Rice growing

About Rice – What's included

Included in this pack are:

- Rice production
- About Rice in Sierra Leone
- Rice farming in Bo
- Rice cycle wheel
- Table of Rice Self- sufficiency levels
- Anatomy of Rice
- Rice is life
- Internet websites

Suggested usage:

Older children in groups take turns reading the following sheets to learn about rice growing in Sierra Leone.

Look at the photos and information provided to help you find out about rice and how it is grown.

Look up rice growing in Sierra Leone or West Africa on the internet.

Now use all this information to help you draw the rice cycle on sheet 09-3d.

Lesson plan 09

Sheet 09-3a

Information sheet

Rice Production

Background information

Rice is the country's staple food, forming 85% of total cereal consumption. Sierra Leone was formerly self sufficient in rice, but now imports over 30% of its needs with government subsidy. This change is mainly due to population increase, the disruption of civil war and the numerous farming problems mentioned above.

The main rice growing systems:

64% of the crop is "upland" rice

26% is inland valley swamp rice which is in the system in Bo area.

5% coastal mangrove swamp cultivation

Other production is scattered in small valley and lake areas.

National Rice Research is based at Rokupr Rice Research Station (RRS) which has limited resources.

Modern initiatives

Modern initiatives in improving rice production are mainly funded by overseas development agencies such as USAID and partners such as "World Vision", which have initiated important projects such as "Systems of Rice Intensification" based on the inland swamp areas near Kono and Jalla (SRbs)

continued over ...

The key elements in these projects are

Use of good quality seed from Southern Districts

Seed sowing in nursery plots which are transplanted after 10 days into the swamps and protected by palm fronds.

This contrasts with broadcasting the seed (scattering by hand) with no transplantation, and results in less waste of seed, and greatly increased yield.

Seed which would produce 2 bushels of rice in the uplands under the old method produces 12 bushels in the swamps using the new Rice Intensification System.

Other outcomes include:

Intercropping of rice with tomatoes, pumpkins and corn developed in the swamps in the rainy season.

After the rice harvest, a second harvest of dry season vegetables is still obtained thus increasing food supplies, variety in diet and increase in soil fertility by added nitrates from some of these crops.

Women's groups are being helped with animal husbandry (raising animals) – improving in stock and rearing methods especially for chickens and goats. Better methods for vegetable cultivation are also being demonstrated.

The old diamond mining area, previously left waste after deforestation, is now being used in some areas for improved farming.

A major problem resulting from success in these developments is a severe lack of storage facilities, especially for rice. Also protection is needed against rats and insect pests which severely deplete the reserves. Much needs to be done to build suitable stores and to research local insecticides to reduce damage in rice storage.

Lesson plan 09
Sheet 09-3b
Information sheet on rice.

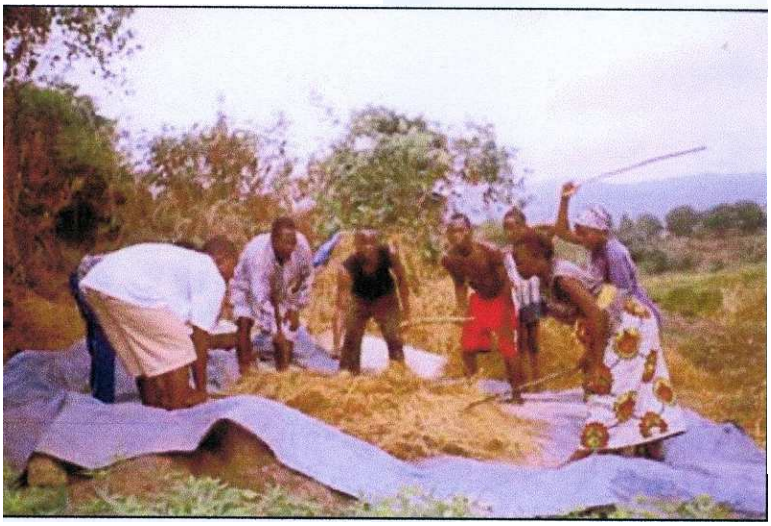
About Rice in Sierra Leone

This is a rice plant.
As it grows the rice seed is inside the husk or hull.

