

# MANUFACTURING OF AGRICULTURE IMPLEMENTS

## 1. INTRODUCTION

Uttarakhand is a state distinguished by its scenic landscapes and rich agricultural heritage. While its beauty and spiritual significance draws tourist and pilgrims from around the world, the heart of Uttarakhand lies in its agriculture sector. The main crops grown in the region are wheat, paddy, maize, urad, gram, pea, mustard, soybean and groundnuts. Rice and wheat dominate the agriculture realm of the state. Considering that agriculture would continue to be the significant driver of its economy, the growth is foreseen in areas like contract farming, processing of agriculture products, cultivation of off-season vegetables and high density fruits and floriculture. To achieve this, efficient tools and implements should be deployed for intensification of agriculture activities and reduction of drudgery in the farm operations. Agriculture implements manufacturing emerges as a key in the global drive of sustainable agricultural practices ranging from boosting food production and economic growth to stimulating technical innovation and environmental sustainability. With many reasons to be attracted by this business, one is that it is beyond ordinary production.

## 2. PRODUCT & ITS APPLICATION

The application and usefulness of various agriculture implements like maize shellers, wheat threshers, seed drills and other hand tools are paramount in Uttarakhand's agriculture landscape owing to the state's unique terrain and agricultural characteristics. These implements play a crucial role in streamlining grain processing, improving crop quality and saving time and labour while performing threshing and seeding operations. Additionally, seed drills enable precise and efficient seeding practices leading to optimal use of resources. Hand tools on the other hand offer versatility in terrace farming and to all those small land holders who are into sustainable and self-reliant agricultural practices. In a state where agriculture is central to livelihoods and terrains are challenging, adaptation of agri-tools are indispensable. They are a one-time investment and their adoption contributes even to significant labor cost reductions.

## 3. DESIRED QUALIFICATION FOR PROMOTER

Anyone with problem-solving skills, adaptability, and passion for agriculture business can start this style of business.

## 4. INDUSTRY LOOKOUT AND TRENDS

Uttarakhand is seeing a rise in the use of mechanical farming equipment like many other hilly regions of India. Given Uttarakhand's topography of tiny and marginal landholdings, there is an increasing demand for smaller and more economical agricultural implements tailored to these land sizes. The varied topography of Uttarakhand, from the plains to the hilly regions, necessitates agricultural instruments that can adapt to different terrains. Seed drills are gaining popularity among the farmers as they are beginning to realize the benefits of precise seeding and reduced wastage.

## 5. MARKET POTENTIAL AND MARKETING ISSUES; IF ANY

Due to the state's agriculture-based economy and enlarged farming practices, the manufacturing of agricultural implements in Uttarakhand has enormous market potential. Agriculture Implements are primarily designed to assist farmers in farming activities. Smallholder farmers and large-scale agricultural enterprises alike can benefit from these kind of tools and equipments. Another market place is selling to agricultural cooperative or farmer groups who

often invest collectively in farming machinery and tools. Selling implements to government agriculture department can help promote adoption of modern agricultural practices. Other market places are agricultural machinery retailers, non-government organisations, agricultural extension services who educate and train farmers, etc.

While the market potential is significant, the market is susceptible to several marketing hurdles. This includes a lack of awareness and education among the farmers about the advantages of new agricultural implements. Many farmers are used to traditional methods of farming and may be unaware of the efficiency and output of the new technology. Furthermore, developing terrain-specific tools and promoting environmentally friendly and sustainable solutions can be challenging. Farmers also rely on dependable after-sales service and assistance, emphasizing the significance of developing a strong customer service infrastructure. Establishing an efficient distribution network is critical for effectively reaching the intended market target.

## **6. RAW MATERIAL REQUIREMENTS**

There will be requirements for raw materials like M.S Sheets, G.I. Sheets, Screws, Bolts, M.S Bright bars, Plumber, blocks, bearings, angle iron, channels, C.I. Castings, indirect materials such as Lubricants, paints, cutting tools, emery paper, etc. The raw material selection has to be based entirely on factors such as strength, durability, and the cost of tools a manufacturing unit undertakes. Additionally, raw materials should also be checked against meeting necessary standards for safety and performance.

## **7. MANUFACTURING PROCESS**

The technical know-how required to manufacture agricultural equipment is straightforward. However, personnel must be trained to operate the appropriate machines and equipment. The following is the production process for some of the implements.

