In case of limited resources of irrigation and fertilizers and non-irrigated conditions, cultivation of barley is more beneficial than wheat. Following points should be taken care to get good yield in irrigated, non-irrigated, late sown and usher land.

Preparation of Field

Prepare the field by 2-3 plough by local plough or disc harrow.

Time of Sowing	
Non-irrigated Condition	From 20th October to 10th November in all zones
Irrigated Condition	Till 25th November
Delayed	Till second fortnight of December

Progressive Variety of Barley

Sculpted Six Stripe Species Plains

SN	**Variety**	**Date of Notification**	**Productivity (Qtl./ hectare)**	**Duration of Ripening**	**Remarks**
1	Jyoti(K. 572/10)	08.10.1974	25-28	120-125 (Delayed)	Irrigated condition, Smut and stripe disease resistant for delayed sowing. Suitable for plains.
2	Azad (K-125)	14.01.1982	28-32	110-115	Suitable for non-irrigated condition and usher land, feed and fodder, smut and stripe resistant and plain area.
3	K-141	29.05.1982	30-32	120-125	Suitable for non-irrigated condition and usher land, feed and fodder, blue smut and stripe resistant. Suitable for plain area.
4	Hritima (K-560)	15.05.1998	30-35	110-115	Suitable for non-irrigated condition, all disease resistant,

					Suitable for whole Uttar Pradesh
5	Priti (K-409)	02.02.2001	40-42	105-112	Suitable for irrigated condition, resistant to all critical diseases of barley, Suitable for whole Uttar Pradesh
6	Jagriti (K-287)	-	42-45	125-130	Smut and stripe resistant in irrigated condition. Suitable for plains of Uttar Pradesh.
7	NDB 1445 (Narendra Jao-7)	13.01.2013	30-35	125-128	Suitable for whole Uttar Pradesh and Usher land.
8	Lakhan (K-226)	24.07.1985	30-32	125-130	Suitable for non-irrigated condition, blue smut and stripe resistant. Suitable for plain area.
9	Manjula (K-329)	01.05.1997	28-30	110-115	Blue smut resistant for delayed sowing. Suitable for plains of Uttar Pradesh
10	RS-6	20.02.1970	25-30 (irrigated)	120-125	For irrigated, non-irrigated and delayed sowing.
		-	20-22 (non-irrigated)	110-115	Partial resistant for smut and stripe disease. Suitable for Bundel khand area
11	Narendra Jao-192 (NDB-209)	92 (E) 2.2.01	25-30 (irrigated)	110-115	Suitable for usher land, resistant to all critical diseases of barley.
12	Narendra Jao-2 (NDB-940)	92 (E) 2.2.01	40-45 (irrigated and timely sowing)	110-115	Suitable for irrigated and timely sowing, resistant to all critical diseases of barley
13			25-30	110-115	

	Narendra Jao-3 (NDB-1020)	937 (E) 4.9.02			Suitable for usher land, smut resistant.
14	RD-2552	03.04.2000	30-40	120-125	Suitable for saline land.
15	K. 603	02.02.2001	30-35	115-122	Suitable for non-irrigated condition, resistant to all diseases.
16	NDB-1173	एस.ओ. 12 (E) 4.2.05	35-45	115-120	Suitable for irrigated, non-irrigated problematic and usher land.

Peel Less Variety

Plain Area

1	(K.1149) Geetanjali	01.05.1997	25-27	95-100	Suitable for Non-Irrigated condition. Gerui, Smut, stripe and net bloch disease resistant. Suitable for whole Uttar Pradesh.
2	Narendra Jao 5 (NDB 943) (Upasana)	17-18/2008 SO (Fourth) 20.1.2009	35-45	115-100	Suitable for irrigated and timely sown. Foliar jhulsa, stripe disease, Gerui and net bloch. Satisfactory yield in problematic land.