Swamp rice in Sierra Leone

Rice in Sierra Leone is the main part of their diet. People eat an estimated 530,000 tons of rice yearly. Rice lands grow about 350,000 tonnes a year. (2005)

This is the hull or husk containing the rice seed which has been harvested from the plant.



These members of a Sierra Leone community are threshing the rice that has been harvested to get the rice grain out of the husk.

Winnowing (in Mende: 'Feleh') basket from Sierra Leone

Description:

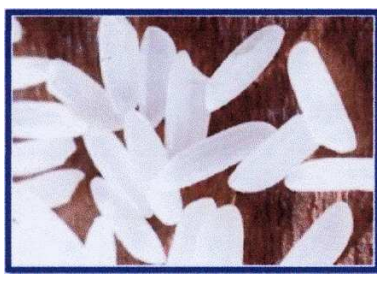
The rice grain is made up of three main layers which are the hull, the bran and germ and the inside endosperm

The hull

The hull or husk is the outer hard protective layer which people cannot eat.
The hull is removed when it is milled through the rice machine or threshed.

Rice Bran

Underneath the hull or husk is the bran and germ layer. This layer gives brown rice its colour.
White rice is when the bran and germ layer are removed.
The bran is the outer layer and the germ is the inside layer.



Endosperm

The Endosperm or Kernal is the inside of the rice grain.
It is hard and white and contains lots of starch.

Lesson Plan 09
Sheet 09-3c

Steps in Rice Growing in Bo

Notes from Joseph Boakarie,
Bo-OWL Teachers' Group, Bo, Sierra Leone

Firstly, there are two farming systems in Sierra Leone, West Africa - Upland farming and Swamp rice farming.. Now for Upland rice farming, this is done on the dry land, while Swamp rice farming is done on the wet land or swamp.

Upland Rice Farming

.**Preparing the ground** - Farmers do the brushing (clearing the land) / felling the trees and let it for a period of time. They also burn their farms late in March and let the land cool for a period for sowing

Sowing - Farmers sow their seeds in early May to late July, scattering by hand and then 'ploughing' to cover the seeds with hand hoes. After it has started to grow they start to remove the unwanted plants, fencing or setting traps for animals. After a period of four to five months the rice will begin to flower, where farmers would now prepare to scare birds / animals that will spoil the rice until the rice is mature and ready to harvest.

Harvesting - Farmers at this time hire labour to harvest in either November or December for a reasonable time depending on the size of the farm. They use hand tools which consist of sharp knives, some straight, some curved.

Threshing and Winnowing - Farmers at this time again ask other farmers' wives to thresh the harvest that has been stored at farm houses and also winnowing at the same time put the winnowing rice in bags. The grain is now processed by drying, mill it and put the clean rice in bags for marketing to the public.

Marketing - At this point the Government will now buy form the farmers and traders buy and sell to the people at a reasonable cost.

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Swamp Rice Farming

For the swamp rice farming in Sierra Leone, it is done in the swamp / wet land. There are about two methods / ways to follow: **local method** and **mechanic** method

Preparing the ground - The farmer chooses the site for his operations. At about March / April and late May the farmer starts to brush his swamp. The land remains for a period of time to dry and be ready to clear for planting

Sowing - Farmer in his **local method**, he will just scatter his seeds on his prepared land and let it germinate whilst the **mechanic** farmer will transplant his nursed seeds on his prepared land.

Continued over …

Weeding / removing unwanted plants: **Local farmers** remove the unwanted plants from the wanted plants without any chemical use, but a **mechanic farmer** will at times apply fertilizer on their farms for better yield.
Farmers will be ready to scare birds / animals that will destroy their rice by either fencing / scarecrow for birds and animals, etc.

