Paper 5
PROBLEMS OF GROWING AND HARVESTING BARLEY

F.A. Bull
Sheffield

INTRODUCTION

I was asked to give this paper on the problems of growing and harvesting barley from "the essential point of view of the farmer and contractor". My initial reaction was, how the devil was I to fill in 15 to 20 minutes on a crop which didn't at first appear to have any problems. However, after a little more thought and a back-to-basics look, I came up with a number of problems which annoy me as a farmer and contractor, so I make no apology for the fact that this is going to be a very basic paper. Many of the points may not be expected by the more technically-minded, while in the case of the practical farmers I am probably preaching to the converted. I make no apology for throwing the occasional brick.

PROFIT AND LOSS

First, prepare your ground with a choice of New Zealand-made and highly-protected implements pulled by a tractor powered by fuel which has risen in price ten-fold in the last eight years, probably started by a battery and running on tyres also New Zealand-made, highly protected, and about twice the price of overseas alternatives.

For a few moments I will include all crops under one heading, and simply say that I believe the biggest single problem facing the New Zealand arable farmer today is the effect inflation is having on the replacement of his machinery. Since 1975 we have seen a four-fold price increase in nearly every item of plant and machinery, right down to the humble plough-share, compared with an approximate two-fold increase in the value of barley over the same period. I suggest that this increase would have been considerably less had it not been for the formation last year of the South Island Export Barley Society.

As a matter of interest, as of last year it took 10 cents worth of barley to make one gallon of beer. The last two years' increase in the barley price to the grower has been worth 3 cents per gallon, while beer over the same period rose by $2.00 per gallon to the consumer. I wonder who received the other $1.97 and how they justified it. Perhaps Mr Malcolm can tell us as growers how to achieve similar increases. If grain prices are going to continue to lag behind inflation then there must eventually be many changes in the cropping sector, because the capital value of machinery, especially headers, will simply make individual ownership uneconomic.

CONTRACT HEADING

Will we see a greater use of contractors? As a contractor myself I must admit that if I were a farmer with barley a few days down the list in an adverse season, I would be getting a little jittery. Will we see more syndication-sharing of machinery? This works well in many cases, but for the independently minded farmer, or the one who takes more pride in his equipment, I can see many areas where relationships could become a little strained.

As a contractor I would make the point that inflation is having a serious effect on my ability to replace my machinery, and I am quite certain many farmers place too much emphasis on the convenience aspect of private ownership and disregard the economics.

Six years ago I travelled to England, purchased a new retail header and landed it back in my yard for $41,000 — $32,000 below the New Zealand retail price. That machine has now harvested about 3,500 ha and has a market value of about $50,000. To replace it would cost me a difference of about $80,000. Put that amount on hire-purchase and we are looking at about $18,000 per year in interest. Add another $14,000 per year, as a replacement allowance on the $80,000 over six years, and we have a total of $32,000 per year as a cost to change the header. Then we add wages, fuel, insurance, registration, repairs, and maintenance for the years, and I rather feel the person making on the deal isn't going to be me. If I find owning a new header a doubtful economic privilege how then can the average farmer justify the capital expense? But some still think they can — bless them.

I have farmers who have not previously grown crops ring me and say, "I am putting in so much of something this year; can you guarantee to head it for me?" The answer can only be "No". I will do the best the weather allows and I think the same conditions would apply to the man who owns his own machine.

CHOICE OF CULTIVAR

Our ground is finally prepared to our individual satisfaction and it has cost us accordingly. Some time prior to this point we had another problem in choosing the cultivar we would grow. Crop Research Division and most of the grain firms publish lists to assist our decision, but after making our choice we have to actually get possession of the seed, because now with breeders rights, head licensees and royalties to contend with, one can run into certain snags. Most grain firms will prefer you to grow one of their own licensed varieties, and if financially committed to a particular firm then "prefer" may not be a strong enough term. If on the other hand you say you wish to grow the barley free, or for the Barley Society, then the seed may suddenly become very scarce or rather more expensive.

Now that we have finally acquired our seed, let's have a look at the quality. The malting companies do not want barley with more than 5% skinned because it affects the germination, but how often do we find up to 30% skinned in the seed we are expected to sow, or perhaps an equivalent percentage of screenings. Seed barley should be threshed to malting standard. In my opinion much of it is not. Then if you really want a challenge, try getting your hands on a copy of the Purity and Germination Certificate before you actually sow the seed. I bet many of you here today sowed wild oats last year and don't know it yet. Or if you want a demonstration in political side-stepping try asking for the price of your malting barley seed when you sign the contract. Perhaps at this point and in a facetious vein, may I congratulate the breeder of Mata on behalf of us poor unfortunate header operators for the distinction of landing us with the itchiest barley I know.

