FARMtalk, NSW
01 Nov 2015, by John Fowler

General News, page 13 - Size: 333.00 cm²
Rural - Circulation: (Monthly)

ID 489901789 **BRIEF** RGA

Using bore water on rice

By JOHN FOWLER

Most of the rice in the Murray Valley this year is likely to be supplemented with ground (bore) water.

This will enable growers to plant larger areas but, as groundwater has a much higher salt content than channel water, it also causes specific agronomic problems that can't be ignored.

Rice growers using groundwater on their crops need to plan ahead to minimise the negative impacts of the water salinity. In particular, they need to:

■ Have constant access to a properly calibrated salinity meter to monitor the salt content of the water;

■ Set up their layouts so that water circulates (i.e. alternate stops);

■ Know the salinity limits for each rice growth stage;

■ Be willing to drain water from the block once thresholds have been exceeded, especially between P.I. and young microspore.

■ Plan for the crop water use to increase (as saline water moves more readily through soil than fresh water).

Salt Meters and Salinity Limits:

A salt meter suitable for field use is essential. They can be purchased from private retailers) but they must be calibrated correctly.

The water on the field is constantly increasing in salinity due to fresh water being evaporated, leaving the salt behind.

Readings need to be taken regularly (at least weekly) and at multiple locations, particularly in the bottom of bays and in any blind spots in the layout. Readings need to be taken out in the crop, away from the toe furrow.

Rice is most salt sensitive at the establishment phase (i.e. germination to 3 leaf stage) and again from panicle initiation (P.I.) to young microspore.

At these times it can only tolerate water salinity up to 2 dS/m (or about 1,300 ppm). This latter stage is perhaps the most challenging, as it is a time of high evaporation and hence more rapid salt concentration.

Layouts for Managing Salinity:

Most rice layouts these days have all the stops down one side for ease of water management. This however is not a good practice when using ground water. It is far better to have staggered stops, or at least some large syphons, to force water (and therefore the salt) to circulate and not accumulate at the end of each bay.

When water is circulating through the layout, you only need one drainage point to release water once salinity levels exceed 2 dS/m.

Water that needs to be drained from the crop is not suitable for reuse on rice. It is usually used to water more salt tolerant crops, such as shirohie millet or even lucerne (though it will not be as productive as fresh water on lucerne).

Nitrogen Fertiliser Rates:

Rice grown on groundwater usually has less tillers and less biomass (bulk) than rice on channel water. I am not aware of any research that indicates whether or not this can be compensated for by an increase in nitrogen, but anecdotally, it does seem that a **slight** increase in urea is beneficial.

Water use and end of season draining:

Salt causes water to move more freely down the soil profile in much the same way as gypsum does. This will lead to higher water use than would otherwise be expected if only using channel water.

Ground water also brings an additional complication when trying to determine the optimum time to drain crops at the end of the season. It is important that crops are not prematurely drained as the increased soil salinity may cause excessive haying off with crops. However, higher salinity soils may be slower drying so the risk of bogging during harvest is greater.

Soil amelioration post-rice:

Most ground water is not only more saline but it is also more **sodic** than channel water.

The additional salt in the profile is readily leached next time channel water is used to grow crops. The increased soil sodicity following the use of groundwater is more difficult to address.

My basic recommendation is to do comprehensive soil testing next spring to see how sodic the soil has become and, if necessary, attempt to ameliorate the problem with a gypsum application.

■ **John Fowler is Extension Agronomist with Murray Local Land Services.**