Harvesting - Rice is harvested when it is ready for harvest after 4-5 months. A large farm will be harvested by plenty of farmers at a time until every bit is finished. The harvest rice is stored at the rice barn for a period of time while other work is going on for other plants to take over the land.

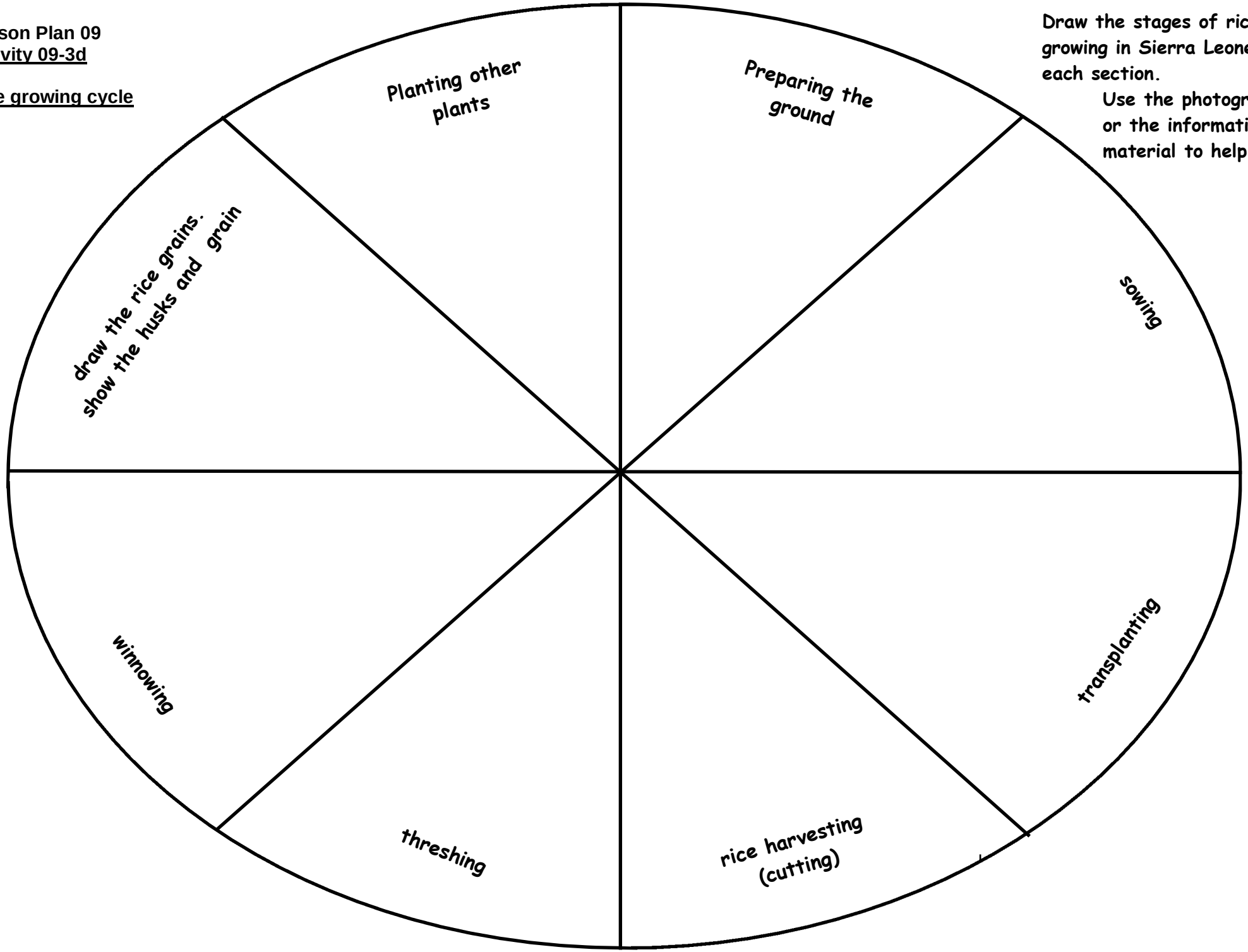
Threshing and willowing- Coming to this point again, farmers gather their family members to do the threshing where every member gets his/her own share to take home. When the farmer has done all this, the balance is bagged for marketing.

