CSIR-FRI/PROMOTES THE CULTIVATION AND UTILIZATION OF MUSHROOMS IN GHANA

By

M. OBODAI

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A workshop on the Transfer and Commercialization of Agricultural Technologies was held on the 20 and 21 April, 1999 at the Conference Room of the Institute for Scientific and Technological Information (INSTI) of the CSIR, Accra. It was attended by 50 participants from various research institutions, technology transfer agencies and small scale enterprises.

The theme for the workshop was “Transfer and Commercialization of Agricultural Technologies: Prospects for Small and Micro Scale Enterprises Development in Ghana”.

In a welcome and opening address Prof J. C. Norman, Deputy Director-General (Agriculture, Forestry and Fisheries Sector) at the Council for Scientific and Industrial Research (CSIR) recalled the signing of a Memorandum of Understanding (MOU) in April, 1998 between the CSIR Ghana and the Semi-Arid Food Grain Research and Development Agency (SAFGRAD) of the Scientific, Technical and Research Commission of the Organization of African Unity (OAU/STRC) to promote the transfer and commercialization of technologies. The Deputy Director General explained that the workshop is one of the major outcomes of the MOU.

According to Prof Norman there is evidence in Ghana to show that we need to pay more attention to the development of the non-farm sector such as the establishment of small scale food processing industries in order to enhance the achievement of sustainable development of agriculture and food security in the country.

Presentation of Papers

In all a total of 17 papers were presented under three sub-themes. These sub-themes were


2. Building and Strengthening Linkages: The Crucial Needs of Technology Transfer and

3. Perspectives for Small and Micro Scale Enterprises Development in Ghana
Mushrooms belong to a group of unique organisms known as fungi. Basically they are fleshy fungi or macrofungus.

Mushrooms which have been used as food from time immemorial for their taste and flavour, have in recent times been found to be highly nutritious and medicinal. Traditionally in Ghana, mushrooms are picked in the wild in the forest areas during the rainy seasons. However, in recent times, through the introduction of new technologies mushrooms can be cultivated, making them available all year round. In this interview, Mrs Mary Obodai a Scientific Officer with the National Mushroom Project of the Food Research Institute (FRI), talks to the NARP Newsletter on the importance of mushrooms in our diets and the benefits to be derived from their cultivation.

NARS Newsletter (NN): What are mushrooms?

Mrs Mary Obodai (MA): Mushrooms belong to a group of unique organisms known as fungi. Basically they are fleshy fungi of macrofungus.

NN: What are the benefits that one derives from eating mushrooms?

MA: Mushrooms are nutritious. They are rich in proteins, minerals, vitamins and fibre but low in fat, calories and cholesterol. On dry weight basis mushrooms contain 19-40% of proteins and this is mainly made up of 8 to 9 of the essential amino acids required for good human health.

Mushrooms are a good source of vitamins esp. thiamine (vit.B1), riboflavin (vit.B2), niacin (vit.B12), biotin and ascorbic acid (vit.C). They are also a rich source of folic acid; larger than practically any other vegetable or meat except liver. In minerals, mushrooms contain calcium, phosphorus, potassium to mention a few. They are, however, low in sodium, which is good for those with heart ailments. They also contain practically all the minerals in the substrates they are grown.

Mushrooms are low in fat content (1-8% dry weight) and this fat is predominately made up of unsaturated fatty acids mainly linoleic acids.

When consumed regularly some mushrooms improve the immune system of the body and the quality of human health.

Most mushrooms are medicinal, having definite effect on blood pressure, cancers, tumors, and viruses.

NN: Apart from these benefits what are the financial benefits that one gets from the cultivation of mushrooms?

MA: Within 7-10 days after investing your money in mushroom cultivation, mushrooms will be ready for sale thus you'll start retrieving your money. We recommend that to start mushroom production on commercial basis, one needs to purchase at least 1000 compost bags from bags producers.

