

Rice Seed Production by Farmers: A Practical Guide

About the West Africa Rice Development Association

The West Africa Rice Development Association (WARDA) was formed as an autonomous intergovernmental research association in 1971 by 11 countries, with the assistance of the United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO), and the Economic Commission for Africa (ECA). Today, the Association comprises 17 member states: Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, the Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo. Since 1987, WARDA has also been a member of the Consultative Group on International Agricultural Research (CGIAR), a network of 16 international research centers supported by more than 50 public- and private-sector donors.

WARDA's mission is to contribute to food security and poverty eradication in poor rural and urban populations, particularly in West and Central Africa, through research, partnerships, capacity strengthening and policy support on rice-based systems, and in ways that promote sustainable agricultural development based on environmentally sound management of natural resources.

WARDA's research and development activities are carried out in collaboration with the national agricultural research systems of members states, academic institutions, international donors and other organizations, to the ultimate benefit of West and Central African farmers—mostly small-scale producers—who cultivate rice, as well as the millions of African families who eat rice as a staple food.

WARDA Headquarters are at M'bé, 25 km north of Bouaké, a major commercial center in Côte d'Ivoire. WARDA also operates research stations at N'Diaye, near Saint Louis, Senegal, and at the International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria.

Donors to WARDA in 2000 were: the African Development Bank, Belgium, Canada, CGIAR (Finance Committee), Common Fund for Commodities (CFC), Côte d'Ivoire, Denmark, the Food and Agriculture Organization of the United Nations (FAO), France, the Gatsby Foundation (UK), Germany, the International Development Research Centre (Canada), the International Fund for Agricultural Development, Japan, the Netherlands, Norway, the Rockefeller Foundation (USA), Sweden, the United Kingdom, UNDP, the United States of America, the World Bank and WARDA member states.

Main Research Center and Headquarters

WARDA/ADRAO
01 B.P. 2551
Bouaké 01
Côte d'Ivoire

Tel.: (225) 31 63 45 14
Fax: (225) 31 63 47 14
(225) 20 22 78 65
E-mail: warda@cgiar.org

WARDA Sahel Station

ADRAO
B.P. 96
St Louis
Senegal

Tel.: (221) 962 6493
(221) 962 6441
Fax: (221) 962 6491
E-mail: warda.sahel@cgiar.org

WARDA Nigeria Station

WARDA
c/o International Institute of
Tropical Agriculture (IITA)
Oyo Road, PMB 5320
Ibadan
Nigeria

Tel.: (234-2) 241 2626
Fax: (234-2) 241 2221
E-mail: itna@cgiar.org

Rice Seed Production by Farmers: A Practical Guide

A.M. Bèye and R.G. Guei



West Africa Rice Development Association

2001

© Copyright West Africa Rice Development Association (WARDA/ADRAO) 2001

WARDA encourages fair use of this material. Proper citation is requested.

Bèye, A.M. and R.G. Guet, 2001. *Rice Seed Production by Farmers: A Practical Guide*. WARDA, Bouaké, Côte d'Ivoire, 14 p.

ISBN 92 9113 212 8

Drawings: Mme Inkpé Perpétue
Professeur d'Arts plastiques
01 B.P. 349, Bouaké 01, Côte d'Ivoire

Translated and adapted from French previously published as Bèye, A.M. and R.G. Guet, 2001. *Guide pratique de production de semences de riz par les paysans*. Bouaké : ADRAO; Man : BAD-Ouest, Abidjan : ANADER, 14 p.

WARDA/ADRAO
01 B.P. 2551
Bouaké 01
Côte d'Ivoire

Tel.: (225) 31 63 45 14
Fax: (225) 31 63 47 14
E-mail: warda@cgiar.org
Web-site: <http://www.warda.cgiar.org>

Contents

Preface	v
Foreword	vi
Quality of a good seed	1
Variety purity	2
Cultural practices	3
Roguing	4
Harvesting	7
Threshing	8
Drying	9
Storage	10
Granary storage of panicles in forest zone	10
Granary storage of panicles in savanna zone	10
Storage in bags	11
Preparation for cropping season	12
Winnowing and grading	13
Germination testing	14

Preface

Seed is of vital importance to farmers: bad seed leads to poor harvest. But quality seed—rather than seed coming from diverse sources—is expensive and generally not available for farmers. Most rice farmers in West and Central Africa save grain from their own harvest for use as seed for the next cropping season. However, seed purity deteriorates as time goes on. At WARDA, we are convinced that with a little practical advice, farmers can improve their seed production. They can also *increase* their seed production and thereby increase their crop yields in the following season.

The system presented in this handbook has been successfully implemented in Côte d'Ivoire and Guinea. I hope that the information provided here will be of a great value and I wish you every success in your efforts.

