

GRAIN LEGUME HARVESTING

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High grain legume losses at harvest is a major problem costing farmers thousands of dollars each year. If you are not convinced that you are losing much grain at harvest then consider this. The stalk component of grain legume stubble contains about the same nutrient value as in cereal stubble and is only slightly more digestible. Given that there is normally only half the amount of grain legume straw compared to cereals straw this means that an average grain legume stubble should have about half the grazing value of cereal stubbles. However grain legume stubbles are known to have much better grazing value than cereal stubbles. The reason for this is purely because of spilt grain.

Harvest losses even in good years are enormous. On average, farmers lose 20% of yield through losses at harvest. This wastage is costing farmers big dollars and its all profit going down the drain.

Sheep only collect a portion of what is spilt and what they do collect is not converted efficiently into extra dollars for the farmer. Returns are far better if farmers can collect all the crop when harvesting. Over-grazing in an attempt to salvage spilt grain can also lead to devastating wind erosion.

This is a huge problem being largely ignored by industry research organisations. The scientist's solution to poor harvestability, is breeding, but you may have to wait a decade for an improved harvesting variety. I believe good practical engineering solutions can be found in a fraction of the time and cost if only given some support.

I have been surveying paddocks at harvest time for 9 years now and in that time I have seen a lot of disasters and a few successes.

At harvest time it is often too late to do anything about the problem. Preparation at sowing is a key to solving many of the problems. I know that this is easily said but much more difficult to achieve in the rush of cropping, especially when direct drilling. However, leaving the soil relatively flat after sowing is a critical issue that may increase yields by 10% at harvest, so it is well worth the time and effort. Rollers have been tried with some success, but of course care is needed on sandy, erosion prone soils or surface crusting and sealing soils.

Flexible Cutterbars

New equipment is also coming onto the market that may help. Flexible cutterbars are undoubtedly the best machine for cutting the crop off as low as possible, excellent for lentils, chickpeas, vetch and beans. There are a few of these machines in the Wimmera but I predict there will be a lot more in future. I believe Ken Smale will be manufacturing them in Warracknabeal next year.

Windrowing

I have seen numerous failures in trying to windrow grain legumes. This is really only a proposition for lupins. Windrowers are rarely able to cut the crop as low as an open front header so unless it is a high crop (like lupins) a lot of the crop will be left behind. The often small windrows are also prone to blowing and are difficult to pick-up without considerable loss. A draper type front is a necessity for picking up small windrows of grain legumes.

Pea Pluckers

Pea pluckers and draper belts have revolutionised field pea harvesting but they are not without their problems. They have made the crop easier to harvest but high losses are still evident. Excessive speeds (greater than 8 kph), late harvesting and high summer weed densities are the cause of the problems. If you can't harvest crop early, then it probably pays to do a late spray to kill the whip thistle and hogweed.

Field Pea Harvest Losses	
	kg/ha
Early No Weeds	158
Early Weeds	212
Late No Weeds	285
Late Weeds	402

Field pea losses using a belt type pick-up operated at 9 km/hr. There was a two week delay between early and late harvesting, in which time the whip thistle progressed from a rosette to an elongated stem. Weed density was approximately 5 plants/m². The crop yielded approximately 2 t/ha (10 bags).

Some farmers in NSW desiccate and harvest crops at 16% moisture content and can reduce losses to less than 20 kg/ha. However, they are fortunate in that some marketers will accept this high moisture grain, otherwise grain drying is required. The prospect of grain drying seems foreign to many farmers but for approximately \$6/t, grain can be dried from 16 to 12% moisture content, using a natural air grain dryer. I have developed such a dryer at the College, it would cost a farmer about \$2,000 to build a similar unit to an existing 50t silo.

I have recently returned from a trip to South Australia where I sampled a number of paddocks to determine the extent of high harvest losses. A much larger survey would be required to determine more precisely the exact extent of losses but the data collected suggests that the South Australian situation is similar to that found in Victoria, with high losses occurring in most crops.

Harvest Loss Survey Data		
	South Australia kg/ha	Victoria kg/ha
Lupins	330 (2)	
Field Peas	173 (14)	186 (21)
Chickpeas	150 (1)	202 (14)
Faba Beans	342 (11)	465 (16)