JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

ENTREPRENEURSHIP OPPORTUNITIES FOR WOMEN IN PLANT-BASED SKILLS

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ABSTRACT

Plant-based skills give women a sustainable, low-investment route into enterprise that rests on local culture and tradition, especially in agricultural regions such as Kashmir. This study looks at four such enterprises: mushroom cultivation, wickerwork, vermi-composting and aromatic plant products. Each needs little land and capital, a short period of training and raw material that is already close at hand, including crop residue, willow withies, kitchen waste and medicinal and aromatic plants. The study draws on five recent research articles, together with case examples and field experience from India and Kashmir. Its results show that these enterprises bring in income and also strengthen women's personal autonomy, voice in family decisions, leadership, self-confidence and standing in the community. Mushroom cultivation gives a first return within six to eight weeks. Wickerwork joins a heritage craft to modern markets. Vermi-composting turns waste into earnings, and aromatic plants lead to branded goods such as essential oils, soaps, green teas and balms. Reported gains range from two to three times in price through branding alone to about ten times in income when aromatic crops are processed rather than sold raw. The study concludes that training, self-help groups, Krishi Vigyan Kendras (KVKs) and reliable market links can make plant-based enterprise a strong instrument for women's economic empowerment, environmental sustainability and the preservation of indigenous knowledge in Jammu & Kashmir.

Keywords: women entrepreneurship, plant-based skills, mushroom, wickerwork, vermi-composting, aromatic plants, Kashmir, empowerment.

1. Introduction

Women make up nearly half of India's population and carry much of the load in farming, running the household and passing down traditional knowledge. Even so, a large share of women, particularly in rural and semi-urban areas, remain economically dependent, under-employed and shut out of formal markets. UNDP

figures quoted by Dey et al. (2020) show how lopsided the picture is: women do about 67% of the world's total work but receive only about 10% of global income (Figure 1). Closing that gap calls for entrepreneurship models that women can reach, afford and fit within their social circumstances.

Plant-based enterprise is one model that meets these conditions. Gurao (2025) points out that mushroom cultivation, herbal dye making, organic farming, compost making and herbal products such as rose water, aloe vera juice and herbal teas can all be taken up by women, because they need very little capital, no formal degree and only limited land.

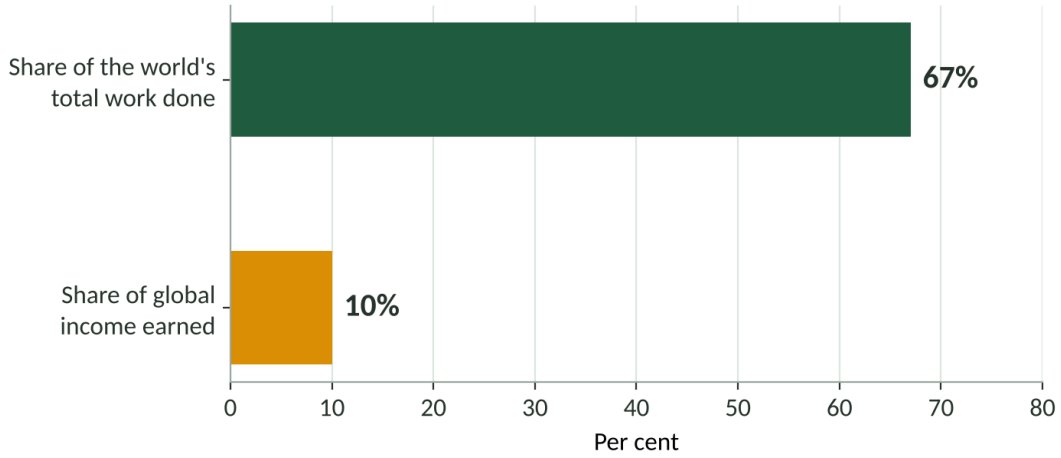


Figure 1. Women's share of the world's work compared with their share of global income (UNDP figures as cited in Dey et al., 2020).