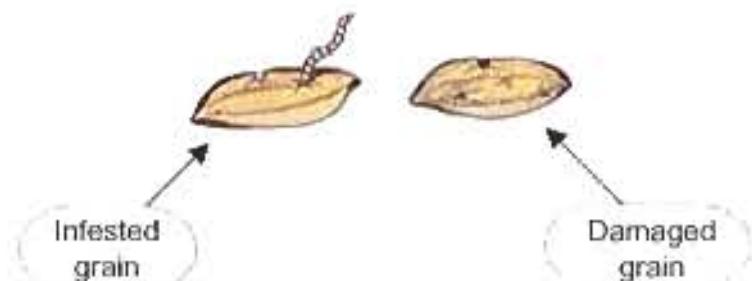


Kanayo F. Nwanze
Director General
WARDA

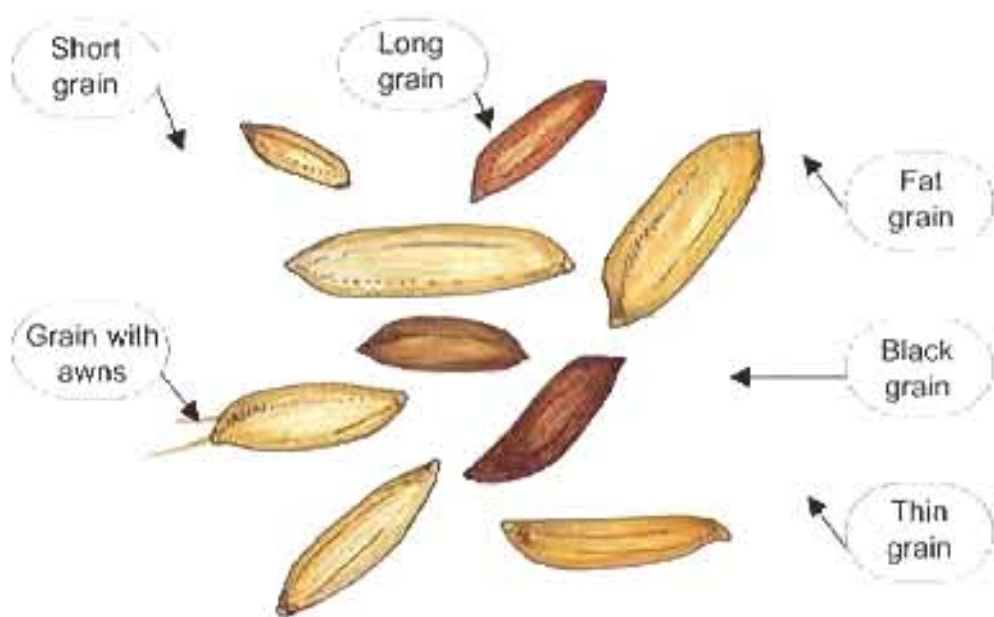
Foreword

This practical guide to seed production constitutes a training tool for subsistence rice farmers. It aims to inform innovative farmers and farmers' organizations about the need to produce their own seed and to improve its quality. This guide, while based on farmers' practices, formulates recommendations with a view to ensuring good cultural practices and the preservation of the harvest that will be used as seed.

Quality of a good seed



A good seed should not be infested or damaged



Good seed should not be a mixture

Variety purity

How to recognize that a plant is of a different variety ('off type')

1. Check the height (short, tall)
2. Check the cycle (short, intermediate, long)
3. Check the leaves (droopy, upright, large, thick, thin)
4. Check the heads (closed, opened)
5. Check the grain color (yellow, red, black)

Cultural practices

Land preparation and sowing

1. Prepare a good seed bed
2. Plant on time

Seed rates per hectare

1. For upland rice – 60 kg if broadcast sowing
2. For lowland rice – 40 kg if in nursery

Fertilizer

1. If possible, spread fertilizer basally at sowing
2. If possible, use urea after each weeding

Weeding

1. Ensure first weeding is done within 1 month after sowing
2. Ensure second weeding is done before 2 months after sowing

Roguing



Examine your rice field very carefully



Before harvesting, remove all 'off types'

'Off types' can be identified through differences in:

- height
- cycle
- grain color
- grain shape
- panicle shape
- leaf shape



'Off types' can be used immediately
for consumption

Harvesting



1. Select healthy plants
2. Carefully collect each variety
3. Avoid mixing varieties during transportation

Threshing



Avoid mixing varieties at threshing.

