Planting summer crops into cooler soils

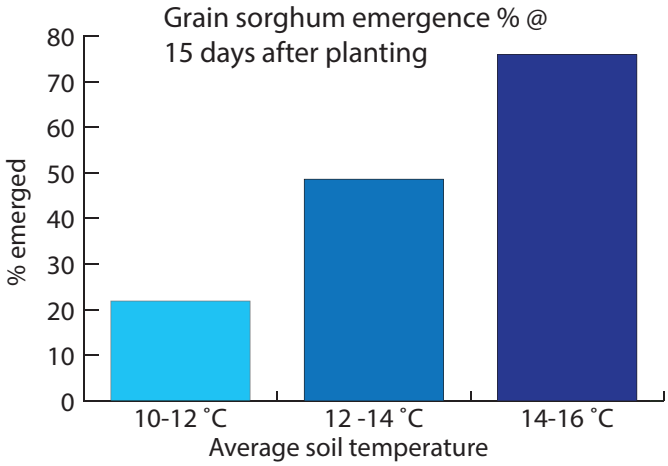
With Spring fast approaching, some recent rain and a promising seasonal outlook, thoughts are fast turning to planting of grain sorghum, forage sorghum and corn. We thought it timely to again share important information related to planting summer crops into cooler soils.

Unless you have access to a weather station with a built-in soil thermometer, it will be necessary to manually take soil temperature readings to determine how close you are to optimum planting conditions.

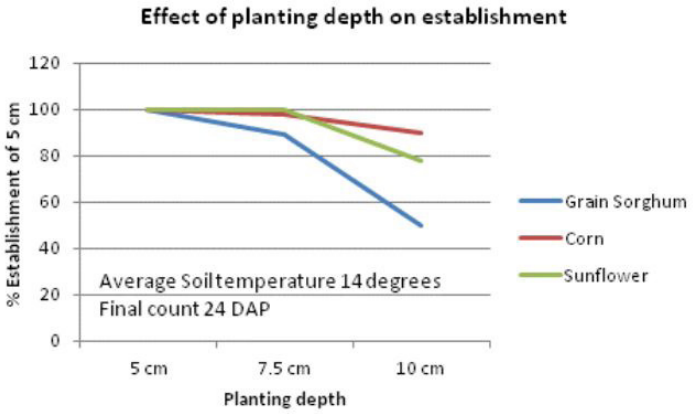
TEMPERATURE CHECKS

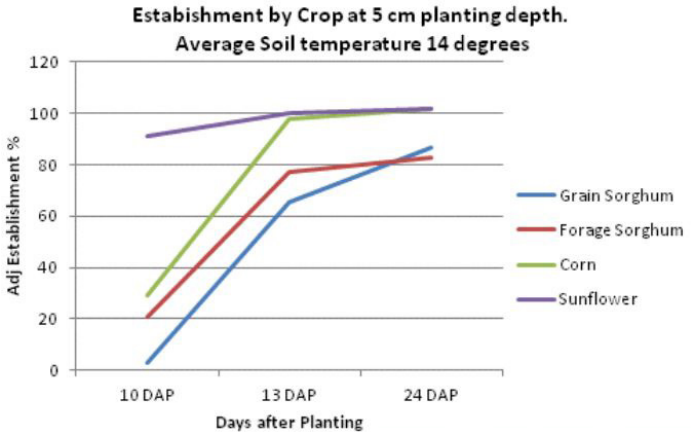
A note on the practice of the early morning temperature check with a soil thermometer. Although this can provide an indication of the soil temperature at the coldest part of the day, it does not take into account the changes in temperature your crop will be growing through outside of this time.

A more reliable method is to take a soil temperature reading at around 7:30am and then again at 3:30pm each day. Readings at around these times will provide an indication of your maximum and minimum soil temperatures - from here you can calculate your daily average soil temperature.



You should take these daily readings over a period of a week or more to get an idea of the trend (rising, falling or flat). It is also important to look ahead at the weather forecast to determine if a cold spell may be shortly approaching.





This graph demonstrates that by planting early when average soil temperatures are just two degrees cooler at 14°C, emergence after a period of two weeks can be at least 20% lower than waiting until the ideal soil temperature of 16°C.

SOIL TEMPERATURE TRENDS

A reminder of recommended minimum soil temperature trends prior to planting:

- Grain Sorghum: 16°C and rising
- Forage Sorghum: 14°C and rising
- Corn: 12°C and rising

EFFECTS OF SLOW SEEDLING EMERGENCE

If planting into soils cooler than the recommended minimums above, you should expect slower emergence and greater field establishment losses.

Planting when temperatures are lower than this can lead to a less than ideal plant population, reduced yield potential, management challenges later in the season or even the need to replant.

When the emergence of sorghum plants is slowed, they are more susceptible to attack from insects and other pests such as mice as well as disease infection.

It is important to remember to adjust your planting rate to consider any expected reduction in field establishment.

Temp	Effect on Seed	Effect on Seedling Emergence	Exp. Time to Emergence
12˚C	Slow germination, providing time for soil borne pests and disease to attack	Poor emergence, couples with increase incidence of soil diseases (Pythium, Fusarium, etc.)	14 Days >
15˚C	Satisfactory Germination	50% emergence to be expected. Similar disease expectations as at 12˚C	7 - 12 Days
16˚C	Good Germination	Adequate for good emergence	
18˚C	Good Germination	Good, Quick emergence	5 - 7 Days
20˚C	Ideal	Ideal	

CALCULATING PLANTING RATES To calculate your planting rate, the following formula should be used						
Target plant population (plants/ha)	÷	Germination (%) $\frac{90}{100}$	÷	Expected field establishment (%) $\frac{70}{100}$	=	Seeds/ha
Example 50,000	÷	0.9	÷	0.7	=	79,365
Seeds/ha	÷	Seeds/kg	÷	Planting rate (kg/ha)		
Example 79,365	÷	30,000	÷	2.65		
Number of Seeds/kg – see details printed on bag						
Germination (%) – see details printed on bag. Ensure germination % used for calculation is actual and not minimum						