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# Evaluation of Course Content of Mushroom Cultivation Technology Training Programme for Farmers

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**ABSTRACT**

The study was conducted to evaluate the course contents of the National Training Course on Mushroom Production Technology for farmers, farm women and unemployed youths with a view to make improvement in the training programme. The selected trainees were given one week training on cultivation technology of various types of mushrooms. The subject matter taught during the training was evaluated at the end. The results reveal that majority of the lectures (72.58%) and practicals (67.74%) were of high level usefulness and the rest were of medium level usefulness. None of the lecture belonged to low level of usefulness.

Training is essential to an individual to pace with the changes and challenges occurring due to advancement in technology over a period of time. Training makes an individual proficient in his job by providing an opportunity to acquire new skills and knowledge. According to Paul et al. (1989) training refers to the process of developing or augmenting knowledge, skills and attitudes in the person to be applied to the performance of his or her specific work situation.

Whenever an individual wants to shift his/her profession or intends to adopt new advance technology, then he needs to be trained in that new profession or advance technology. Mushroom being a quite new non-traditional indoor vegetable crop, its cultivation technique is unique and entirely different from traditional vegetable crops, and can only be taken up by an individual after proper training. Hence, training is an integral part of mushroom cultivation.

Among the several factors contributing towards progress of mushroom cultivation enterprise, the quality of training elements viz; the trainer's capability, training methods, use of A.V. aids, facilities at the training centre, course contents, supporting training material and the trainees is also very crucial.

The general objective of all the training programmes is "to change knowledge, skill and attitude of trainees. The changes in these attributes upto a great extent are contributed by what is taught (the course contents). According to a teaching learning principle, learning takes place very fast and have a long lasting effect when the subject (the course content) is based on learner's needs. In other words for a useful training programme the course contents should be in line of the trainee's training needs.

The evaluation of course contents of training programme is very much essential to have a watch on training needs of the trainees as the training needs changes with the development in the society. The National Research Centre for Mushroom, Solan, has been organising training programmes on mushroom cultivation for the farmers since 1995. During the last six years, the course content of this training programme has been changed a little bit based on coordinator's perception, but the systematic evaluation of the course content has not been conducted so far. Hence, the present study was conducted to evaluate the course content of the National Training Course on Mushroom Production Technology for marginal and small farmers, farm women and unemployed youths held at the National Research Centre for Mushroom, Solan (H.P.).

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## METHODOLOGY

This training programme was designed to cater the training needs of the trainees from all over the country. Keeping in mind the diversified climate of the country, six types of mushroom namely, white button mushroom (*Agaricus bisporus*), summer white button mushroom (*A.bitorquis*), oyster mushroom (*Pleurotus* spp.), paddy straw mushroom (*Volvariella spp.),* black ear mushroom (*Auricularia* spp.) and milky white mushroom (*Calocybe indica*) were included in the training. The participants of the training programme were from 13 states of India. A total number of 71 farmers, farm women and unemployed youths were selected randomly from 13 states on first come first serve basis over a period of one year .The maximum trainees were from Himachal Pradesh (39), followed by Rajasthan (9), Haryana (5), Uttar Pradesh (4), Madhya Pradesh (3), Punjab (2), Gujarat (2), Bihar (2), Maharashtra (1), Uttaranchal (1), J&K (1), Chhattisgarh (1) and West Bengal (1). The southern part of the country was unrepresented because of the Hindi medium of instruction.

A total number of 62 participants were considered for the present study as remaining trainees were unable to respond properly. These selected trainees were given one week training on mushrooms cultivation through lectures and practicals. On closing of the training programme, trainees' opinion on usefulness of 20 lectures and 10 practicals taught/conducted during the training programmes were sought. The usefulness of each lecture and practical was measured on three point continuum as most useful, useful, least useful with respective scores as 3, 2 and 1. Trainees were asked to rate each lecture and practical in anyone category as per their perception.