1. Carefully clean the threshing floor to avoid contamination with foreign matter (stones, weeds, other rice grains)
2. Cover the threshing floor with Tarpaulin or other suitable material
3. Thresh different varieties separately

Drying



1. Dry the seed in a shaded area in the open air for about one week
2. Avoid drying under excessive heat
3. Avoid mixing of varieties during drying
4. Dry thoroughly

Storage

Granary storage of panicles in forest zone



1. Clean out granary and make repairs to walls, floor and roof
2. Make sure material is adequately dried before storing in a granary
3. Maintain a gentle fire
4. Avoid mixing of varieties during storage

Granary storage of panicles in savanna zone



1. Make sure drying is adequate before storing in granary
2. Open the granary from time to time to ensure good air circulation
3. Avoid mixing of varieties during storage

Storage in bags



1. Ensure that seeds are properly dried before placing in bags
2. Winnow carefully
3. Treat with insecticide—Actellic 50[®] or natural insecticides (dried neem leaves, dried pepper, ash) may be recommended
4. Store in an area with good ventilation
5. Keep bags over pallets to ensure good air circulation

Preparation for cropping season



Seeds from different sources

- Choose seeds that are the same
- Avoid old seed
- Avoid infested or diseased seed
- Avoid damaged seed

Winnowing and grading



1. Prepare a clean floor for winnowing
2. Winnow different varieties separately, possibly even in different locations
3. Ensure adequate grading by sorting all unfilled or diseased grains
4. After cleaning, carefully pack different varieties separately to avoid mixing

Germination testing



To ensure good seedling establishment, germination tests should be conducted before sowing.

1. Randomly select 100 grains of the seed to be sown
2. Take a shallow basin or tray
3. Place a wet cloth in the basin or tray
4. Place the 100 grains on the cloth
5. Cover the grains with the cloth
6. Place the basin in the shade. Water (moisten) as necessary
7. After about a week, count the number of grains that have germinated:
 - if more than 80 of the 100 grains have germinated, the seed is good
 - if less than 80 of the 100 grains have germinated, then seed quantity should be increased at sowing

About the Consultative Group on International Agricultural Research (CGIAR)

The Consultative Group on International Agricultural Research (CGIAR) was founded in 1971 as a global endeavor of cooperation and goodwill. The CGIAR's mission is to contribute to food security and poverty eradication in developing countries through research, partnership, capacity building and policy support, promoting sustainable agricultural development based on the environmentally sound management of natural resources. The CGIAR works to help ensure food security for the twenty-first century through its network of 16 international and autonomous research centers, including WARDA. Together, the centers conduct research on crops, livestock, fisheries and forests, develop policy initiatives, strengthen national agricultural organizations, and promote sustainable resource management practices that help provide people world-wide with better livelihoods.

The CGIAR works in partnership with national governmental and non-governmental organizations, universities and private industry. The United Nations Development Programme, the United Nations Environment Programme, the World Bank, and the Food and Agriculture Organization of the United Nations sponsor the CGIAR. The CGIAR's 57 members include developing and developed countries, private foundations, and international and regional organizations. Developing world participation has doubled in recent years. All members of the OECD (Organisation for Economic Co-operation and Development) Development Assistance Committee belong to the CGIAR.

The CGIAR is actively planning for the world's food needs well into the twenty-first century. It will continue to do so with its mission always in mind and with its constant allegiance to scientific excellence.

CGIAR Centers

CIAT	Centro Internacional de Agricultura Tropical (Cali, Colombia)
CIFOR	Center for International Forestry Research (Bogor, Indonesia)
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo (Mexico, DF, Mexico)
CIP	Centro Internacional de la Papa (Lima, Peru)
ICARDA	International Center for Agricultural Research in the Dry Areas (Aleppo, Syria)
ICLARM	International Center for Living Aquatic Resources Management (Penang, Malaysia)
ICRAF	International Centre for Research in Agroforestry (Nairobi, Kenya)
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics (Patancheru, India)
IFPRI	International Food Policy Research Institute (Washington, DC, USA)
IITA	International Institute of Tropical Agriculture (Ibadan, Nigeria)
ILRI	International Livestock Research Institute (Nairobi, Kenya)
IPGRI	International Plant Genetic Resources Institute (Rome, Italy)
IRRI	International Rice Research Institute (Los Baños, Philippines)
ISNAR	International Service for National Agricultural Research (The Hague, Netherlands)
IWMI	International Water Management Institute (Colombo, Sri Lanka)
WARDA	West Africa Rice Development Association (Bouaké, Côte d'Ivoire)



*To produce good-quality seed
is to perpetuate good agriculture*



WARDA/ADRAO
01 B.P. 2551
Bouaké 01
Côte d'Ivoire

Tel.: (225) 31 63 45 14
Fax: (225) 31 63 47 14
E-mail: warda@cgiar.org
Web-site: <http://www.warda.cgiar.org>