HARVESTING

I am not going to get involved in the actual details of ground condition, fertilisers, sowing rates, diseases and sprays, because other papers cover these specialised topics. Instead I will go straight to the point of harvest, a subject with which I am more familiar, although here again we all have our opinions and you may not agree with some of mine.

In New Zealand, unless we have a drier, it is unlikely that we will start threshing until the grain moisture drops to 14% or very close to it, although I have found that barley stores quite safely at 16%. I would stress, however, that storage must be fumigated before filling, regardless of moisture content. Last year, many thousands of tonnes of grain in Canterbury became infested with insects and in most cases a few dollars worth of housework prior to harvest would have prevented the problems.

Back to moisture, and I wonder how much barley has been lost in Canterbury in recent years because it sat for days on end at 16% and was then caught by a nor-west blow and lost for the sake of 2%.

In England grain is traded at 16% moisture, and many of the larger properties have a machine to bring the moisture back up to the legal limit. As one farmer pointed out to me his 9,000 tons of grain, sold at 15% instead of 16% represented a loss in weight of 90 tons, or at the 1976 English Malting price of £ 100 per ton, a drop in income of £9,000 or $18,000. Used on that scale, the machine pays for itself in its first year. We may not have New Zealand grain growers who harvest 9,000 tons, but this year in Canterbury we certainly harvested a lot of grain at 11% or less and so missed out on 3% of income. If our grain is to be rejected or docked in value when over 14%, how about a corresponding increase when we are under the limit, as is usually the case?

Our moisture has finally come right and now to the harvesting. I find the header operates best if treated like a baby — "Keep the front end full, the back end clean, and don't feed in anything that can't be digested". I consider barley a very easy crop to thresh providing it is mature, but premature ripening or dehydration such as occurred during this last harvest can undermine the efficiency of both machine and operator. We grow barley for two end-uses — the malting trade and the feed trade — and as Mr Drewitt points out in his paper, "all too often, some grain intended for the former is suitable only for the latter." Feed barley can be abused by the operator and his machine during the threshing process and remain feed barley, although I would suggest the through-put would suffer, but malting barley will rarely stand down-right abuse and survive the experience. I find that setting the header for practically all barley can be likened to a bloated cow — tight, slow and plenty of wind.

I **never** remove the cover plates from the concave when threshing barley, whether feed or malting. I would rarely exceed a (5 mm) concave clearance, and in the case of malting barley would rarely exceed 600 drum-revs with the normal being 400-500. Those settings normally give me between nil and 2% skinning and I have never lost a sample on skinnings. Under most conditions those settings will also produce a clean whisker-free feed sample. A barley grain has a better chance of surviving a hard slow rub than a soft fast smack, although to the amateur that may appear contrary to expectations.

I mentioned earlier that feed barley will stand abuse but through-put will suffer, and I am suggesting that many operators would get better results by using filler-plates and slower drum-speeds, which in turn give cleaner removal of whiskers and less breakage of straw. A header rapidly loses its capacity when the sieves are loaded with hairy barley and chopped-up straw, and the grain loss on walkers and sieves increases markedly when the whisker is not removed. A good example is in the threshing of wheat. I can achieve some of my best through-puts and cleanest samples when the tyres are wet with dew, because the husk then stays on the head, and as long as you have plenty of power and tight belts the rest is easy. You are separating only clean grain and unbroken straw. I must admit, however, that there are exceptions, and on occasions this season I was frustrated by some barley on light country where the grain dehydrated to 14% but the plant itself was a still a fortnight from maturity.

Too many operators in my opinion are afraid to use maximum air to obtain maximum sieve capacity. A higher air flow requires a wider sieve opening, and this of course will result in a rougher sample if the machine is then allowed to run light, so we come back to the "full at the front and clean at the back" bit for best results.

Hiring good operators for harvesting machinery can be a major problem and although this point does not apply only to barley, it is one I consider worth making. No two machines or people are identical, and I believe a header should have one operator whenever possible. This next comment may bring some howls of protest, but I do not class a driver listening to a stereo as an operator. My ears and the soles of my feet tell me of any problem or change in the running of my machine, and I never cease to be amazed by farmers who allow their most important piece of equipment to be steered round a paddock by a toe-tapping individual with a set of head phones clamped on his head. With all due respect, I consider that farmer has more money than sense. Something as simple as a build-up of barley whisker in one straw-walker should be felt by a good operator and rectified before it stresses bearings and cranks.

CLIENT AND CONTRACTOR

I now intend to outline some serious and some light hearted aspects of barley growing as they affect me as a contractor. First, let me say that there are contractors and contractors, and regardless of how my clients rate me I would freely admit that I have made some mistakes, often due to lack of sleep. And clients have sometimes lost a crop because I simply couldn't get there quickly enough, but unfortunately the cost of machinery does not allow me to keep any surplus to my normal requirements, sitting in the shed for the sole purpose of coping with emergencies. I therefore stress the point, that this particular contractor is prepared to push himself to the limit for the sake of his clients, but I am still only human and in a wet season I can neither change the weather nor achieve the impossible. Contract heading has given me some headaches but also a lot of laughs and I look forward to it each year. It is my annual working holiday, but it has seen some changes.

