominal white | : | Occasionally present |

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**Table 1. Overall mean yield performance of ACM 01010 in different trials**

| Name of the trials | No. of trials | Average grain yield (kg/ha) | | |
|---|---|---|---|---|
| | | ACM 01010 | ADT 43 | ADT (R) 45 |
| Station trials | 4 | 6794 | 5658 | 5273 |
| Multi location trials (2008- 09) | 9 | 5236 | 4782 | 4908 |
| Multi location trials (2009-10) | 8 | 6120 | 5480 | 6118 |
| AICRIP-IVT- Early 2013* | 16 | 4212 | - | 3487 (Tulasi) |
| Adaptive Research trial (2011-12 and 2012-13) | 160 | 6093 | 5579 | 5704 |
| OFT 2013 | 15 | 7200 | - | 6239 |
| **Overall weighted mean yield in kg/ha** | 196 | **6118** | **5496** | **5550** |
| **Per cent increase over checks** | | | **9.7** | **10.23** |

***** The results are not included for calculating overall mean

**Table 2. Yield performance of ACM 01010 in station trials, Dept. of PBG, AC&RI,Madurai**

| SI. No. | Name of the trial | Duration(days) | Grain yield kg/ha | | | SEd | CD 5% | CV% |
|---|---|---|---|---|---|---|---|---|
| | | | ACM 01010 | ADT 43 | ADT (R) 45 | | | |
| 1) | **IET, 2008-09** | **115** | **6361** | **-** | **4361** | **127** | **269.43** | **4.63** |
| 2) | **PYT, 2009-10** | **111** | **7000** | **5639** | **5250** | **153.58** | **443.67** | **4.55** |
| 3) | **CYT, 2010-11** | **109** | **6890** | **5630** | **5704** | **140.33** | **291.11** | **7.94** |
| 4) | **AYT, 2011-12** | **109** | **6926** | **5704** | **5778** | **206.78** | **426.78** | **4.72** |
| | **Mean** | **111** | **6794** | **5658** | **5273** | | | |
| | **% Increase** | | | **20.08** | **28.85** | | | |

**Table 3A.Performance of ACM 01010 in MLT I during 2008-09**

| S. No. | Location | Duration (days) | Grain Yield (kg/ha) | | |
|---|---|---|---|---|---|
| | | | ACM01010 | ADT 43 | ADT (R) 45 |
| 1 | Aduthurai | 111 | 5280 | 4848 | 3960 |
| 2 | Ambasamudram | 108 | 3422 | 3840 | 4852 |
| 3 | Coimbatore | 111 | 5733 | 5671 | 6474 |
| 4 | Madurai | 104 | 5889 | 4389 | 5060 |
| 5 | Thanjavur | 105 | 6675 | 6000 | 4425 |
| 6 | Pondicherry | 114 | 5326 | 5048 | 4770 |

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| | | | | | |
|---|---|---|---|---|---|
| 7 | Tirur | 120 | 3541 | 3442 | 3395 |
| 8 | Tirupathisaram | 108 | 5807 | 5260 | 5286 |
| 9 | Karaikal | 107 | 5454 | 4537 | 5954 |
| | **Mean** | **110** | **5236** | **4782** | **4908** |
| | **Per cent increase over check** | | | **9.5** | **6.7** |

**Table 3 B. Performance of ACM 01010 in MLT I during 2009-10**

| S. No. | Location | Duration (days) | Grain Yield (Kg/ha) | | |
|---|---|---|---|---|---|
| | | | ACM01010 | ADT 43 | ADT (R) 45 |
| 1 | Aduthurai | 112 | 4931 | 4565 | 5510 |
| 2 | Ambasamudram | 108 | 7703 | 6496 | 8023 |
| 3 | Coimbatore | 117 | 7437 | 5499 | 6881 |
| 4 | Madurai | 109 | 6750 | 4806 | 4889 |
| 5 | Thanjavur | 113 | 5600 | 7800 | 7800 |
| 6 | Pondicherry | 117 | 5114 | 4876 | 4971 |
| 7 | Tirur | 110 | 5302 | 4319 | 4752 |
| 8 | Tirupathisaram | 111 | 4832 | 4765 | 5010 |
| | **Mean** | **111** | **6120** | **5480** | **6118** |
| | **Per cent increase over check** | | | **11.7** | **-** |

