

벼 수확동시 보리파종기 이용에 따른 보리생육특성 및 생력효과
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Growth Characteristics of Barley(*Hordeum vul.* L.) labor-saving effects by Using Barley seeder attached with Rice harvesting

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Objectives

To investigate the effects of barley seeder attached to rice harvest combine that could be using in barley seeding and harvesting simultaneously on barley growth characteristic and labor-saving efficiency.

Materials and Methods

Materials - Hinchalssalbori and Saessalbori (*Hordeum vulgare*)

Methods - Developed seeding system(barley seeding attached to combine: DSS) : 20th, Oct.; 26th, Oct.

Conventional system(broadcasted on high ridge: CS)
: 25th, Oct.; 26th, Oct.

Results and Discussion

By using this developed seeding system(Barley seeding attached to combine : DSS), barley seeding was 5 days earlier than the conventional system(CS), because of conducting seeding and rice harvesting simultaneously. Also, the damage caused by drought was decreased with covering the rice straw on barley seed after seeding in DSS. In barley growth by the DSS working, the number of spikes per m² was lower than CS does, but it made longer the culm length, more kernel numbers per spike and heavier 1,000 kernel weight than by CS working. This method resulted in about 58% labor-saving effect comparing to the CS. The cost to merge whole works from seeding to harvest of barley saved 9% than CS working. So the income was increased 16% more than that by CS.

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Table 1. Comparison of Seeding time, emergence, and heading date with two seeding method.

Year (Cultivar)	Seeding method	Seeding date	Emergence date	Heading date
'00/'01 (Hinchalssalbori)	CS(A) [†]	Oct. 25	Nov. 8	Apr. 30
	DSS(B) [‡]	Oct. 20	Oct. 27	Apr. 28
	Difference(B-A)	-5	-12	-2
'01/'02 (Saessalbori)	CS(A)	Oct. 26	Nov. 1	Apr. 23
	DSS(B)	Oct. 26	Nov. 2	Apr. 25
	Difference(B-A)	0	1	2

[†] CS : Conventional system(Broadcasted on high ridge),

[‡] DSS : Developed seeding system(Barley seeding attached to combine)

Table 2. Comparison of characteristics and yield of barley with two seeding method.

Year (Cultivar)	Seeding method	Culm length (cm)	No. of spikes/ m ²	Spike length (cm)	No. of kernels/s pike	1,000- kernel weight (g)	Yield (ton/ha)
'00/'01 (Hinchalssalbori)	CS	58	591	4.1	50	24.9	4.62
	DSS	66	543	4.1	52	25.7	4.99
	F-value	*	*	ns	*	*	ns
	SEM [†]	2.16	8.03	0.25	0.41	0.41	11.8
'01/'02 (Saessalbori)	CS	83	623	4.3	42	26.4	4.77
	DSS	88	527	5.3	59	29.0	4.99
	F-value	ns	**	*	*	**	ns
	SEM	1.63	5.10	0.18	2.27	0.22	40.0

* and ** : Significant at 5% and 1% level, respectively, and ns : no significant. [†] SEM Standard error of mean

Table 3. Effects of the new seeding method on labor-saving in comparison with the conventional seeding method.

Work step	CS(A)			DSS(B)		
	'00/'01	'01/'02	Mean	'00/'01	'01/'02	Mean
	----- min./10a -----					
Harvest(Rice)	30	20	25			
Rice straw burning	54 [†]	48	51	32	24	30
Seeding(Barley)	4	4	4			
Fertilization	6	4	5		4	
Soil covering (Drainage canal)	12	8 [‡]	10	12	8	10
Total	106	84	95	44	36	40
Index(B/A)	100	100	100	42	43	42

[†] : The three person's working time. [‡] : Soil covering attached to tractor (2 rows).