1. **Maize Shellers and Wheat Thrashers:** This involves selection of appropriate materials like mild steel, cast iron and stainless steel for the body and components. Then these are cut into definite shapes based on measurements. The components are welded together with additional components such as blades, hoppers and handles. The mechanical parts such as bearings and pulleys are fabricated and assembled together. After painting and finishing, the machine goes for quality checks and then packaged for distribution.
2. **Seed Drills:** Similar to maize sheller and wheat thresher, seed drills require steel for frame. The frame is fabricated based on the design specifications. The seed hopper is constructed to hold and dispense seeds periodically and at intervals. Other mechanical components such as seed meters, furrow openers are integrated into the drill. All the components are assembled and test for operation. Followed by the painting and finishing, the drills are sent for product quality and checks.
3. **Hand Tools (Spades, Hoes, Sickles):** The major raw material required, namely steel sheets/alloy, is cut to the desired size, blanked, and then pressed to produce the proper shape. Heating and pressing treatment is used to cut the handle section. The shovel blade is heat-treated, which may be subcontracted, and the wooden handles are fixed. Manufacturing hand tools mainly involves steps such as cutting metals in angles, heating, bending and twisting, drilling tools for bolts and rivets, cutting sheets for shovels, hardening and tempering of shovel, welding, and fixing the shovel, fixing beam and handle, and anti-corrosive lacquer painting on metal parts etc.

## 8. MANPOWER REQUIREMENT

Sr. No	Particulars	No.	No of month in year	Wages/Salaries per month (Rs. In Lakhs)	Annual Expense (Rs. In Lakhs)
1	Production Manager	1	12	0.35	4.20
2	Skilled	7	12	0.20	16.80
3	Semi-skilled	4	12	0.15	7.20
4	Unskilled	3	12	0.11	3.96
5	Accountant	1	12	0.30	3.60
	<b>Sub Total</b>				<b>35.76</b>
6	Statutory Requirements( PPF, ESI, Graduuty etc.) at 25%				8.94
	<b>Total</b>				<b>44.70</b>

## 9. IMPLEMENTATION SCHEDULE

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	2
2	Construction (if applicable)	2.5
3	Procurement & installation of Plant & Machinery	2.5
4	Arrangement of Finance	1
5	Recruitment of required manpower	1
	Total time required (some activities shall run concurrently)	4

## 10. COST OF PROJECT

Sr. No.	Particulars	Annual Expenses (Rs. in lakhs)
1	Pre-operative and preliminary Exp.	0.53
3	Machinery Exp.	5.32
4	Equipment and Furniture Exp.	4.65
5	Working Capital	43.38
	<b>Total Project Cost</b>	<b>53.88</b>

## 11. MEANS OF FINANCE

Bank-term loans are assumed @ 60%

Sr. No.	Particulars	Annual Expenses (Rs. in lakhs)
1	Promoter's contribution	21.55
2	Bank Finance	32.33
	<b>Total</b>	<b>53.88</b>

## 12. LIST OF MACHINERY REQUIRED

### A. Machinery

Sr. No.	Particulars	Unit	Annual Expenses (Rs. in lakhs)	Annual Expenses (Rs. in lakhs)
1	Precision Center Lathe height of centers 240 mm, length of bed 2400 mm with 3 HP Motor	1	1.00	1.00
2	Universal Shaper Stroke 600 mm with speed change gears with motor etc	1	0.75	0.75
3	Center Lathe of height of center 150 mm length of bed 120 mm	1	0.65	0.65
4	Double Ended Bench Grinder wheel dia 200 mm	1	0.10	0.10
5	Pillar Drilling Machine 25 mm with 1 HP motor	1	0.20	0.20
6	Gas Welding Set welding torch, gas hose etc.	1	0.17	0.17
7	Arc Welding Set Transformer type 300 Amps with all accessories	1	0.16	0.16
8	Air Compressor with spray painting equipment 100 psi. with motor and other standard equipments	1	0.26	0.26
9	Sheet Folding Machine, Hand operated 1200 mm/Brake Press	1	0.30	0.30
10	Hand 'Fly' Press No.3	1	0.08	0.08
11	Bench Drilling Machine 12 mm	1	0.04	0.04
12	Hand Tools, measuring instruments minor equipments, such as flexible shaft grinder, portable drill etc	1	0.12	0.12
<b>Total Amount</b>				<b>3.82</b>
Tax, Transportation, Insurance etc.				1.00
Electrification Exp.				0.50
<b>Grand Total Amount</b>				<b>5.32</b>

### B. Furniture & Equipment

Sr. No	Particulars	Unit	Annual Expenses (Rs. in lakhs)	Annual Expenses (Rs. in lakhs)
1	Vehicle	3	0.80	2.40
2	Computers	2	0.50	1.00
3	Office table & chair	5	0.25	1.25
<b>Total</b>				<b>4.65</b>

Local manufacturers in India offer a wide range of machines and equipment. The entrepreneur can avail machines and required tools after thorough research and analysis. Below is the tentative list of machinery suppliers in India. Besides these, online platforms such as India Mart can also be explored for ordering machinery online.

