# DLB Product Profile – Early maturing, lowland, long slender grain rice (Nigeria)

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Rivers State, Nigeria

**Design target**
Early maturing lowland rice, with long slender grains and high yield.

Andrew Efisue is Head of rice breeding, Crop and Soil Science Department, Faculty of Agriculture, University of Port Harcourt, Nigeria. He is a renowned rice breeder having officially released three rice varieties in 2013: UPIA 1, UPIA 2 and UPIA 3. Each are resistant to iron toxicity and drought and have accelerated rice production and income generation for resource poor farmers in Nigeria. He has more than 20 years' experience in agricultural research and training. He is a principal investigator, coordinator and project manager of many local and international projects in Nigeria and across West Africa. He works with local, regional and international institutions in multi-cultural and multi-discipline environments which requires good interpersonal and collaborative skills for effective partnerships.

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## Product Profile design team

**Step 1**

| | |
|---|---|
| **PP Design Team Lead/Champion** | Andrew A. Efisue |
| | University of Port Harcourt, Rivers State, Nigeria |

| **PP Design Team** | | |
|---|---|---|
| **Person** | **Area of Expertise** | **Name of organization** |
| Andrew A. Efisue | Plant Breeder | University of Port Harcourt |
| Joseph Orluchuku | Agronomist | University of Port Harcourt |
| Emmanuel Ikiriko | Soil fertility expert | University of Port Harcourt |
| Martins Adesope | Agricultural Economics/Extension | University of Port Harcourt |
| Bamidele P. Adegoke | Plant hybridization | AfricaRice, Nigeria |
| Azeez Shittu | Seed technologist | AfricaRice, Nigeria |
| Mohammed Sanda | Field technician | AfricaRice, Nigeria |

## Clients and markets

**Step 2**

| **Product profile descriptors** | |
|---|---|
| **Product profile name** | Early maturing, lowland, long slender grain rice |
| **Crop** | Rice *(Oryza sativa L.)* |
| **Country** | Nigeria |
| **Geographic regions** | Northern and Southern |
| **Market segment and positioning** | New emerging market segment for high yielding, slender grain varieties that are early maturing, due to global warming and erratic rainfall |
| **Name of target variety to be replaced** | Mata Malla (landrace)<br>**Strength:** Popular, grown for many years<br>**Weakness:** Poor yield, many unproductive tillers, shattering and bold grains |
| **Date PP created** | 17.11.2020 |

| **Target client and use** | |
|---|---|
| **Value chain primary clients/customers** | Farmers, millers, wholesale and retail sellers, consumers |
| **Market scale** | Local, regional and emerging international markets |
| **Use** | Food |
| **Type of processing** | Fresh, dried or cooked |
| **Market class** | Rice quality |

| **Target crop producers and production system** | |
|---|---|
| **Number of farmers** | 1,000,000-2,500,000 |
| **% ratio: male to female farmers** | 65-75% male; 20-35% female |
| **Production system** | Open field (+/- irrigation)/ Flooded system |
| **Area of production system** | 300,000-500,000 ha |
| **Growth habit** | Erect type |
| **Expected level of inputs** | Medium, crop protection chemicals |
| **Typical yield range of target system** | 2.0-3.0 t/h |
| **Cropping system** | Continuous monocrop |
| **Mechanization** | Some mechanical harvesting and threshing |
| **Agroecological zone(s)** | Coastal, Forest, Savannah and Sahel |
| **Total seed market** | 50,000-100,000 tonnes |

**Variety technical specification**

**Step 3**

| Client/ customer | Driver | Trait category | Preference group: Women (W) Men (M) Youth (Y) W+M+Y (All) | Trait demand classification: *1. Essential/ "must have" 2. Niche opportunity 3. Added-value 4. Winning trait* | Target traits | Trait description (Quantitative measures) | Name of benchmark variety | Performance required compared to benchmark variety <, =, > etc. |
|---|---|---|---|---|---|---|---|---|
| Farmer | Productivity | Yield | All | 4 | Grain dry weight | 6.0-10.0 t/ha | Mata Malla | > |
| | | Biotic stress resistance | All | 1 | Leaf blast | <3 (IRRI scale) | Mata Malla | < |
| | | | All | 1 | African rice gall midge | <3 (IRRI scale) | Mata Malla | < |
| | | | All | 1 | Rice yellow mottle virus | <5 (IRRI scale) | Mata Malla | < |
| | | Abiotic stress resistance | All | 1 | Iron, salinity, drought | <3 (IRRI scale) | Mata Malla | < |
| | Crop management | Plant architecture | All | 1 | Erect type and droopy panicles | Height: 90 cm to 1.2m | Mata Malla | > |
| | Market value and price | Grain weight | All | 1 | Dry weight | 6.0-10.0 t/ha | UPIA 3 | > |
| | | Crop duration | All | 4 | Early maturing | 85-100 days | UPIA 3 | < |
| | Post-harvest and storage | Storage-life | All | 1 | Grain storage time | 3-5 years | UPIA 3 | > |
| Transporter | Durability and cost | Container suitability | All | 3 | Grain storage time | 3-5 years | UPIA 3 | > |
| Processor | Raw material quality specification | Milling | All | 1 | High milling Recovery | 75-80% milling recovery | UPIA 3 | > |
| Retailer | Sales and profit | Shelf-life | All | 1 | Maintain quality in long storage | 3-5 years in storage | Mata Malla | > |
| Consumer | Satisfaction | Taste | All | 1 | Palatable and Good taste | Aromatic | Mata Malla | > |
| | | Appearance | All | 1 | Grain and colour | Uniform and whitish | UPIA 3 | > |
| | | Shelf-life | All | 1 | Shelf-life is stay white | 3-5 years in storage | Mata Malla | > |
| | | Nutrition | W | 1 | Medium amylose content | 20-25% amylose content | Mata Malla | ≥ |
| | | Digestibility | W | 1 | Soft and easy to eat | Soft | Mata Malla | < |
| | | Food preparation | W | 1 | Short cooking time | 40-60mins | Mata Malla | ≤ |
| Seed producer | Scalability and cost | Seed numbers | All | 1 | Easy to package | 10, 25 and 50kg | Mata Malla | ≥ |
| | | Reproductive fertility | All | 1 | High viability | 90-95% viability | UPIA 3 | > |
| | | Ease of vegetative propagation | All | 1 | Easy to handle for propagation | Less bulky | UPIA 3 | < |
| Seed distributors | Variety identification | Unique appearance | ALL | 4 | Grain shape | Long slender | Mata Malla | > |


Lowland rice


Long, slender, cooked grains

***''Demand-Led Breeding has revealed the flaws in conventional variety release in Nigeria. Now new rice varieties have better prospects for adoption – the key stakeholders smallholder farmers want to grow these new varieties."***