**Table 4. District-wise performance in ART Rice 3 / (2011-12)**

| Districts | Grain yield (kg/ha) | | | % increase over checks | |
|---|---|---|---|---|---|
| | ACM01010 | ADT 43 | ADT (R) 45 | ADT 43 | ADT (R) 45 |
| Salem (5) | 6528 | 5602 | 5950 | 16.5 | 9.7 |
| Kanyakumari (4) | 5976 | 5564 | 5647 | 7.4 | 5.8 |
| Coimbatore (5) | 6736 | 5856 | 5715 | 15.3 | 17.9 |
| Namakkal (5) | 6538 | 6492 | 6801 | 1 | - |
| Pudukkottai (6) | 5646 | 5307 | 5569 | 6.4 | 1.4 |
| Thiruvarur (5) | 4442 | 3978 | 3913 | 11.7 | 13.6 |
| Thiruvannamalai(5) | 5688 | 5527 | 5769 | 2.9 | - |
| Karur (5) | 5628 | 5462 | 5580 | 3.04 | 0.9 |
| Cuddalore (7) | 5155 | 5274 | 5154 | - | - |
| Trichy (6) | 6118 | 5625 | 6040 | 8.8 | 1.3 |
| Dharmapuri (3) | 7183 | 6467 | 6500 | 11 | 5.8 |
| Theni (5) | 8000 | 8492 | 8221 | - | - |
| Vellore (5) | 5621 | 4376 | 4782 | 28.5 | 17.5 |
| Erode (6) | 7396 | 6817 | 6844 | 8.5 | 8.1 |
| Dindigul (5) | 5972 | 4299 | 5011 | 38.9 | 19.2 |
| **Overall mean (77)** | **6109** | **5652** | **5791** | **7.8** | **5.5** |

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**Table 5. District-wise performance in ART Rice 3 / (2012-13)**

| Districts | Grain yield (kg/ha) | | | % increase over checks | |
|---|---|---|---|---|---|
| | ACM01010 | ADT 43 | ADT (R) 45 | ADT 43 | ADT (R) 45 |
| Salem (5) | 6630 | 6090 | 6294 | 8.9 | 8.9 |
| Kanyakumari (3) | 6450 | 5882 | 5097 | 10 | 26.6 |
| Coimbatore (5) | 5429 | 5168 | 5261 | 5 | 3.2 |
| Namakkal (5) | 7125 | 6478 | 6547 | 10 | 8.82 |
| Pudukkottai (5) | 6020 | 5240 | 5280 | 14.9 | 14 |
| Thiruvarur (2) | 6005 | 5910 | 5813 | 1.6 | 3.3 |
| Thiruvannamalai(5) | 5858 | 4740 | 5075 | 23.6 | 15.5 |
| Madurai (5) | 6464 | 6082 | 6413 | 6.3 | 0.8 |
| Cuddalore (5) | 5448 | 4869 | 5006 | - | - |
| Trichy (5) | 6285 | 5394 | 5710 | 16.5 | 10.1 |
| Dharmapuri (4) | 5106 | 5099 | 5168 | 0.13 | - |
| Vellore (5) | 5688 | 4412 | 5130 | 28.9 | 10.9 |
| Erode (5) | 5925 | 5667 | 5572 | 4.5 | 6.3 |
| Dindigul (5) | 6048 | 4617 | 5069 | 31 | 19.3 |
| Thanjavur (5) | 6194 | 5666 | 5758 | 9.3 | 7.6 |
| Kancheepuram (5) | 6481 | 5886 | 5968 | 10.1 | 8.6 |
| Ariyalur (4) | 6094 | 5156 | 5119 | 18.2 | 19 |
| Nagapattinam (5) | 5299 | 4718 | 4789 | 12.3 | 10.6 |
| **Overall mean (83)** | **6002** | **5378** | **5506** | **11.6** | **9.0** |

**Table 6. Pooled Mean in Adaptive Research Trials (2011-12 and 2012-13)**

| SI. No. | Year | Grain Yield (kg/ha) | | |
|---|---|---|---|---|
| | | ACM01010 | ADT 43 | ADT (R) 45 |
| 1. | 2011-12 (77) | 6109 | 5652 | 5791 |
| 2. | 2012-13 (83) | 6002 | 5378 | 5506 |
| | **Overall mean (160)** | **6093** | **5579** | **5704** |
| | **% inc. over checks** | | **9.21** | **6.82** |