To know the extent of usefulness of lectures and practicals, Cummulative Usefulness Index was calculated for each lecture and practical using following formula.

$$C.U.I. = Plu\ X_1 + Pu\ X_2 + Pmu\ X_3$$

Where as Plu, Pu and Pmu are percentages of trainees falling in least useful, useful and most useful categories, respectiely. This index was prepared on the basis of preference index developed by Saha et al. 1999. The cummulative usefulness Index score for each lecture and practical may range from 100 to 300. The low and high score of CUI indicates least and high usefulness respectively. On the basis of CUI score, lectures and practicals were given ranks as highest CUI value I" rank, second highest CUI value-IInd rank and so on.

In order to determine the overall usefulness of course contents, the score (response) of each respondent on 20 lectures and 10 practicals was added. On the basis of this cummulative score, a respondent may obtain a minimum score of 20 and maximum 60 for all the lectures. Similarly for all practicals, minimum and maximum scores will be 10 and 30, respectively. Further on the basis of score obtained, all the respondents were categorised into three level as low, medium and high levels of usefulness.

Besides the evaluation of course contents, suggestions were also invited from trainees to improve the course contents and training programme as a whole. The data were analysed with the help of frequency, percentage and ranks.

## RESULTS AND DISCUSSION

### 1. Extent of usefulness of lectures and practicals as perceived by trainees

The usefulness of 20 lectures and 10 practicals was measured on three point continuum and the data obtained were analysed using statistical devices like frequency, percentage and ranks. The results are presented in Table-1 & 2.

The data depicted in table 1 reveal that majority of the lectures delivered during the training were perceived as very useful. The usefulness index score based rank value describes place of each lecture in terms of usefulness. The CUI scores of eighteen lectures out of twenty, range above 200 which indicate that these lectures are very useful. The rest two lectures whose CUI score is somewhat below 200 or at margin are useful only. None of the lecture was found least useful. The lectures viz, importance of mushroom cultivation in India, compost preparation for white button mushroom using short method, insect, pest and nematodes of mushrooms and their management as well as round the year seasonal cultivation of mushrooms, post harvest handling, and management of diseases of mushrooms were ranked $I^{st}$, $II^{nd}$, $III^{rd}$ and $V^{th}$ ,respectively indicating that these lectures were highly useful. Other most useful lectures ranked $VII^{th}$, $VIII^{th}$, $IX^{th}$, $X^{th}$, $Xl^{th}$, $XII^{th}$, $XIII^{th}$, $XIV^{th}$, $XV^{th}$, $XVI^{th}$, $XVII^{th}$ and $XVIII^{th}$ are preparation of spawn, cultivation of *Pleurotus spp*., crop management practices for white button mushbroom, mushroom farm design suiting to Indian conditions, compost preparation by long method, annual calender for seasonal cultivation of dhingri mushroom, characteristics of different varieties, economics of white button mushroom cultivation, use of spent compost, application of hormones/biofertilizers,

economics of oyster mushroom cultivation, and cultivation package of Summar white button mushroom, respectively.

The lectures on cultivation technology of paddy straw mushroom and cultivation technology of speciality mushrooms were found useful with 20th and 19th ranks, respectively.

