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Mungbean Harvest Losses

Trial ID: BD2019 **Location:** Edgeroi **Trial Year:** 2020
Investigator: Branko Duric

High levels of grain loss are common when harvesting mungbeans. Combined with high grain prices, harvest losses of more than \$100/ha can easily occur. Losses can occur at a number of points in the harvest process but this project was mainly focussed on those that occur at the front of the header rather than losses within the header 'processing'. The front of header losses may be due to pods falling off at harvest, pods shattering at harvest or plant and pod material feeding poorly into the elevator. In addition, yield losses due to low harvest height are common, particularly in undulating country or with short or lodged plants.

This project aimed to quantify the level of grain loss under commercial conditions and also the impact of management changes to reduce those losses. This trial evaluated the impact of air assist on grain losses from an AWS airbar mounted on a New Holland CR8.90.

Objective:	To evaluate the impact of header front adaptation on mungbean grain loss at harvest
Crop & Variety:	Mungbean cv. Jade AU
Planting Date:	20/01/2021
Row Spacing:	38 cm
Harvest Date:	26/04/2021
Headers:	New Holland CR8.90
Airbars:	AWS
Trial Design:	Randomised complete block with 3 replicates
Plot Size:	12 m x 40 m
Keywords:	Harvest losses, mungbean

This trial was planned to be conducted with 8 reps, to have sufficient degrees of freedom to provide good statistical confidence. Unfortunately, the header driver only harvested 3 reps using the airbar turned off. As a consequence, the degrees of freedom are very marginal.

Crop Name Crop Variety Description Assessment Date Assessment Unit Sample Area Evaluation Interval		Mungbean Jade AU			
		Pods on Stalks 27/04/2021 kg/ha 10 x 0.38m row	Grain on Ground 27/04/2021 kg/ha 10 x 0.38m row	Pods on Ground 27/04/2021 kg/ha 10 x 0.38m row	Total Grain Loss 27/04/2021 kg/ha 10 x 0.38m row
ARM Action Codes		1 DAH	1 DAH	1 DAH	1 DAH
AS					
Trt No.	Treatment				
1	Airbar - Off	0-	54-	100a	154a
2	Airbar - On	2-	41-	69b	114b
LSD P=.05		nsd	nsd	2.1	29.8
Treatment Prob.(F)		0.3455	0.1481	0.0002	0.0291

Means followed by same letter do not significantly differ (P=.05, LSD)

t=Mean descriptions are reported in transformed data units, and are not de-transformed.

Mean comparisons performed only when AOV Treatment P (F) is significant at mean comparison OSL.

Grain and pod counts were conducted away from the centre of the header trail. This was done to avoid any grain losses that were caused by header 'processing'.

NB: 50 pods assessed - mean 9.6 grains/ pod, grain weight 5.7 g/ 100 grains

ARM Action Codes

AS = Automatic square root transformation of X+0.5

DAH = Days after Harvest

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Conclusions:

This trial was designed to evaluate the impact of header front adaptations on mungbean grain loss at harvest. It was conducted in a crop of Jade AU (on 38 cm row spacing) with a harvested yield of ~1t/ha.

A New Holland CR8.90 header fitted with an AWS Airbar harvested the trial. The trial compared the impact of air assist on mungbean grain loss.

Counts of pods on stalks, pods on the ground and individual grain on the ground were assessed 1 day after harvest. 50 random pods were also assessed to calculate grains/pod and grain weight.

Total harvest grain losses were ~150 kg/ha. At a price of \$1,000/ha, this represented a financial impact of ~\$150/ha. The grain losses consisted of ~100 kg/ha as pods on the ground, ~55 kg/ha as individual grains on the ground with negligible losses as pods attached to stalks. The use of air assist in this situation had no impact on individual grains on the ground or pods attached to stalks. The use of air assist reduced total grain loss by ~40 kg/ha and pod loss on ground by ~31 kg/ha.

In this situation, a potential crop yield of ~1.15 t/ha was reduced by ~0.15 t/ha in grain losses at the front of the header during harvest.

Crop Description	
Crop:	Mungbean cv. Jade AU
Planting Date:	21/01/2021
Row Spacing:	38cm
Harvest Date:	26/04/21

Rainfall

Closest Weather Station:	SIL0 grid pt 30.25S, 149.75E
Distance, Unit:	~5km

There was no rainfall received between desiccation and assessment.