Ten years ago I was covering 800 ha including my own, of which about 200 ha was wheat, 200 ha barley, 250-280 ha grass-seed on light country, and the balance peas, oats, etc. A fairly well balanced harvest. Grass-seed was cleaned up early, the barley was spread over early and late country, and as the wheat ripened it could either be done or left a few days if barley needed priority. This year I did 600 ha, of which 400 ha was barley, 60 ha wheat, virtually no grass-seed and the balance mainly oats. Risk-wise, this year was a contractor's nightmare, with 200 ha of barley all on light exposed country coming fit within two days. Fortunately, the nor-westers left us alone.

Now for the lighter side and its problems. The client who rings and tells you his barley is ready, but after a 24 km drive with the header it's obvious from the gate that he's a week premature. Farmers are not the only culprits here. I've been led on some wild goose chases by agents who should have known better. Then there are clients who ring and say their crop is ready and they will see you when you get there, and there are those who ring morning, noon and night, wet or fine, to check when you are coming. The latter get no better service and I prefer the former.

I mentioned earlier that as growers we have our own opinions on how the ground should be prepared, but as a contractor I have some very definite ideas on how it should not be left after it is drilled. I have been turned loose into barley where the biggest boulders were sticking up above the crop, and it was impossible to drive a loaded truck on the paddock. My estimate was that a heavy roller would have saved 2 t/ha and I was later criticised by an opposition header salesman for the amount I left on the ground.

On another occasion, while opening up a paddock at 2.00 a.m., I crashed through a ditch about 45 cm wide and 30 cm deep. The front hit the ground and scooped in a load of dirt, and although normally a very mild-mannered fellow I did on that occasion describe my client's pedigree in vivid terms. I discovered that these channels meandered all over the paddock, and was informed by the owner when he finally arrived that there had been heavy rain just after the paddock was drilled, so he had put drainage channels down all the hollows with a single furrow swamp-plough and was very sorry he had forgotten to tell me.

Another hero drilled barley and then decided to remove a gorse fence down one side of the field. There was an old wire fence inside, so he cut the wires at one end, hooked the tractor on and towed all the wires, with assorted standards and posts still attached, out into the newly drilled paddock. That was exactly where I found it all, nicely concealed in the crop, in the middle of the night about four months later.

Some cultivars of barley are prone to lodging under good growing conditions, and where this has happened it is more important than ever that the ground be not only reasonably level but also free from rock and other objects, if knife loss is to be kept to a minimum. The front width of many of today's big machines makes them very difficult to operate safely close to the ground on rough paddocks, and if some farmers who employ contractors were to put their own reflexes and concentration to the test and try harvesting some of their own crop, I am sure there would be an improvement in the condition of their paddocks the next year.

Steep hills no longer thrill me like they used to. I have been expected to head barley drilled by crawlers and four-wheel drives, clawing my way up, crabbing across and sledging down, and the aim of the whole exciting exercise to produce an acceptable malting sample. The most interesting aspect is perhaps the attitude of the landowners. Some, although white around the gills, will ride with you, while others point out the steepest parts as if you weren't capable of finding them for yourself and then excuse themselves to sit back like vultures to watch you try and head it.

I have heard professional people say they do not allow themselves to become involved with clients' problems outside working hours, but as a heading contractor I find this attitude impossible. During unfavourable weather I do worry about my clients' crops, because they are relying on me to secure part of their year's income. The ones who puzzle me are the minority who leave me to worry alone, while they take the family to the beach for their summer holiday. On these occasions I am not sure whether I am being paid a compliment or regarded as some sort of peasant.

Three years ago, clients of mine lost 80 ha of barley in a nor-west gale. Most of it was not mature, so there was not a damn thing I could have done about it anyway; but when I miss a crop that is ready it does concern me, and I think it is probably because being a farmer as well, I can appreciate the problems on both sides of the fence.

DISCUSSION

McCloy: There was a move in Mid-Canterbury this season to check all wheat lines sown for wild oats, in order to make a better sample.

Q: Could I ask Mr McCloy if all uncertified lines put out by firms are field-inspected?

McCloy: Not by Ministry Officials.

Q: How careful are contractors to see they don't take wild oats from one property to another? And are wild oats a consideration in header ownership?

Bull: As far as trying to clean them out of the machine, it's virtually impossible. I clean off everything that's visible rear and front, run it, open and shut the sieves. But if you mean, do I climb inside with a vacuum-cleaner? No, I don't. It's time I can't afford. The point you make about owning a header if you want a clean farm is a good one. Spreading wild oats does concern me, but there are very few oat-free properties now.