Women in Jammu & Kashmir already hold a good deal of plant knowledge. They grow vegetables, collect medicinal herbs, weave willow wicker, make the Kangri and prepare herbal remedies at home. Most of this skill has never been turned into income. Plant-based enterprise offers a way to do that without upsetting cultural norms, since much of the work can be done at home or in small community groups.

Four plant-based skills stand out for their potential:

- **Mushroom cultivation.** A small-input, high-return venture. It uses paddy straw and other farm waste as substrate, needs only a small dark room and gives a crop in under a month. The literature reports that, among rural enterprises, mushroom entrepreneurs show the highest empowerment on both social and agro-economic measures. Dey et al. (2020) describe it as a low-cost, small-scale unit that earns from the sale of compost, spawn and fresh mushroom.
- **Wickerwork.** Kashmir's best-known forest-based cottage industry. The Shaakhsaazi communities of Pulwama, Ganderbal, Shallabugh, Anantnag, Bandipora and Charari Shareef have woven for generations, using slender twigs of willow, Parrotia, *Hedysarum cachmerianum* and *Hibiscus syriacus*. With design input, the Kangri and the basket can become handbags, lampshades and home décor that sell at far better prices (Rather et al., 2017).
- **Vermi-composting.** An eco-friendly technology in which the earthworm *Eisenia fetida* converts kitchen waste, cow dung and garden waste into nutrient-rich compost and vermiwash. Investment is low, it

creates work, cuts the use of chemical fertiliser and gives steady income, especially in cluster-based SHG models. Katke and Dhurve (2023) report that urban women, once trained, turned garden and kitchen waste into 5.57 quintal of compost.

- **Aromatic plant products.** Lavender, rose, rosemary, oregano, artemisia and mint suit Kashmir's climate well. With support from the Aroma Mission and CSIR-IIIM, women can move beyond selling raw flowers to making essential oils, rose water, soaps, balms, green teas and herbal cosmetics, which is reported to raise income about ten times.

Ritu et al. also found that after capacity building in medicinal and aromatic plants, many women reported high creativity (57.5%) and self-confidence (53.5%), along with a clear gain in knowledge across all aspects of the enterprise.

Objectives

(i) Examines the four enterprises above and compares their scope, investment, training needs and market potential;

(ii) Brings together the empowerment and economic outcomes reported in the literature; and

(iii) Proposes a practical model for promoting plant-based entrepreneurship among women through colleges, SHGs and rural communities.

2. Materials and Methods

The study is a structured review. Five recent research articles were selected, covering mushroom production, vermi-composting, traditional wickerwork, medicinal and aromatic plant enterprise, and women's entrepreneurship in plant sciences (Table 1). The findings of each were read for the same set of questions: what resources the enterprise needs, how long training takes, what income or empowerment outcome was reported, and what support women require. Field observations from Kashmir, including success stories of women artisans and trainees, were used to put these findings in a local context.

Results were then compared across the four enterprises on six practical parameters: start-up capital, land requirement, training time, time to first income, availability of local raw material and potential for value addition. Because this is a review, the figures quoted are those reported by the original authors; no new survey data were collected.

3. Results

3.1 Studies reviewed

Table 1 lists the five studies and what each contributes. Together they cover all four enterprises and include one large field sample of 200 women from four villages in Haryana.

Table 1. Summary of the studies reviewed.

Study	Enterprise / theme	Main finding used in this study
Gurao (2025)	Entrepreneurship in plant sciences	Mushroom, herbal dye, organic farming, compost, rose water, aloe vera juice and hair oil are suitable for women: low capital, no formal degree, limited land.
Dey, Patel & Rashid (2020)	Small-scale mushroom unit	Minimum input and maximum output; income from spawn, fresh mushroom and value-added items such as pickles and dried mushroom.
Katke & Dhurve (2023)	Vermi-composting	Trained urban women turned kitchen and garden waste into 5.57 quintal of compost sold at Rs 25, reduced landfill waste and earned an income.
Rather et al. (2017)	Wickerwork, Shaakhsaazi communities	Documents wicker species, processing, weaving methods and gender division of labour; shows the craft's livelihood role in Pulwama.
Ritu, Yadav & Kaushik	Medicinal and aromatic plants, rural Haryana	In a sample of 200 women from four villages, high creativity (57.5%), high self-confidence (53.5%) and significant knowledge gain.