**Table 1. Perceived usefulness of lectures delivered during farmers training**

| Sl. No. | Lectures delivered | Very useful | Useful | Least useful | CUI value | Ranks |
|---|---|---|---|---|---|---|
| 1. | Importance of mushroom cultivation in India | 80.65 (50) | 17.75 (11) | 1.60(1) | 279.05 | I |
| 2. | Preparation of spawn, its storage and transportation | 72.58 (45) | 17.75 (11) | 9.67 (6) | 262.91 | VII |
| 3. | Compost preparation for white button mushroom by long method | 61.29 (38) | 27.42 (17) | 11.29 (7) | 250.00 | XI |
| 4. | Compost preparation for white button mushroom by short method | 79.00 (49) | 12.94 (8) | 8.06 (5) | 270.86 | II |
| 5. | Mushroom farm design suiting to Indian conditions | 62.90 (39) | 32.26 (20) | 4.84 (3) | 258.06 | X |
| 6. | Crop management and improved practices for white button mushroom cultivation | 64.52 (40) | 30.64 (19) | 4.84 (3) | 259.68 | IX |
| 7. | Cultivation package of summer white button mushroom | 38.71 (24) | 38.71 (24) | 22.58 (14) | 216.13 | XVIII |
| 8. | Cultivation technology of *Pleurotus* spp. | 62.90 (39) | 35.48 (22) | 1.60 (1) | 261.26 | VIII |
| 9. | Economic of white button mushroom cultivation | 50.00 (31) | 40.32 (25) | 9.67 (6) | 240.31 | XIV |
| 10. | Economics of oyster mushroom cultivation | 37.10 (23) | 51.61 (32) | 11.29 (7) | 225.81 | XVII |
| 11. | Cultivation package of specialty mushrooms | 22.58 (14) | 56.45 (35) | 20.97 (13) | 201.61 | XIX |
| 12. | Cultivation technology package of paddy straw mushroom | 22.58 (14) | 37.10 (23) | 40.32 (25) | 182.26 | XX |
| 13. | Diseases of mushroom and their management | 74.19 (46) | 17.75 (11) | 8.06 (5) | 266.13 | V |
| 14. | Insects, pests and nematodes of mushrooms and their management | 74.19 (46) | 20.97 (13) | 4.84 (3) | 269.35 | III |
| 15. | Post harvest handling and processing of mushroom | 72.58 (45) | 20.97 (13) | 6.45 (4) | 266.13 | V |
| 16. | Characteristics of different varieties/ strains of mushrooms | 53.23 (33) | 38.71 (24) | 8.06 (5) | 245.17 | XIII |
| 17. | Round the year seasonal cultivation of mushrooms | 72.58 (45) | 24.19 (15) | 3.23 (2) | 269.35 | III |
| 18. | Uses of spent compost for various purposes | 50.00 (31) | 38.71 (24) | 11.29 (7) | 238.71 | XV |
| 19. | Application of hormones and biofertilizers for yield enhancement | 38.71 (24) | 50.00 (31) | 11.29 (7) | 227.42 | XVI |
| 20. | Annual calendar for seasonal cultivation of Dhingri mushroom | 51.61 (32) | 43.55 (27) | 4.84 (3) | 246.77 | XII |

( ) figures in parenthesis indicate number.

**Table 2. Perceived usefulness of practicals conducted during farmers training**

| Sl. No. | Practicals | Very useful | Useful | Least useful | CUI value | Ranks |
|---|---|---|---|---|---|---|
| 1. | Identification of diseases, insects and pests of mushrooms | 82.25 (51) | 14.52 (9) | 3.23 (2) | 279.02 | I |
| 2. | Method of spawn production | 79.03 (49) | 17.74 (11) | 3.23 (2) | 275.80 | II |
| 3. | Visit of the centeres farm design | 69.35 (43) | 29.04 (18) | 1.61 (1) | 267.74 | III |
| 4. | Various methods of compost preparation for white button mushroom | 69.35 (43) | 25.81 (16) | 4.84 (3) | 264.51 | IV |
| 5. | Improved package of practices and crop management | 64.52 (40) | 30.64 (19) | 4.84 (3) | 259.68 | V |
| 6. | Methods of oyster mushroom cultivation | 59.68 (37) | 32.26 (20) | 8.06 (5) | 251.61 | VI |
| 7. | Post harvest handling and preservation of mushrooms | 56.46 (35) | 35.48 (22) | 8.06 (5) | 248.38 | VII |
| 8. | Farm visit of local mushroom units | 45.16 (28) | 40.35 (25) | 14.52 (9) | 230.64 | VIII |
| 9. | Method of paddy straw mushroom cultivation | 29.04 (18) | 37.09 (23) | 33.87 (21) | 195.17 | IX |
| 10. | Method of specialty mushroom cultivation | 25.81 (16) | 43.55 (27) | 30.64 (19) | 195.17 | IX |

* figures in parenthesis indicate number.