Variety for Malt

	Variety	**Date of Notification**	**Productivity (Qtl./ hectare)**	**Duration of Ripening**	**Remarks**
Variety for Malt					
1	Pragati(K. 508)-6 striped	15.05.1998	35-40	105-110	Stripe, Smut and yellow gerui disease resistant.
2	Ritambhara(K. 551) 6 striped	15.05.1998	40-45	120-125	Suitable in irrigated condition for malt and beer. Resistant to Gerui, smut and helmenthisporium diseases.
3	DWR-28 (2 striped)	-	40-45	130-135	Suitable for irrigated area.
4	DL-88 (6 striped)	15.05.1998	40-42	120-125	Suitable for irrigated and

					delayed sowing condition, Suitable for whole Uttar Pradesh
5	Rekha (BCU 73) 2 striped	01.05.1997	40-42	120-125	Suitable for irrigated condition, resistant to all critical diseases. Suitable for whole Uttar Pradesh

Seed Quantity

Non-irrigated	100 kg/ha.
Irrigated	100 kg/ha.
Late sown	125 kg/ha.

Sowing Method

Sow the seeds 5-6 cm in furrows at a distance of 23 cm behind the plough. In non-irrigated condition, sow 6-8 cm deep so that sufficient moisture can be available for germination.

Fertilizer

It is better to use fertilizer on the basis of soil testing.

A. Non-Irrigated Area

Spread 40 kg/hectare nitrogen, 20 kg phosphate and 20 kg potash below seeds in the furrows. Use of funnel is beneficial for this.

B. In the stage of timely sowing in irrigated condition.

Spread 30 kg/hectare nitrogen, 30 kg phosphate and 20 kg potash below seeds in the furrows at the time of sowing followed by top dressing of 30 kg nitrogen at the time of first irrigation.20-30 kg/hectare sulphur should be used in light soil. For better yield, use 40 kg/hectare rot farm yard manure. 25% extra quantity of nitrogen should be used for malt variety.

C. In case of usher and late sowing

Spread 30 kg/hectare nitrogen and 20 kg phosphate below seeds in the furrows at the time of sowing followed by top dressing of 30 kg nitrogen after the time of first irrigation. Use 20-25 kg/hectare zinc sulphate in usher land.

Irrigation

Two Irrigation: Irrigate after 30-35 days at the time of tillering followed by second irrigation at milking stage. If only one time irrigation is available, do it at the time of tillering. Cultivation of barley for malt requires an additional

irrigation. In usher land, 3 irrigation-first at the time of tillering, second at the time of joint formation and third at the time of grain formation is required.

Crop Protection

(A) Critical Insects

Termite	As wheat
Weevil	As wheat
Mahu	As wheat or Thiomethazom 30% FS 3.50 ml.

Control Measures

- For termite control before sowing, treat the seed with chlorpyrifos 20% EC or thiomethozam 30% fs at the rate of 3ml. per kg seed.
- Mix 2.5 kg bio pesticides Beauvaria bassiana 1.5% with 60-75 kg/hectare farm yard manure, sprinkle light water on it and keep it in shade for 8-10 days. Mix it in the soil before sowing and at the time of last plough. This will control termite and soil borne insects.
- Use chlorpyrifos 20% EC at the rate of 2.5 liter per hectare with irrigation water for control of termite/weevil in standing crop.
- For control of Mahu insect, spray dimethoate 30% EC or methyl-o-dematon 255 EC at the rte of 1.0 liter per hectare or thiometon 25% EC 1liter dissolved in 750 liter water. Azadirechtin (Neem Oil) 0.1% EC at the rate of 2.5 liter per hectare can be used.

(B) Critical Disease

- **Aavrit Kandua(Powdery Mildew):**In this disease, black powder is formed in place of grains which is covered by a strong membrane. At the time of threshing, the cover ruptures and the black powder stick with the seeds.
- **Leaf Stripe disease:**In this disease, yellow stripes is formed in the ribs of the leaves which later turns into dark grey color on which large number of spores of fungus are formed.
- **Leaf Blight Disease:** Oval shaped, grey colored spot is formed on the leaves which later spread on the whole leaf.|
- **Anavrit Kandua:** As in wheat.
- **Gerui:** As in wheat.