Source: compiled from the studies cited.

3.2 Profile of the four enterprises

Table 2 sets the enterprises side by side. All four can be started at home or in a small group, all use materials found locally, and all lead to products that can be sold at a higher price once they are processed, packed or designed well.

Table 2. Profile of the four plant-based enterprises.

Feature	Mushroom cultivation	Wickerwork	Vermi-composting	Aromatic plant products
Raw material	Paddy straw, farm waste	Willow, Parrotia, Hedysarum, Hibiscus twigs	Kitchen waste, cow dung, garden waste	Lavender, rose, rosemary, oregano, artemisia, mint
Space needed	Small dark room	Home or courtyard	Small corner or shed	Kitchen garden or small plot
Training	Short course of a few days	Existing skill; design and finishing training	Short course of a few days	Short course on cultivation, processing and packaging
First return	Crop in under a month; 6 to 8 weeks for the full cycle	Depends on product and orders	After one composting cycle	After crop establishment and processing
Main products	Fresh and dried mushroom, powder, cookies, pickles, spawn, compost	Kangri, baskets, handbags, lampshades, décor	Vermicompost, vermiwash, earthworms	Essential oils, rose water, soaps, balms, green teas, cosmetics
Main support	KVKs, NRLM, SHGs	Handicrafts Department, ODOP	KVKs, SHG clusters	Aroma Mission, CSIR-IIIM

Source: compiled by the author from the studies reviewed and from field experience.

3.3 Economic outcomes

The clearest economic gains reported come from adding value, not from raising output. Katke and Dhurve (2023) found that women who received training could convert their own garden and kitchen waste into 5.57 quintal of compost with very little investment, and sell it at Rs 25. For aromatic plants, moving from the sale of raw flowers to essential oils, soaps and balms is reported to raise income about ten times. Branding makes a similar difference: a clean label, a price tag, an expiry date, a phone number and a social media handle are said to lift the selling price two to three times, and modern design and attractive packaging on wicker and aromatic goods can lift it three to four times (Figure 2).

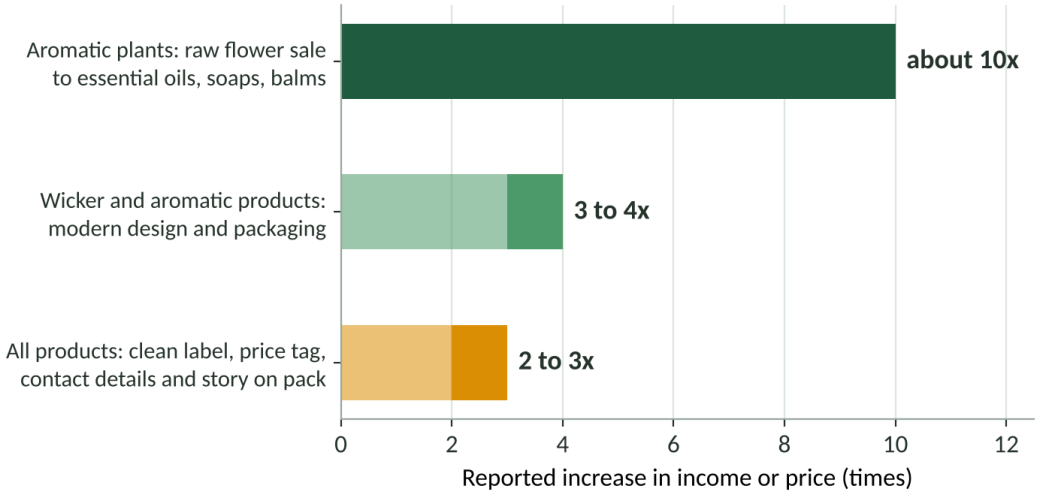


Figure 2. Increases in income or price reported when raw produce is processed, packed and branded.

