WHEAT QUALITY: A FARMER'S VIEWPOINT

A.L. Mulholland
United Wheat Growers, Darfield

To begin with, I think we should ask some basic questions. What is wrong with wheat quality? Is there a pressing or urgent need to do something about it? Is there really a ground swell of public opinion which would suggest that bread made from our wheat is not of good quality? I am not going to try and answer these questions in depth but I am going to try and acquaint you with the problems associated with growing good quality wheat. I am also going to try and point out various ways by which we can improve on what we have got.

First and foremost, it would be fair to say that all the wheat growers I represent wish to produce the best possible quality standard. It gives the grower no joy to be informed that the wheat he produced has returned an MDD 11 and consequently will be rejected by the Board. Quite apart from the fact that his financial returns will be lower, he has the unhappy feeling that somewhere his farm management has fallen short.

I will attempt to follow the sequence of events which, if carried out, should give top quality grain.

First, the history of the paddock is important. Ideally the crop should follow a legume such as peas or pasture which has had a good clover base. Cultivation is important. On our own farm, we have used the direct drilling technique with moderate success. I have still to be convinced that we can dispense with the plough however. We have been practising a technique where we spray with paraquat, deep plough a week later, one cultivation, and drill the crop. Paraquat has a property which tends to make the soil crumbly, thus aiding cultivation. Previous fertiliser history will dictate how much, if any, superphosphate is applied. We are using soil tests to supplement this information. The crop establishment and plant count per square metre can be adversely affected by not using the right drilling techniques, i.e. too high a ground speed and by not adjusting the sowing rate according to the 1000 grain weight.

From the time the crop has emerged, it is essential that a constant watch be kept. On our farm, this means 400 to 450 acres in 12 to 15 different paddocks, and consequently takes time and effort to keep up the vigilence necessary. As most of our wheat is late autumn and winter sown, early August becomes critical period. At this time, the spores of septoria speckled leaf blotch and mildew start drifting around. We are now spraying in August, the entire crop as a matter of course with a fungicide. We have an added worry with the yellow stripe rust, already present in some earlier crops.

The protective measures taken so far will have had more to do with yield than quality, although I firmly believe that a healthy crop is more than half way to a quality crop. The next move is to evaluate the need for nitrogen application. If the season has been wet, it's pretty safe bet that the levels of fertiliser N and natural N have been leached from the soil. For a one application situation, the 5 leaf stage of the plant is generally reckoned to do the most good, both from a yield and quality viewpoint. Later applications are more likely to affect quality and less likely to affect yield. This is an area where I believe we are short on research. At $238 per tonne, and at a rate of 250 kg per hectare (40 units), the cost is around $60 per hectare, so we want to be sure we are getting the best results.

Weed control and, if necessary, spraying with an appropriate herbicide will have an effect on the yield, as well as the cleanliness of the resultant sample. Flour millers are not overly impressed at lines which are full of Californian thistle heads, yarrow heads or wild oats. At about this time, we will also be watching for the presence of cereal aphids which act as carriers for yellow dwarf virus, a serious disease which stunts the crop and causes yield depression of up to 50%, as well as shrivelled grain.

Having survived, or treated the crop so, the promise of good harvest becomes a reasonable prospect, if the weather is kind, we don't get a late frost (which can totally destroy the crop) and if we don't get an attack at the milky dough stage of the English grain aphid. This nasty sucking beast has a similar affect to a crop that has sprouted which of course is no good for bread.

Eventually the crop ripens, and the harvesting process begins. The one climatic risk left is that of sprouting. About 12 mm of rain followed by an hour or so of high humidity are the only ingredients necessary. This causes the grain to spring or actually, in extreme cases, produce green shoots and the resultant alpha-amylase activity spells problems for bread baking.

It never ceases to amaze me how many farmers, or for that matter contractors, who cannot, or will not, set a combine property. Wheat quality can be ruined by incorrect combine settings. There is an erroneous belief that the way to get rid of white-heads in the sample is to screw up the drum revs. This way you will get rid of the white-heads but the grains will be cracked as well. I do not believe this is the time to go into the mechanics of setting a combine, but believe me this is a significant cause of wheat being rejected for milling.

