INDIA ON THE THRESHOLD OF A NON-GREEN REVOLUTION

R.N. VERMA
INTRODUCTION

• 7th LARGEST & 2nd MOST POPULOUS NATION, INDIA’S 70% PEOPLE LIVE ON FARMING
• ON 2.8% GLOBAL LAND, WORLD’S 16% HUMAN & OVER 8% OF LIVESTOCK LIVE HERE.
• GREEN REVOLUTION IN 1968 MADE INDIA WORLD’S 2nd BIGGEST PRODUCER OF WHEAT AND RICE.
• YET, 2nd GREEN REVOLUTION IS NEEDED FOR FOOD & NUTRITIONAL SECURITY AND POVERTY ALLEVIATION OF RURAL AND URBAN POORS AMONG RISING POPULATION.
INTRODUCTION (contd.)

- MUSHROOM FARMING BEING A MICROBIAL CONVERSION OF HEMICELLULULOSIC WASTES TO PRODUCE CHEAP PROTEINOUS FOOD WITH NO PRESSURE ON ARABLE LAND IS FIT TO BE DOVETAILED WITH TRADITIONAL FARMING & FULFIL INDIA’S NEED.

- THE TWO SYSTEMS TOGETHER MIGHT BE MORE SUSTAINABLE AND CAPABLE TO PROVIDE BOTH FOOD & NUTRITIONAL SECURITY AND BOOST BOTH RURAL AND SEMI-URBAN ECONOMY.
MUSHROOM GROWTH IN INDIA

• THOUGH A LATE STARTER, INDIA WITH HUGE AGRI-RESIDUES, CHEAP LABOR & VARIED AGRO-CLIMATE HAS MADE RAPID STRIDES BOTH IN TEMPERATE & TROPICAL MUSHROOMS.

• A STRONG R&D AND EXTENSION SUPPORT HAS TAKEN IT TO THE ENTIRE COUNTRY BOTH AT COTTAGE AND COMMERCIAL LEVELS. THE CORPORATE SECTOR LOOKS AFTER EXPORT.
MUSHROOM GROWTH IN INDIA-2

• RESEARCH BASE BUILT ON INDIGENOUS & EXTERNAL KNOWHOW HELPED TO PERFECT GROWING TECHNIQUES OF BUTTON MUSHROOM & RELEASE HYBRID & SSIs OF A. bisporus & STRAINS OF A. bitorququis.

• ALSO, VARIOUS SUBTROPICAL & TROPICAL MUSHROOMS INCLUDING A NEW ONE, CALOCYBE INDICA ARE GROWN ON COTTAGE, COOPERATIVE AND COMMERCIAL SCALE, WHILE OTHERS LIKE SHIITAKE & GANODERMA ARE IN PIPELINE.
COMMONLY GROWN Spp: A. BISPORUS, C. INDICA, P. OSTREATUS & V. VOLVACEA
Ganoderma lucidum & 2. Lentinula edodes, two potential species in pipeline.
MUSHROOM GROWTH IN INDIA-3

1. SEASONAL, COMMERCIAL & EOU FARMS: BUTTON MUSHROOM

2. SEASONAL & COMMERCIAL FARMS: OYSTER & MILKY MUSHROOMS

3. SEASONAL & OUTDOOR FARMING: PADDY STRAW MUSHROOM
BUTTON MUSHROOM

1. A SEASONAL FARM

2. A COMMERCIAL FARM
INSIDE VIEW OF EOU FARM

AHU FIXTURES

HEAVY FRUITING OF BUTTON
INDOOR CAGE CULTURE & OUTDOOR FARMING OF STRAW MUSHROOM
A MODEL GROWING ROOM FOR MILKY MUSHROOM
OYSTER MUSHROOM GROWING ON CYLINDRICAL BEDS
MUSHROOM MAP OF INDIA
R & D SUPPORT

A. PUBLIC SECTOR
H.P.: DMR, UNDPMP, YSPU H&F, HPKV, **PUNJAB**: PAU, P.U.,
HARYANA: HAU, HAIC,
NCR: IARI, IHE, IIT,
U.P.: BHU, CSAUAT, NDUAT, SVBPUAT, DHFP
BIHAR: RAU, ARI,
W.B.: BCKVV, CU, **ODISHA**: OUAT, OAIC, DH,
JHARKHAND: HARP, DIVYAYN, BAU, DRDASC, **A.P.**: DH, MPTC,
MP: JNKVV, PRADAN,
MS: MPAU, MACS, BAIF,
CHHATISGARH: IGKV, PRADAN
GOA: ICARC,
JK: SPL, RRL
KARNATAKA: IIHR
KERALA: KAU, TBGRI
TN: TNAU, COA
RAJASTHAN: MPRAU, HD, ARS
GUJRAT: MGSI
ASSAM: HD, RRL, AAU
NEH STATES: HD, S&T, ICARC
A&NI: CARI

B. SPAWN LABS IN PRIVATE SECTOR
Some Featured Spawn Companies in India, 2014.

1. Microfungi, Kolkota-700046.
2. Vee Nee Agro, 9, Green Park, Kolkota-700084.
3. PCR Industries, Cuddalore (TN) 608001.
5. Myco Groups, Manddaiyur Salai, Thirucharpalli (TN) 620020.
6. Udhayan Mushroom Farm, Aladhar Kovil Road, Madurai-625107 (TN).
8. ABRM Export, Thirumudi Nagar, Pondicherry, 605001.
10. Wonder Mushroom, Ponda Commerce Centre, Ponda, Goa-403105
Some Featured Spawn Companies in India, 2014 (CONTD.)