3.4 Empowerment outcomes

The benefits were not limited to money. In the Haryana study, more than half of the 200 women trained in medicinal and aromatic plants reported high creativity (57.5%) and high self-confidence (53.5%) (Figure 3), along with a significant gain in knowledge. Across the wider literature, women in these enterprises report greater say in family decisions, leadership roles in the community and more recognition in society. Mushroom entrepreneurs, in particular, scored highest on empowerment among the rural enterprises compared (Table 3).

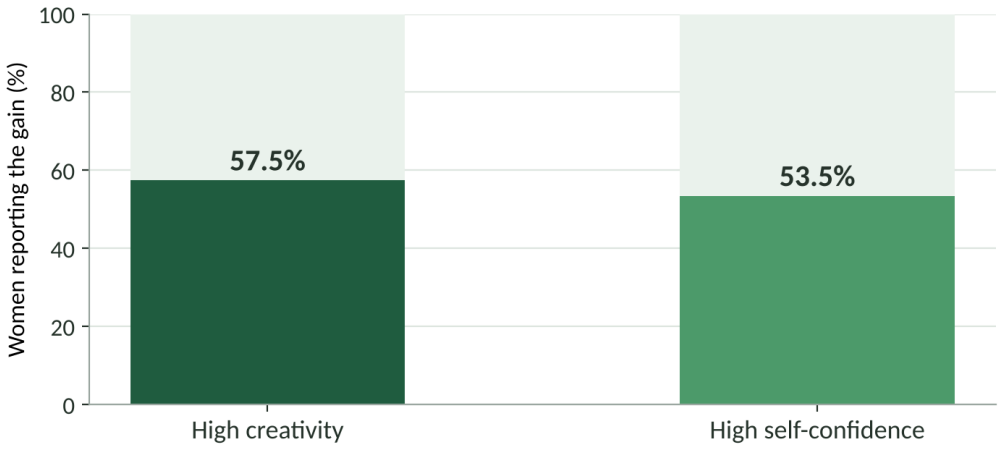


Figure 3. Outcomes reported by women after training in medicinal and aromatic plants (Ritu et al.; n = 200 women, four villages).

Table 3. Empowerment and livelihood outcomes reported for each enterprise.

Enterprise	Outcomes reported in the literature
Mushroom cultivation	Highest empowerment among rural enterprises on social and agro-economic dimensions; income from spawn, fresh mushroom and value-added products.
Wickerwork	Livelihood for whole communities across Pulwama, Ganderbal, Anantnag, Bandipora and other areas; skill passed down through generations; women's role within the craft's division of labour.
Vermi-composting	Employment on low investment; 5.57 quintal of compost produced by trained urban women; less landfill waste and less use of chemical fertiliser.
Aromatic plant products	High creativity (57.5%) and self-confidence (53.5%) among trained women; significant knowledge gain; income reported to rise about ten times with processing.

Source: compiled from the studies reviewed.

3.5 Comparative suitability

Figure 4 compares the enterprises on the six parameters described in Section 2. Mushroom cultivation and vermi-composting are the easiest to start: they need little capital and space and training takes only a few days. Wickerwork has the advantage of an existing skill base and almost no land requirement, so what it needs most is design input. Aromatic products ask for more at the start, in land, equipment and time, but they carry the highest potential for value addition.