Lesson Plan 09
Activity 09-3d

Rice growing cycle

Draw the stages of rice growing in Sierra Leone in each section.

Use the photographs or the information material to help you.



Lesson Plan 09
Sheet 09-3e

Sierra Leone

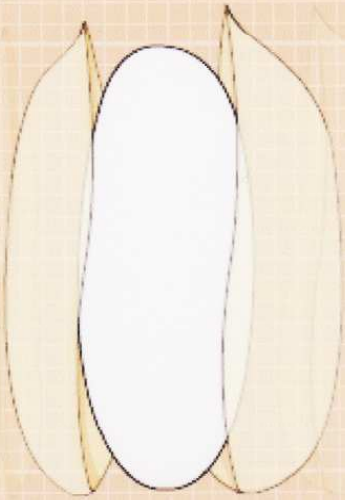
Table II Rice Self-sufficiency levels by District and Region in 2004 and 2005

DISTRICT	TOTAL PRODUCTION OF RICE (MILLED) IN MT	TOTAL CONSUMPTION REQUIREMENT IN (MT)	SELF-SUFFICIENCY LEVEL (%)	TOTAL PRODUCTION RICE (MILLED) IN MT	TOTAL CONSUMPTION REQUIREMENT IN (MT	SELF-SUFFICIENCY LEVEL (%)
KAILAHUN	39,664	37,257	106	46,563	37,930	123
KENEMA	38,404	50,527	76	44,884	51,437	87
KONO	20,899	35,518	58	22,326	36,157	62
BOMBALI	22,751	42,225	53	25,300	42,985	59
KAMBIA	27,562	28,807	96	31,229	29,326	107
KOINADUGU	29,494	24,370	121	34,793	24,809	140
PORT LOKO	32,069	47,323	69	35,242	48,175	73
TONKOLILI	22,655	35,972	63	29,556	36,620	81
BO	18,868	49,184	38	22,883	50,069	46
BONTHE	3,099	14,543	21	6,521	14,805	44
MOYMABA	24,660	27,000	91	28,841	27,486	105
PUJEHUN	23,737	24,360	97	28,655	24,799	116
WESTERN AREA	3,417	98,896	04	4,286	99,885	4
TOTAL	**307,168**	**516,183**	**60**	**361,114**	**525,474**	**69**

Source: www.daco-sl.org

What is rice made of?

The Anatomy of Rice

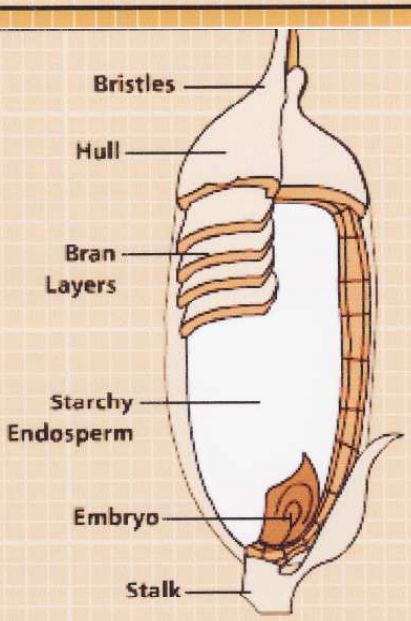


A kernel or grain of rice is a seed that contains an embryonic rice plant, stored food and a protective coat. Rice is a seed of a cereal (grass) plant used for food.

The HULL is the outer straw-like protective covering that surrounds the entire grain. It is inedible and must be removed before the grain can be eaten.