From these 1000 bags one can reap profit margin of 20-40% (ie. £210,000.00- £810,000.00). The breakdown of the costs and returns are as follows:

1. Yield of mushrooms/bag = 200-250g

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit cost (£)</th>
<th>Total cost (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compost bags</td>
<td>1000</td>
<td>500</td>
<td>500,000.00</td>
</tr>
<tr>
<td>Water</td>
<td>20,000</td>
<td></td>
<td>20,000.00</td>
</tr>
<tr>
<td>Labour</td>
<td>90,000</td>
<td></td>
<td>90,000.00</td>
</tr>
<tr>
<td>Polythene, etc</td>
<td>60,000</td>
<td></td>
<td>60,000.00</td>
</tr>
<tr>
<td>Depreciation of cropping house</td>
<td>30,000.00</td>
<td></td>
<td>30,000.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>790,000.00</strong></td>
</tr>
</tbody>
</table>

Returns Based on a cycle of 2 months

2. Total yield of mushrooms/1000 bags = 200-250kg.
3. Selling price of one Kg. of mushroom = £5.00-£6.00
4. Total selling price of 200-250 kg of mushroom = £1,000,000-£1,600,000.
5. Net profit:
   (i) £1,000,000.00-£790,000.00 = £270,000.00
   (ii) £1,600,000.00-£790,000.00 = £810,000.00

NN: When was your project started and what are some of its achievements?

MA: The National Mushroom Development Project was started in June 1990.

It has popularised the cultivation and consumption of mush-
rooms to over 5,000 people from all regions of Ghana
through organised workshops. It has been able to use
sawdust from *Triplochiton scleroxylon* (locally known as
‘wawa’) and agricultural wastes eg. oil palm bunch waste,
yam, cassava and peelings from other tubers to grow oyster
(Pleurotus spp.), oil palm (Volvariella spp.), monkey seat (Ganoderma lucidum) and wood ear (Auricularia spp.)
mushrooms.

Mushroom cultivation is now taught from Primary to Senior
Secondary School level as part of the academic curricular.

**NN:** How do you get your technologies transferred to your
clients?

**MA:** Through annual training programmes organised by
FRI. This takes the form of a 2-day introductory course and
a 2-week on-the-job intensive training.

**NN:** Do you have any constraints to your work?

**MA:** Yes. The major constraint is lack of funds and
equipment to increase spawn production to supply the
increasing number of mushroom producers. We also do

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**FOOD FOR THOUGHT**

*Facing the Information Age*

Keep your mind open to change. Welcome it. Court it. It is
only by examining and re-examining your opinions and ideas
that you can progress.

*Dale Carnegie*

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**IBSRAM PRODUCES
KIT FOR ANALYSIS OF
ON-FARM TRIALS**

The International Board for Soil Research Management’s (IBSRAM) Regional Office for Africa has come out with a
35 page Tool Kit for the Economic Analysis and Evaluation of On-Farm Trials. The Tool Kit presents a set of procedures for the economic analysis and evaluation of on-farm experiments by agricultural scientists and extension officers. The kit in its introduction states that to some extent there may be an
overlap between some tools, and that several of them are correlated as most economic indicators are based on the same variables
costs and prices, labour input etc.). It stresses that some tools are more adequate for smallholders (than for larger farms), for
perennial (than annual) crops, or for labour (than land constraint environments), and vice versa. It therefore recommends a careful choice
of the most appropriate methodologies.

The kit further indicates stress that though economic indicators are important, it becomes
more important when the farmer is integrated in the
market economy. It states that in a
subsistence-oriented economy, economic and particularly monetary indicators may be of little

significance where crops are cultivated for home consumption. It, therefore, recommends that it is
important to determine only those economic indicators that may influence adoption and
acceptability of innovations before a decision is
made on the mode of economic analysis, and its
value in comparison to the agronomic analysis and
farmers’ assessment. The authors’ caution that
those innovations which seem to be promising
from agronomic, ecological, and economic points of
view may have other shortcomings that only
farmers can identify. It cites examples such as the
taste of a certain cassava variety, the dusty texture
of rock phosphate or the odour of poultry manure.

The authors, Prof. E. Baum, Mrs L. A. Gylieke,
Dr. P. Drechel and Dr. G.K. Nurah, contend that
economic tools only allow us to contribute, but not
to substitute for judgement. Complimentary tools
for a participatory assessment of innovations or
technologies are part of kits prepared by others like
Hergwog et al (1998) or Bechstedt and that by

For readers with little experience in the
economic terminology the authors kept the text
simple and illustrated with different tools with
eamples from Africa and Asia. It also provided a
glossary of Terminology as well as exercises and examples of forms for on-farm data recording.

In Ghana, IBSRAM has its offices at the Kwame Nkrumah
University of Science and Technology, Kumasi. The offices can
be reached through Tel/Fax: 233-51-60206; E-mail:
ibram@ghana.com.