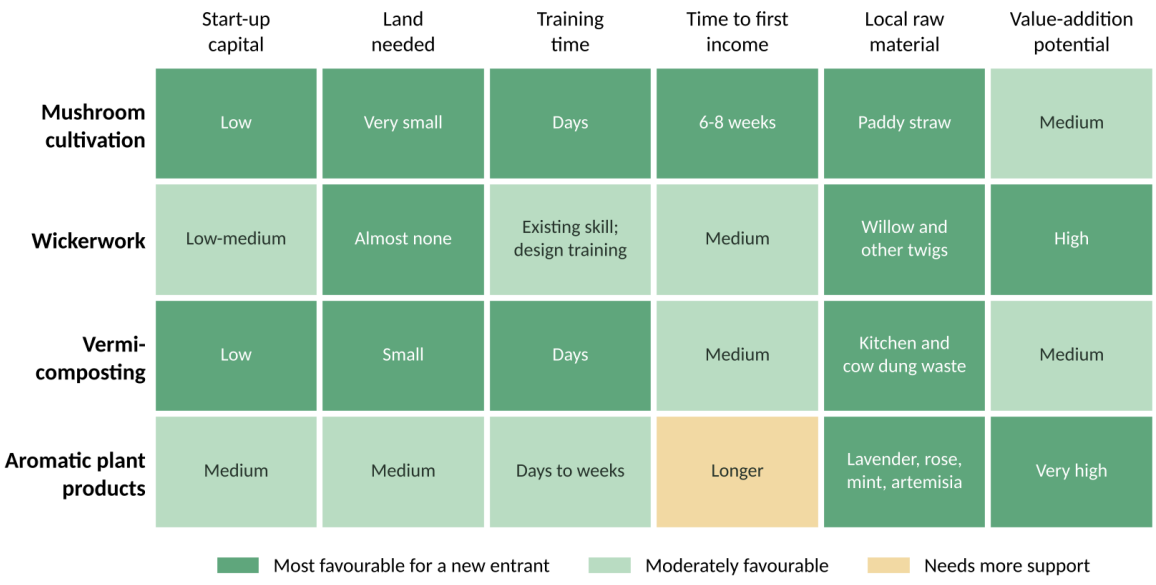


Figure 4. Comparative suitability of the four enterprises for a new woman entrepreneur.

Ratings are the author's indicative judgement, drawn from the studies reviewed and field experience. They are meant to guide choice of enterprise, not to serve as measured data.

4. Discussion

Four features run through all the enterprises studied and help explain why they work for women.

- **Low barrier to entry.** Little capital, little land, no formal degree and a few days to a few weeks of training. A woman can begin at home, in her courtyard or in a small SHG.
- **Use of local resources.** Paddy straw becomes mushroom, willow becomes wicker, kitchen waste becomes vermicompost, and lavender, rose and lemongrass become oils, soaps and balms.
- **Economic and social empowerment.** Women gain income, but also confidence, creativity, a stronger voice at home, leadership in the community and recognition in society.
- **Environmental sustainability.** Organic farming, recycling of waste, less chemical use, protection of biodiversity and revival of indigenous knowledge are built into all four.

These strengths link directly to the Sustainable Development Goals (Table 4). The enterprises also fit the culture of the Valley, since they keep women's work close to home and build on skills that families already respect.

Table 4. Contribution of plant-based enterprise to the Sustainable Development Goals.

SDG	Goal	How these enterprises contribute
SDG 1	No Poverty	Home-based income from small investments and local materials.
SDG 5	Gender Equality	Income, confidence and decision-making power for women.
SDG 8	Decent Work and Economic Growth	Self-employment and group enterprise, with the chance to become job-creators.
SDG 12	Responsible Consumption and Production	Recycling of farm and kitchen waste; less chemical fertiliser; use of renewable local plants.

Source: compiled by the author.

The evidence also has limits. The reviewed studies come from different regions, use different samples and do not all report the same measures, so the figures cannot be added up or compared directly. Only the Rather et al. (2017) study is based in Kashmir itself. Field studies in the Valley that track income, expenses and empowerment over several years would give a firmer base for planning.

5. Promote These Enterprises

Having the idea is the easy part. The harder task is helping women take it up and earn from it. The approach below has six linked steps (Figure 5), each described in turn.



Figure 5. Proposed model for promoting plant-based entrepreneurship among women.

5.1 Awareness

Telling women about an opportunity is not enough; they have to believe they can do it themselves. Success stories do this best, such as the mushroom entrepreneurs of Bihar and the women artisans of Ganderbal. Videos work better than lectures, and live demonstration stalls inspire people because buyers respond to what they can see and smell.