Under the hull is the GERM and the BRAN. The germ is the plant embryo from which a plant emerges. The bran layers include layers of fibrous tissue with protein, vitamins, minerals and oil.

more ▶



Beneath the bran layers is the ENDOSPERM. The white endosperm is made up of complex carbohydrates (starch), the energy source used by the germinating rice plant. The endosperm is the largest portion of the rice grain.

The bran, germ and endosperm are the edible portions of rice. In the milling process, the inedible hull is removed to make brown rice. If the rice is further milled to remove the bran and germ, the result is white rice.

◀ previous more ▶

Fun Facts!

▶ **Rice is a staple food for 2/3 of the world's population.**

Both brown and white rice are a healthful food. It's a great source of complex carbohydrates, the best source of fuel for your body. It is a good source of iron, niacin, thiamin and folic acid. And, it has NO cholesterol, No fat, and NO sodium.

Lesson Plan 09
Sheet 09–3f

Information sheet on Rice.

Lesson plan 09
Sheet 09–3g

Information sheet on rice

Rice is life.

64% of rice in Sierra Leone is produced in upland systems.
26% of rice is grows valley rice system .The Bo Area usually grows valley swamp systems.
Only a small portion , less than 5% is coastal mangrove swamp rice area has been developed permitting partial water control (irrigation).

The main planting season is April to July with harvesting between September and January. Upland rice is directly seeded (they don't transplant it) with other crops growing among the rice plants
In other areas they may transplant the rice. Land preparation is usually done manually with hand hoes. As a result the average yield is a low 1.3 tonnes/ha.

In 2004 domestic rice production had not grown (not enough rice was grown for the people living there) and Sierra Leone now meets only 70% of its total requirements. As the country recovers from civil war, growing enough rice for the country will depend on development of lowland rice.

In 2002 the country's president said "no Sierra Leonean should go to bed hungry by 2007."
A government organization started an inland valley swamp rice production. About 100 youth—men and women were involved in inland swamp rice production for members in the community. They cultivated (grew) about 25 bushels of inland valley swamp rice, then harvested the rice.
Members can use part of the harvested rice to eat, part as seed for growing the next season and part to sell..

Swamp rice is grown when it is wet and then as the ground dries out other vegetables can grow—such as cassava, cucumbers, sweet potatoes, okra, onions, and haida greens.
Swamp rice sells for 20,000 leones for a 50 kg. bag. Swamp rice has more taste than hill rice. (In Bo they prefer upland rice) Swamp rice is planted Feb. and harvested in Nov. If there is enough water some can be planted in Dec.

A new hybrid Chinese rice plant can be planted in Feb. and get a crop by May
Then more planted in June to harvest another crop in Aug.
And one planted in Sept. can be harvested in November.

Nutritional value; There are many types of rice– brown, white, long grain, jasmine, doongara, medium grain, Koshihikari and Wild rice.
White rice is less nutritious than brown rice.
Many breakfast cereals are products of rice.

Jollof rice is the national dish served in nearly all ceremonies across the country—at weddings, funerals and social gatherings. It is a common dish on restaurant menus.

Many different kinds of rice

Lesson Plan 09
Sheet 09–3h

Information sheet

More information from Internet websites

Look up more about rice growing in Sierra Leone on these websites:
You will see where we found our information.

At MacGregor SS Website—Production—you can use the following address:
http://www.macgregoss.qld.edu.au/qldwebchall/ricemdjt/produce.html

For a rice picture go to:
http://www.vegetables.pr.kr/vegetablesgallery/crop/images/rice_seed.jpg

For anatomy of rice pictures go to:
http://www.riceromp.com/animations/ricecomposition.cfm

For 2005 information on program activities of rice growing go to
http://www.awish.net/Africa/sierra_leone.htm

For information about the international year of rice—go to:
http://www.fao.org/rice2004/en/p18.htm