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**Table 7. Performance of ACM01010 (IET 23944) in AICRIP: IVT E - *kharif* 2013**

| SI. No. | Location | Grain Yield (kg/ha)* | |
|---|---|---|---|
| | | ACM 01010 | Tulasi (RC) |
| 1. | Ludhiana | 2630 | 4367 |
| 2. | Kaul | 3000 | 3850 |
| 3. | Cuttack | 3200 | 3685 |
| 4. | Jeypore | 4394 | 1939 |
| 5. | Patna | 4619 | 2381 |
| 6. | Chinsurah | 4085 | 4412 |
| 7. | Varanasi | 6450 | 5250 |
| 8. | Waraseoni | 2175 | 1325 |
| 9. | Rewa | 4063 | 1931 |
| 10. | Kanjat | 4182 | 5636 |
| 11. | Sakoli | 3469 | 2153 |
| 12. | Vadagaon | 4722 | 4722 |
| 13. | Vyra | 2167 | 2655 |
| 14. | Dabhoi | 2549 | 2745 |
| 15. | Warangal | 4147 | 1205 |
| 16. | Coimbatore | 6982 | 2798 |
| 18 | Ambasamudram | 5813 | 6622 |
| 19 | Aduthurai | 4412 | 5688 |
| 20 | Moncombu | 2783 | 1592 |
| 21 | Pattambi | 5375 | 3968 |
| 22 | Mandya | 5914 | 5672 |
| 23 | Brahmavar | 2111 | 2925 |
| 24 | Gangavati | 6481 | 4784 |
| 25 | Kurumbapet | 5375 | 4500 |
| | Mean | 4212 | 3616 |
| | **Per cent increase over control** | | **16.5** |

*Not included for calculating overall weighted mean in Table 1.

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**Table 8. Performance of ACM 01010 in OFT Madurai and Tirunelveli Districts - *kharif* 2013**

| SI. No. | Farmers Name and Location (5 cents each) | Duration (days) | Mean Grain Yield Kg/ha | |
|---|---|---|---|---|
| | | | ACM01010 | ADT (R) 45 |
| 1. | OFT,Mr. Kennedy,Meetupatti | 112 | 6775 | 4520 |
| 2. | OFT,Mr.Panchacharam,Velichanatham | 111 | 6400 | 4852 |
| 3. | OFT, Mr.Thirumalai Soundirarajan, MDU (W) | 115 | 6225 | 5110 |
| 4. | OFT,Mr.Jeyakumar, Cheranmahadevi | 114 | 9000 | 9445 |
| 5. | OFT,Mr. Krishnan chettiar, Palayamkottai | 125 | 7200 | 7000 |
| 6. | OFT,Mr.Suppukutty,Kadayanallur | 110 | 11560 | 10320 |
| 7. | OFT,Mr.Pradheep,Mukoodal | 118 | 10180 | 9470 |
| 8. | OFT, Mr.Kadalthurai, Sankarankovil | 115 | 8000 | 7200 |
| 9. | OFTMr.,Kamtchi,Manur | 125 | 7400 | 6840 |
| 10. | OFT,Mr.Nalayiramoorthy,Ambasamudram | 113 | 5000 | 6000 |
| 11. | OFT,Mr. Palanivel, Alanganallur,MDU | 112 | 5950 | 4750 |
| 12. | OFT,Mr.Ravi, Pudhuppatti, Alanganallur | 113 | 6225 | 4625 |
| 13. | OFT,Mr.Ramanan,Vadipatti | 113 | 6050 | 4200 |
| 14. | OFT,Mr.Pandiyan, Chatirapatti | 111 | 6115 | 4575 |
| 15. | OFT, Mr.Chandran, Thirumalpuram | 112 | 5925 | 4675 |
| | **Mean** | **114.6** | **7200** | **6239** |
| | **Per cent over control** | | | **15.4** |