Most farmers have storage for at least part of their crop. Many have the capacity to store it all. On our farm, we have permanent steel silos with a capacity of 1300 tonnes. Store hygiene is absolutely vital. It is a futile exercise to do all that is agronomically possible to produce a high quality crop and then ruin it by putting it in a contaminated silo. The technique we use is as follows. About a month before harvest, we vacuum clean all loose grain. Then we hose the silo down with high pressure water. The doors are propped open until the interior has

thoroughly dried out. About a fortnight before harvest, we fumigate and seal the silo up. This appears to be adequate in our experience. The reason for washing down the walls is that this is the only way to remove the fine dust which could harbour disease.

At this point the farmer has done about all he can to ensure that the wheat he grew is of the best possible quality. All the various treatments cost money. Some should increase yield, so that in the end, greater returns will more than cover the costs. Other treatments, such as later application of nitrogen, only improve quality. Under our present pricing system, there is no incentive to produce beyond the minimum baking score. Farmers have been critical at the lack of progress towards a reliable quality measure which would be an essential yardstick if quality payments are to be made. It is pleasing to note that the Wheat Research Institute is making progress in this direction.

An important decision a farmer must make is to choose the correct variety of wheat for his farm. This can have an important effect on the quality of the crop. The decision must however be made on the basis of each variety's yield potential. I know that in all districts, Hilgendorf will consistently give good quality. But I also know that in many areas, the returns will be disappointing in relating to other varieties even with a premium on price. Crop Research Division has done much good work but more remains to be done. Evaluation of new crosses in the field is an important part of selecting new strains; and yet we find that tighter fiscal measures within the C.R.D. are curtailing this essential work.

There has been a considerable upsurge in research into agronomic factors in wheat growing. MAF in Canterbury has done some very good work in this field, and I am confident that the results of these efforts coupled with keen grower participation will flow on through the industry. While much of this work is aimed at getting a better yield from healthier crops, I would repeat what I said earlier. You can't expect good quality from an unhealthy crop.

Certain factors relating to the production of good quality wheat are beyond the growers control. I have mentioned them at times earlier in this paper. Weather is of prime importance. Drought, frost, flood, hail and wind all take their toll somewhere, sometime. The amount of sunshine and its effect is often overlooked. Much of the growing characteristics of the plant are influenced by this factor. Ironically the seasons that give the most sunshine give us the best quality, and usuallly the lowest yields, because plenty of sunshine usually means little rain.

The other limiting factor is cost. If someone had said to me, say five years ago, that I would be paying $400 for one spraying of the crop, that I would be paying $120 per tonne for seed wheat, $120 per tonne for ammonium sulphate, $400 per tonne for seed wheat, $2 per gallon for diesel fuel and $100,000 for a new combine, my reply would have been — "bovine excreta". However, this year I have paid those prices for all the abovementioned commodities. How much longer can we sustain our industry under today's cost structure. You may well ask what has this got to do with quality? I submit that they all play an important part. For instance, if I have a soil test reading of 6 ppm for nitrogen, I know that to produce good quality wheat I must apply nitrogen. But my bank manager tells me that at $238 per tonne, my overdraft is too high to stand it. If I have an old combine which is prone to breakdowns, I could loose a substantial part of my crop. And so it goes on. Believe me, costs are one of our greatest problems.

What of the future? I have every confidence in our cereal breeders. The challenge is there for them to take up. The demands of the consumer side of the industry cannot be ignored. Stability in the quality produced is and will continue to be an area where breeding can help. Increased areas of irrigated wheat will bring its own set of problems. We may well need varieties bred specially for irrigation. Fertiliser demands, particularly for nitrogen, will be greater in an irrigation situation. Hybridised seed has had an indifferent success rate as yet but it may well be that with better technology, a breakthrough could be made in this area.

Finally, I would like to make this point. We as farmers grow the crop to the best of our ability. There are two more processes to follow which, let's face it, have a fair bearing on the quality of the final product — the milling and the baking industry. It would be fair to assume that they too are making every effort to produce a quality article. We are all in it together. We are links in a chain, each link of equal importance in "giving us this day our daily bread".