Control Measure

1. Seed Treatment

- For control of Aavrit Kandua, Anavrit Kandua, Leaf stripe and Leaf Blight disease, sow the seeds after treatment of the seed with carbandism 50% wp or carbaxin 75% wp at the rate of 2.5 gm per kg seed.
- For control of Anavrit Kandua and other seed borne disease along with preliminary soil borne diseases, sow the seeds after treatment with carbaxin 37.5% +thiram 37.5% ds/ws at the rate of 3.0 gm per kg seed.

2. Soil Treatment

- For control of soil and seed borne diseases, mix the bio pesticides trichoderma biridi 1% wp or trichoderma harzanium 2% WP at the rate of 2.5 kg per hectare with rot farm yard manure, sprinkle water on it and keep in shade for 8-10 days. Mix it in the soil at the time of last plough before sowing. This will help in management of Kandua disease.

3. Foliar Treatment

- For control of Gerui and Leaf stripe and leaf blight disease, spray thiram 80% wp or mancozeb 75% wp or zineb 75% WP at the rate of 2 kg per hectare dissolved in 750 liter water.
- For control of Gerui, spray propiconazole 25% EC at the rate of 500 ml per hectare dissolved in approximately 750 liter water.

(C) Critical Weeds

- **Thin Leaf -** Gehusa and wild jai.
- **Wide Leaf-** Bathua, Santhi, Krishna neel, Hiran khuri, chatri-matri, Akra, forest carrot, gajri, pyaji, khartua, satyanaashi etc,.

Control Measures

For control of Gehusa and wild jai, spray recommended quantity of any one of the following weed herbicide chemicals dissolved in 500-600 liter of water per hectare by flat fan nozzle after 20-25 days of sowing. For sulphosulphurone quantity of water should be 300 liter.

- 1.25 kg per hectare isoproturan 75% WP.
- 3.3 gram (2.5 units) per hectare sulphosulphurone 75WP.
- 1 liter per hectare phinoxaprop-p-eythl 10% EC.
- 400 gram per hectare chlodinafop proparazil 15% WP.

For control of wide leaves weed such as Bathua, Santhi, Krishna neel, Hiran khuri, chatri-matri, Akra, forest carrot, gajri, pyaji, khartua, satyanaashi, spray recommended quantity of any one of the following weed herbicide chemicals dissolved in 500-600 liter of water per hectare by flat fan nozzle after 20-25 days of sowing:

- 2-4 D sodium salt 80% technical @ 625 gram per hectare.
- 2,4 D di-methyl amine salt 58% WSC @ 1.25 liter per hectare.
- Carfentrazon ethyl 40% DF @ 50 gram per hectare.
- Metsulphuron methyl 20% WP @ 20 gram per hectare.

For control of weeds both of narrow and wide leaves, spry recommended quantity of any of the following weed herbicide chemicals dissolved in approximately 500-600 liter water through flat fan nozzle:

- Pendimethylene 30% EC at the rate of 3.3 liter pr hectare within 3 days of sowing.
- 3.3 gram (2.5 units) per hectare sulphosulphurone 75WP after 20-25 days of sowing.
- 250 gm per hectare Metribuzin 70WP after 20-25 days of sowing.

(D) Rodents

Field rat, Soft furred field rat and field mouse.

Control Measures

As applied in wheat.

Harvesting and Storage

Do harvesting either in morning or evening. Reap the crop when the streaks are ripened and store after threshing. Method of storage has been described in the chapter “Cultivation of Wheat”.

Important Points

- Select the suitable variety and sow pure and certified seed as per climate.
- Use balanced fertilizer as per recommendation of soil testing.
- Recommended chemicals should be used in time for control of weeds..
- For control of disease and insect, use chemicals recommended for wheat.
- Irrigate at the time of tillering and milking stage as per availability.