1. Suparth Enterprise  
B-6, Kaushliya Enclave,  
Gangapur Road,  
Rudrapur- 263153,  
Udam Singh Nagar, Uttarakhand
2. Ronmas BV Enterprise  
16, Kailashpuri,  
Ballapur Road,  
Dehradun- 248001,  
Uttarakhand
3. Liberty Metal & Machines Private Limited  
124/19, Ranhola Road,  
Mundka, West Delhi - 110041,  
New Delhi, India
4. Laxmi Metal & Machines  
179, Near Tilyar Lake, Sector 29,  
Garhi Bohar, Rohtak - 124021,  
Haryana, India
5. HMT International Ltd.  
59, HMT Bhavan,  
Bellary Road– 560 032,  
Bangalore, India

### 13. LIST OF MACHINERY REQUIRED

#### A. Machinery

Sr. No.	Particulars	Annual Expenses (Rs. in lakhs)
A.	Sales realisation	260.00
B.	Cost of production	
i)	Raw materials	169.50
ii)	Utilities	11.48
iii)	Manpower Cost (Salaries/wages)	44.70
iv)	Administrative expenses	0.97
v)	Selling & distribution expenses	4.44
vii)	Rent	2.00
viii)	Interest	0.48
	<b>Total (B)</b>	<b>233.57</b>

	No. of Unit production	4000
	Cost of Goods Sold	0.06
	Gross profit/loss (A – B)	26.43
	Less: Depreciation	1.06
C.	PBIT	25.37
D	Income-tax	2.54
E	<b>Net profit/loss</b>	<b>22.83</b>
F.	Repayment (Annual)	0.88
G	Retained surplus (E-F )	21.96

The production capacity of the unit is estimated at 80%.

#### 14. BREAKEVEN ANALYSIS

(Rs. in lakhs)

Fixed cost	
Land & Building Rent	2.00
Depriciation	1.06
Interest	0.48
Manpower	13.41
<b>Total Fixed cost</b>	<b>16.95</b>
Variable cost	
Raw materials	169.50
Utilities	11.48
ManPower	31.29
Administrative expenses	0.97
Selling & distribution expenses	4.44
<b>Total Variable cost</b>	<b>217.68</b>
Variable cost per Unit	0.05
Revenue per unit	0.07
Margin per Unit	0.01
<b>Number of Unit for Break Even Point</b>	<b>1602</b>
Actual Production	4000

#### 15. STATUTORY/GOVERNMENT APPROVALS

To commence a business in manufacturing agriculture implements in Uttarakhand, there are several statutory and government approvals required to meet with the legal compliances. These approvals include;

1. Registration of business under relevant act such as MSME act as it offers several benefits in terms of subsidies, financial incentives and convergence benefits from other schemes.
2. Registration under the Factories Act will be required from the Directorate of Factories and Boilers. The department is responsible for regulating and overseeing industrial safety, health, and boiler-related matters in various states.
3. To get the product testing and certification done, BIS (Bureau of Indian Standards) certification is required. Various government departments and ministries have mandated the requirement of BIS certification to ensure safety, health, and environmental protection. This is mainly to certify the uniformity, consistency, and safety standards of the product.

4. Registration for applicable taxes i.e. Goods and Service Tax depending upon the type and turnover of the business is mandatory.

## 16. TRAINING CENTERS AND COURSES

There are few specialized Institutes that provide training and certification

1. Central Farm Machinery Training & Testing Institute

P.O. Tractor Nagar,  
Sehore, Budni-466445  
M.P., India

2. Junagadh Agricultural University

Motibag, Junagadh- 362001  
Gujarat, India

3. Institute for Industrial Development

Multi-Disciplinary Training Centre,  
Gandhi Darshan Rajghat-110002,  
New Delhi, India

Swayam portal (link: <https://swayam.gov.in/>) can also be accessed for enhanced learning on business commerce, accounting, production, marketing, and areas of entrepreneurship.

### Disclaimer

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.