The data presented in Table 2 reveal that the practical exercise on identification of eases, insects and pests of mushrooms was highly useful and ranked Ist followed by method of spawn production (II), visit of the Centre's farm design (III), various methods of compost preparation (IV) and so on. The practicals on method of specialty mushroom cultivation and paddy straw mushroom cultivation were perceived useful with common rank IX as their CUI scores are below 200.

Table further reveal that the practicals on white button and oyster mushrooms cultivation were given utmost importance and vice versa in case of other uncommon mushrooms like paddy straw and specialty mushrooms.

**2. Overall usefulness of course content of farmer's training programme**

After knowing the usefulness of individual lecture and practical, it is essential to determine the overall usefulness of course contents with respect to lectures and practicals. For purpose, the over all score of each respondent for lectures and practicals was worked out and the results are presented in Table 3.

Table – 3 reveals that majority of the lectures (72.58%) belonged to high level of usefulness and the remaining 27.42 percent lectures were in medium level. It indicates that nearly 3/4 of the course contents were perceived as highly useful whereas rest 1/4 course contents were of medium usefulness.

**Table 3. Overall usefulness of farmers training course content with respect to:**

| | Lectures | | | Practicals | | |
|---|---|---|---|---|---|---|
| Category | Range | Frequency | Percentage | Range | Frequency | Percentage |
| Low level | 20-32 | 00 | 00.00 | 10-16 | 01 | 01.61 |
| Medium level | 33-46 | 17 | 27.42 | 17-28 | 19 | 30.65 |
| High level | 47-60 | 45 | 72.58 | 24-30 | 42 | 67.74 |

Data presented in table-3 show that practical course content was not much different from the theoretical one as far as trend of usefulness is concerned. Majority of the practicals (67.74%) were found highly useful, while only 30.65 percent practicals were of medium level of usefulness.

3. **Suggestions for improving the course contents and training programme**

Apart from evaluation of course contents, the suggestions were also invited to make improvement in the course contents and training programme. On this aspect, only 58 trainees responded and a total number of 19 suggestions were given by them. Out of 19, only 11 suggestions were supported by more than one trainee.

The data presented in table 4 reveal that increase in number of practicals was most important suggestion endorsed by 39.65 per cent trainees and ranked first. Increase in duration of training programme was the second most important suggestion with II$^{nd}$ rank. The third important suggestion was medium of instruction in Hindi. The suggestion was taken consideration for future training work.

**Table-4: Suggestions for improving the course contents and training programme.**

| Sl.No. | Suggestion | No. | Percentage | Rank |
|---|---|---|---|---|
| 1. | Provide training notes in starting of the programme | 2 | 3.45 | XI |
| 2. | Mixed medium of teaching (Hindi & English) | 4 | 6.89 | VIII |
| 3. | Teaching in Hindi | 15 | 25.86 | III |
| 4. | Greater emphasis on low cost farm design suitable for small scale production | 9 | 15.52 | V |
| 5. | Increase in training duration | 19 | 32.76 | II |
| 6. | Small and homogenous batch | 5 | 8.62 | VI |
| 7. | Practicals by trainee's own hand | 10 | 17.24 | IV |
| 8. | More emphasis on disease and insects aspects | 5 | 8.62 | VI |
| 9. | More number of practicals | 23 | 39.65 | I |
| 10. | Practical class immediately after lecture class | 3 | 5.17 | IX |
| 11. | Emphasis on Practical knowledge of mushroom . cultivation instead of bookish one | 3 | 5.17 | IX |

## CONCLUSION

All the lectures and practicals taught during the training were perceived as very useful and useful. None of the lecture and practical was found useless except low importance to few lectures and practicals on paddy straw and specialty mushrooms. On the basis of these findings it may be concluded that the course content of training programme is very much meaningful and as per the requirements of the trainees. However, there are always chances of improvement due to technological advancement.

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