15. Jai Agro Industries, Lilashati Nagar, Gandhi Dham, Gujarat-370201.
17. Omark Enterprises, Maruti Nagar, Hyderabad-502032, A.P.
19. Katyayni Creation, Cd-314/1i P.O. Dhurva, Ranchi-834004 (Jharkhand).
22. RKS Enterprises, Tiruvananthapuram 695012 (Kerala).
23. Saraswati Spawn, Pehowa 136128 (Haryana).
# MUSHROOM MAP OF INDIA-2

## II. BUTTON MUSHROOM FARMS

<table>
<thead>
<tr>
<th>EOU FARMS</th>
<th>COMMERCIAL FARMS</th>
<th>SEASONAL FARMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PUNJAB, GUJARAT, H.P., U.K., A.P. &amp; M.S.</td>
<td>• M.S., H.P., KARNATAKA, T.N., PUNJAB, HARYANA, U.P. BIHAR</td>
<td>• HARYANA, PUNJAB, H.P., JK, NCR, UP, UK, NB, MS, TN, &amp; SOME NE STATES</td>
</tr>
<tr>
<td>Name of the Farm</td>
<td>Number of EOU or Domestic (approx.)</td>
<td>Source of Mushroom Production</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Agro-Dutch Foods, Lalru (Punjab)</td>
<td>50,000</td>
<td>EOU</td>
</tr>
<tr>
<td>Flex Foods, Dehradun (U.K.)</td>
<td>2,500</td>
<td>EOU</td>
</tr>
<tr>
<td>Inventa Foods, Hyderabad (A.P.)</td>
<td>4,000</td>
<td>EOU</td>
</tr>
<tr>
<td>Premier Mushroom Farms, Medchal A.P.</td>
<td>N.A.</td>
<td>EOU</td>
</tr>
<tr>
<td>Himalaya International, Idar Gujarat</td>
<td>10,000</td>
<td>EOU</td>
</tr>
<tr>
<td>---do--</td>
<td>--do-- Paonta Sahib (H.P.)</td>
<td>2,000</td>
</tr>
<tr>
<td>Cambium Biotech Pvt.Ltd., Nasik (M.S.)</td>
<td>3,000</td>
<td>EOU/Domestic</td>
</tr>
<tr>
<td>Kulkarni Farm Fresh, Belgaum, Karnataka</td>
<td>ca. 3,000</td>
<td>Domestic</td>
</tr>
<tr>
<td>Wakefield Mushrooms, Pune (M.S.)</td>
<td>2,000</td>
<td>Domestic</td>
</tr>
<tr>
<td>Balaji Mushrooms, Baramati (M.S.)</td>
<td>1,500</td>
<td>Domestic</td>
</tr>
<tr>
<td>INKAA Foods, Nalagarh (H.P.)</td>
<td>1,500</td>
<td>Domestic</td>
</tr>
<tr>
<td>S.R. Mushroom Industries, Allahabad (U.P.)</td>
<td>1,500</td>
<td>Domestic</td>
</tr>
<tr>
<td>Kodai’s West Hill Farms, Kodaikanal (T.N.)</td>
<td>N.A.</td>
<td>Domestic</td>
</tr>
<tr>
<td>Mushroom Cultivation, Chennai (T.N.)</td>
<td>N.A.</td>
<td>Domestic</td>
</tr>
<tr>
<td>Vikas Mushroom, Solan (H.P.)</td>
<td>N.A.</td>
<td>Domestic</td>
</tr>
<tr>
<td>Thakur Mushroom, Solan (H.P.)</td>
<td>N.A.</td>
<td>Domestic</td>
</tr>
<tr>
<td>Pankaj Internationals, Purnea (Bihar)</td>
<td>200</td>
<td>Domestic</td>
</tr>
<tr>
<td>Others, Haryana-3, U.P.-3, Punjab--5</td>
<td>16,500 approx.</td>
<td>Domestic</td>
</tr>
</tbody>
</table>

**Some EOU and Commercial Button Mushroom Farms in India.**
MUSHROOM MAP OF INDIA-3

- **OYSTER FARMS:**
  - SEASONAL FARMS ALL OVER COUNTRY;
  - COMMERCIAL ONLY IN GOA, U.K., CHHATISGARH, MS, TN & KARNATAKA;
  - CO-OPERATIVE FARMING IN NORTH-EAST, UK & CHHATISGARH.

- **MILKY MUSHROOM:**
  - COMMERCIAL FARMING IN AP & TN;
  - SEASONAL FARMS MORE IN SOUTH. PICKING UP FAST IN OTHER AREAS.

- **STRAW MUSHROOM:**
  - OUTDOOR-SEASONAL/COMMERCIAL FARMS IN ODISHA.
MUSHROOM BIO-DIVERSITY

• INDIA’S RICH GENETIC RESOURCES OF EDIBLE MUSHROOMS NEED CONSERVATION & UTILIZATION FOR SUSTAINED PRODUCTION.
• DMR’S GENE BANK PLAYING A LEAD ROLE IN THAT.
• IN 1999, NRCM RELEASED A. BISPORUS HYBRID NCH-102, & FEW SSIs. A FEW MORE ARE IN PIPE-LINE. SOME WILD SPP LIKELY TO BE DOMESTICATED SOON.
• PROTECTIVE HARVESTING, PROCESSING & PACKAGING OF PRIZE WILD MUSHROOMS ONLY, FOR EXPORT.
Wild Collections

LENTINULA EDODES & L. LATERITIA COLLECTED FROM KOHIMA

MORCHELLA CONICA IN FOREST
Wild Collections

Gomphus Floccosus, a delicacy from NEH region

Cantharellus Cibarius, a prize mushroom from Meghalaya
Wild Mushrooms
Spp in pipeline
Cultivated mushroom