

Lateral Move Irrigator Farm Walk 5th June 2013

Murray Irrigation and NSW DPI held an information day on Centre Pivot and Lateral Move Irrigators (CPLM) irrigators on the Fasham property "Studleigh" near Wakool on the 5th June 2013 with 23 people in attendance.

Michael Pissasale (MIL) gave an overview of a new system installed with Steve Fasham. The system irrigated 93 ha.

Robert Hoogers from NSW DPI issued a handout that provided information on;
Infiltration considerations

- Application rate
- Readily available water
- Costing and design
- Scheduling
- Maintenance

Some key messages were;

- Soil type is very important. These systems are best suited to soils with good infiltration rates. They should not be sited on sodic, heavy clays.
- You need to match the irrigation rate with the infiltration rate of the soil.
- Don't use groundwater. Centre Pivot and Linear Move (CPLM) systems apply small, precise amounts of irrigation water frequently (as opposed to applying large, imprecise amounts infrequently with surface systems) and this saves water because deep drainage is minimised. The downside for CPLM systems is that, when groundwater is used, not enough water is applied to wash/leach the salt in the irrigation water out of the profile.
- Retain stubbles to protect the soil surface. Droplet impact can cause soils to slake and then set hard, particularly in red soils.
- The system needs to be able to:
 1. deliver the crop's total seasonal irrigation water requirement – consider access to irrigation water when channel supply is unavailable (e.g. storage, river)
 2. deliver water at a high enough rate to match peak crop demand in most years. If the peak evapotranspiration in summer is 10 mm per day, then you need a system with enough capacity to deliver this amount of water plus allow for down-time.
 - Convert ETo to crop water use: multiply ETo by the crop co-efficient (Kc). For maize Jan K_c is 1.2, so crop water use (ET_c) = 10 x 1.2 = 12.0 mm/day.
 - Determine the **System Capacity**:
 - Pump utilization ratio (PUR) is the proportion of time through the season that the machine can/will operate (e.g. time for maintenance, shifting towable machine, drying hay). Say 80% (or 0.8)
 - Application Efficiency (AE) is the proportion of water pumped that enters the soil – say 90% (or 0.9)
 - **System Capacity** = ET_c / (PUR x AE) = 12.0 / (0.8 x 0.85) = 17 mm/day
- Pressure = operating cost. Look at reducing pressure to save energy costs. It might be a higher capital cost initially going from 6" pipe from 8" pipe, but the energy savings from

doing so will more than outweigh the initial capital cost through the life of the machine and you will increase and the life span of equipment.