

Empowering Women in Agriculture: The Need for Ergonomically Designed Hand Tools

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Introduction

Women play a vital role in agriculture, particularly in developing countries where they make up a significant portion of the agricultural workforce. Even while women make a significant contribution, the agricultural tools available in the market are frequently made with male users in mind, which puts women at risk for pain, harm, and decreased productivity. The labour-intensive agriculture industry needs tools and equipment's that are not only efficient but also ergonomically designed to meet the various needs of the farmers. By designing hand tools specifically tailored for women, an ergonomic approach can close this disparity and enhance the well-being, security, and efficiency of women working in agriculture.

Ergonomic Challenges in Agriculture

One of the industries with the highest physical demands is agriculture, where workers are involved in repetitive activities viz, planting, weeding, harvesting and digging. When these tasks are carried out with poorly fitting instruments, musculoskeletal ailments, exhaustion, and long-term health problems may result. The ergonomic issues are much more acute for women, who frequently have smaller hands, less upper body power and a different body form than men. Conventional farming implements such as sickles, hoes and spades are frequently bigger in size, heavy or awkwardly shaped for women to handle with comfort.

Importance of Women-Specific Hand Tools in Agriculture

The development of hand tools specifically designed for women is essential, considering the substantial role that women play in agriculture. With these instruments, agricultural work is safer and more productive since they are made with consideration for the distinct physical characteristics of women. These ergonomically designed equipment's can lessen the physical strain on women, enabling them to operate more comfortably and precisely. According to the research studies, utilizing ergonomically designed instruments can lower the chance of accidents, boost output and enhance overall job satisfaction. These advantages can have a significant impact on agriculture, where labour is frequently repetitive and physically taxing. Farm women can work more productively and reduce time and effort required for activities while limiting risk by utilizing instruments that are appropriate for their bodies. For them to attain the same outcomes as their male coworkers, this may require women to take on abnormal postures, use excessive power, and put in more hours at work. The effects are not just physical but also financial since inefficient tool use can result in decreased output and income.

Key Features of Ergonomically Designed Women-Specific Tools in Agriculture

- 1. Reduced Weight and Size:** Tools designed for farm women are generally lighter and smaller, making them easier to handle and reducing the strain on the hands, wrists, and arms. This is particularly important in agriculture, where tools are often used for extended periods.
- 2. Adapted Handle Design:** The handles of women-specific tools are designed to fit smaller hands, with shapes that allow for a comfortable and secure grip. This reduces the need for excessive force and helps maintain proper posture during use.
- 3. Balance and Control:** Women-specific tools are often better balanced, allowing for easier control and reducing the risk of accidents. A well-balanced tool requires less effort to use, making tasks like digging or

cutting less physically demanding.

4. Materials and Durability: While lighter materials are used to reduce the weight of the tools, these materials must also be durable enough to withstand the rigors of agricultural work. High-quality, lightweight materials like aluminium or composite plastics are commonly used.

5. Customization and Adjustability: Some tools offer adjustable features, such as handle length or angle, allowing women to customize the tool to their needs. This flexibility is particularly useful in agriculture, where different tasks may require different tool configurations.

Examples of Women-Specific Hand Tools

1. Weeding Tools: Women who are doing 70% of major farm works like weeding are consequently increasing their workload causing significant physical, mental exhaustion and other health problems. Women do weed control using hand tools like sickle, khurpi which demands more labour and is full of drudgery with forceful exertions and sustained awkward postures they adopt due to which their physiological workload increases. Ergonomic weeding tools often have a shorter handle and a wider, curved blade to reduce bending and strain on the back.

Long Handle weeder



2. Planting Tools: Farm women perform the transplanting activity with their hands, in bending posture which causes pain in the lower back leading to ankylosing spondylitis. Planting tools with cushioned handles and adjustable features can help prevent hand and wrist pain.



Seed Placement Tube



Sapling Transplanter

3. Harvesting Tools: Manual method of harvesting is very lengthy, time-consuming which results in pain and discomfort in fingers, wrist and shoulder thus lead to drudgery by causing weakness, muscle atrophy, tingling in the hand and fingers leading to trigger finger or Carpel tunnel syndrome. Harvesting tools designed to minimize repetitive movements and reduce strain on the hands and arms can improve efficiency and comfort.



Ring Cutter



Harvest Bag

Impact on Health, Productivity, and Economic Empowerment

The introduction of hand tools designed specifically for women in agriculture can have a significant effect on production and health. Women are less likely to have work-related injuries—which are widespread in the agricultural industry—when they have tools that match their anthropometry. By doing this, they not only get better health but also spend less time and money on medical care. Women can work more productively and efficiently while using ergonomic products. Women can now perform tasks that formerly required a lot of effort faster and with less weariness, increasing their output and in turn, their income. Women frequently play a major role in providing for their families in rural areas, making economic empowerment especially crucial there.

Additionally, utilizing technologies designed specifically for women might support gender equality in the workplace. The agriculture industry has the potential to foster a more equitable and productive work environment by acknowledging and catering to the distinct requirements of women. Hand tools designed specifically for women in agriculture face obstacles in their widespread adoption, despite their obvious advantages. These include the price of research and development as well as the necessity of raising consumer and manufacturer awareness and educating them. Furthermore, aversion to change and conventional thinking can make it difficult for new tools to be adopted.

It is crucial for stakeholders—including governmental organizations, non-profits, and commercial businesses—to work together to promote the creation and application of tools tailored specifically for women in order to address these issues. Subsidies for the creation of new equipment, courses for female farmers, and public awareness campaigns stressing the advantages of ergonomically made implements can all help achieve this.

Conclusion

Developing women-specific, ergonomic hand tools is a crucial first step in enhancing the well-being, security and efficiency of agricultural women. By helping farm women to work more productively, these tools not only improve efficiency and lower the possibility of injury but also provide them more economic power. The implementation of these technologies will be essential in fostering a more diverse and equitable workplace for all employees as the agriculture industry develops.