5.2 Training

The most practical route is to train the trainers. College students are trained first, and they in turn train women in rural and urban areas. Tie-ups with KVKs, CSIR-IIIM Srinagar and the Handicrafts Department can provide programmes of two to ten days on cultivation, packaging, marketing and branding. A certificate at the end gives trainees confidence and helps them when they apply for bank loans.

5.3 Making it easy to start

Starter kits on subsidy remove the first barrier. A vermicompost kit could hold ten bags with worms and green waste; a mushroom kit, spawn and ten compost bags; an aromatic kit, plants, soap moulds and oil bottles; and a wicker kit, bundles of withies and tools. Self-help groups of about ten women share cost, effort and market, and a common facility lets women who cannot afford individual premises work together.

5.4 Branding

Branding takes a product from the local market to premium markets. Good packaging with a clean label, price, expiry date, phone number and Instagram ID is reported to raise the price two to three times. A line on the

pack, such as "made by the women of Bandipora", helps it sell. Value-added items deserve particular attention: mushroom powder and cookies, wicker handbags and lampshades, herbal soaps, aromatic herbal teas and packed vermicompost.

5.5 Marketing

Offline selling can begin at college exhibitions, Sunday markets, tourist spots and handicraft fairs. Online, a page on Instagram or Facebook, a WhatsApp group, or listings on Amazon and Flipkart reach buyers more widely. Vermicompost sells well to institutions, colleges and nurseries; mushrooms and herbal products to hotels; and wicker goods to home décor shops. Together these channels give home-based units a wide market.

5.6 Government support

Many women do not know about the loans and subsidies available for plant-based ventures. The District Horticulture and Agriculture departments offer several options (Table 5). One point needs to be made clear at the start: subsidy is not paid up front. The entrepreneur first invests, builds the unit, and only then is the subsidy credited to her account. Awareness of this and some bridge finance would help many women begin. A good example is two young women from Tral who received 50% subsidy and training in mushroom cultivation under NRLM.

Table 5. Main schemes and agencies that support women in plant-based enterprise.

Scheme / agency	Meant for	What it offers
MUDRA (PMMY)	Small and micro enterprises	Loans for starting or expanding a small venture.
UMEED / NRLM	Women in self-help groups	Bank support at low interest; training and subsidy (50% subsidy in the Tral mushroom example).
PMEGP	New manufacturing and service units	Loans of up to Rs 50 lakh for manufacturing, with 35% subsidy for women.
Aroma Mission / CSIR-IIIM	Aromatic plant growers and processors	Technical support and training for essential oils and related products.
KVKs and Handicrafts Department	Trainees and artisans	Short training programmes, design support and market linkage.

Source: compiled from the reviewed literature.

6. Conclusion and Recommendations

Plant-based skills are more than traditional work for women; together they form a complete entrepreneurship ecosystem. This study finds that mushroom cultivation, wickerwork, vermi-composting and aromatic plant products are suitable, sustainable and scalable livelihood options for women, especially in Kashmir. All four ask for little capital, land and formal training, make use of materials found locally, strengthen women's confidence and standing, and protect the environment. They also contribute directly to SDGs 1, 5, 8 and 12.

The largest gains reported come from value addition. Processing aromatic plants, packaging and branding products well, and applying modern design to wicker move women from selling raw produce to selling finished products that earn two to ten times more. For these opportunities to reach their potential, three kinds of support are needed:

- **Training and handholding** through colleges, KVKs, CSIR-IIIM and the Handicrafts Department, with certificates that help women obtain credit.
- **Market linkage** through Instagram, exhibitions, local markets, Amazon and government schemes such as the Aroma Mission, ODOP, PMEGP and SHG-bank linkage.
- **Branding and design,** especially for wicker and aromatic products, where modern design and attractive packaging can raise prices three to four times.

Further work should follow groups of women in the Valley over several seasons and record their costs, income, savings and decision-making, so that the figures reviewed here can be tested locally.

When women are given skill, confidence and a market, plant-based entrepreneurship can move them from job-seekers to job-creators.

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