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**Table 9. Reaction of ACM 01010 to major insect pests and diseases under field condition**

| Station | Culture/ check varieties | Pests | | | | | | | Diseases | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Stem borer | | Leaf folder % LD | BPH | GLH | WBPH | Blast | RTD | Brown spot | Sheath rot | Sheath blight | BLB |
| | | Dead heart (%) | White ears (%) | | | | | | | | | | |
| Aduthurai | ACM 01010 | 4.00 | 20.42 | 2.77 | 7 | - | - | | - | 5 | 9 | 7 | 9 |
| | ADT 43 | 6.38 | 13.57 | 18.74 | 7 | - | - | | - | 5 | 9 | 9 | 9 |
| | ADT (R) 45 | 6.94 | 10.00 | 5.33 | 7 | - | - | | - | 7 | 7 | 5 | 9 |
| Coimbatore | ACM 01010 | - | - | - | 7 | 3 | 5 | 5 | 5 | - | 7 | 7 | - |
| | ADT 43 | - | - | - | 9 | 3 | 7 | 7 | 7 | - | 5 | 7 | - |
| | ADT (R) 45 | - | - | - | 9 | 7 | 5 | 5 | 7 | - | 7 | 7 | - |
| Madurai | ACM 01010 | 4.41 | 8.12 | 9.90 | 9 | - | - | 7 | - | 3 | 7 | 5 | 5 |
| | ADT 43 | 7.46 | 6.98 | 6.61 | 9 | - | - | 7 | - | 5 | 7 | 5 | 9 |
| | ADT (R) 45 | 3.68 | 9.27 | 14.69 | 7 | - | - | 7 | - | 7 | 9 | 3 | 7 |

(Annual Rice Meet 2009 - 2010)

**Table 10. Grain quality characters of ACM 01010**

**a. Milling, physical and cooking quality characters**

| Quality characters | | ACM 01010 | ADT 43 | ADT 45 |
|---|---|---|---|---|
| Milling quality traits* | Milling yield (%) | 73.80 | 65.0 | 74.0 |
| | Head rice yield (%) | 62.15 | 58.50 | 61.08 |
| Physical grain quality traits* | Kernel length (mm) | 6.8 | 5.5 | 6.0 |
| | Kernel breadth (mm) | 2.2 | 1.7 | 1.9 |
| | L/B ratio | 3.09 | 3.20 | 3.156 |
| | Grain Type | LS | MS | MS |
| Cooking quality characters** | Kernel length after cooking (mm) | 10.0 | 8.8 | 8.2 |
| | Kernel breadth after cooking (mm) | 2.8 | 2.2 | 2.7 |
| | Linear elongation ratio (LER) | 1.64 | 1.60 | 1.41 |
| | Breadthwise expansion ratio (BER) | 1.47 | 1.29 | 1.50 |
| | Volume expansion (ml) | 5.0 | 5.5 | 4.0 |

(*Source : IICPT, Thanjavur & TNAU, Coimbatore; ** Source : HSC & RI, Madurai)

**a. Biochemical characteristics of ACM 01010**

| Parameters | ACM 01010 | ADT 43 | ADT (R) 45 |
|---|---|---|---|
| Gel consistency | Soft | Soft | Soft |
| Gelatinization temperature | High to intermediate | High to intermediate | High to intermediate |
| Amylose content | 21.8 | 24.0 | 22.4 |

(Source : TNAU, Coimbatore)

 DOI: 10.5958/0975-928X.2017.00160.0

**c. Organoleptic evaluation of cooked rice**

| Details | ACM 01010 | ADT 43 | ADT (R) 45 |
|---|---|---|---|
| Colour and appearance | 8 | 7 | 7 |
| Flavour | 7 | 7 | 6 |
| Texture | 8 | 7 | 7 |
| Taste | 8 | 8 | 7 |
| Overall acceptability | 8 | 7 | 7 |

(Maximum score = 10) (Results from HSC & R I Madurai - 2013)

**d. Organoleptic evaluation of Flaked rice**

| Details | ACM 01010 | ADT (R) 45 | Co (R) 51 |
|---|---|---|---|
| Colour and appearance | 8 | 8 | 7 |
| Flavour | 8 | 8 | 5 |
| Texture | 8 | 8 | 6 |
| Taste | 8 | 7 | 5 |
| Overall acceptability | 8 | 7 | 6 |

(Maximum score = 10) (Results from HSC & R I Madurai - 2013, 2014)

 DOI: 10.5958/0975-928X.2017.00160.0

**Figure 1. Pedigree chart of ACM 01010**