



Prairie Soil Moisture Conditions

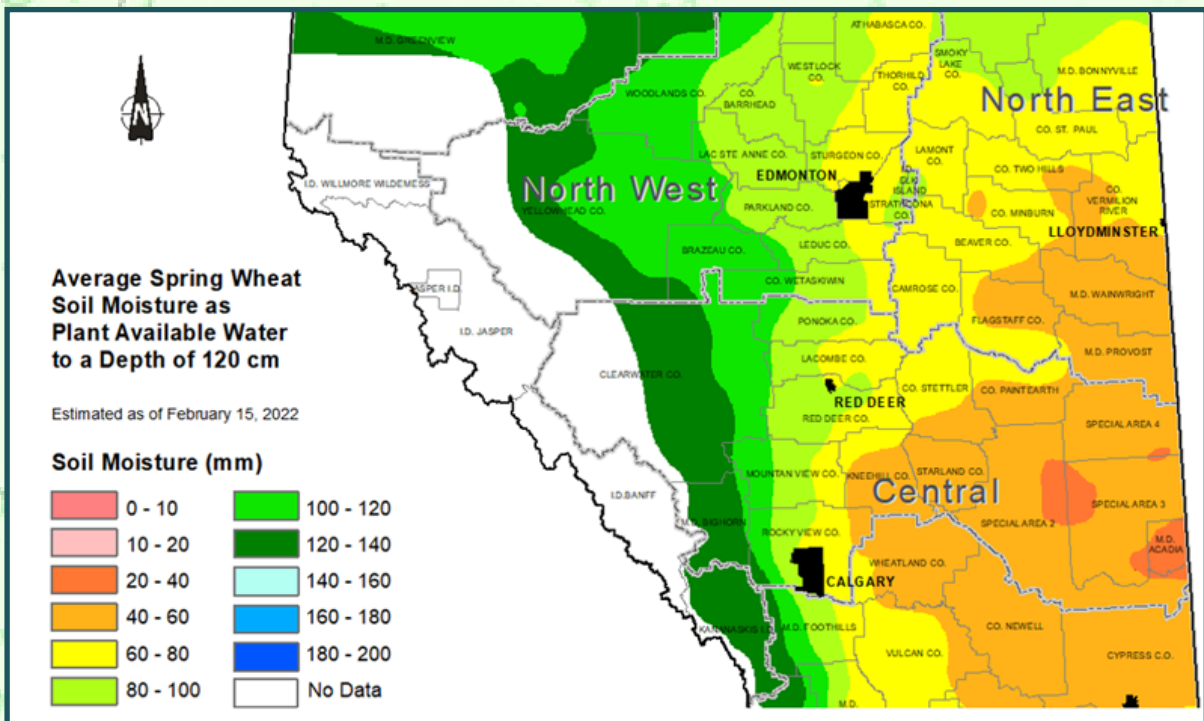


**MARCH 2022
AGRONOMY UPDATE**

With the high costs of inputs this year, and the dry, challenging weather that everybody had to deal with in 2021, this would be a good year to pay extra attention to what soil moisture reserves we have available going into the spring. Good reserves, with lots of moisture “in the bank” gives you a much better chance for a return on input investments than a field with poor soil bed moisture and no reserves below.

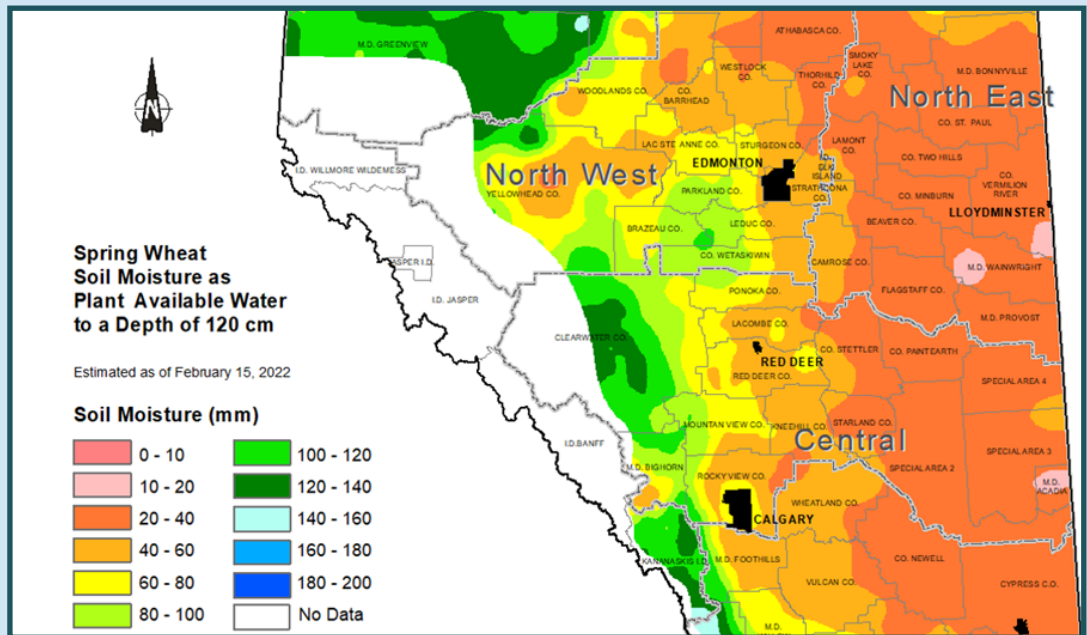
Fortunately, Alberta Agriculture supplies us with some good resources to give us an idea of where we stand in east central Alberta.

LONG TERM AVERAGE SOIL MOISTURE TO FEB 22nd



Normal soil moisture conditions in our area generally range between 40 and 80 mm in the top 120 cm of soil at this time of year, trending from drier on the east side of the province and getting wetter as you move west.

2022 SOIL MOISTURE TO FEB 22nd



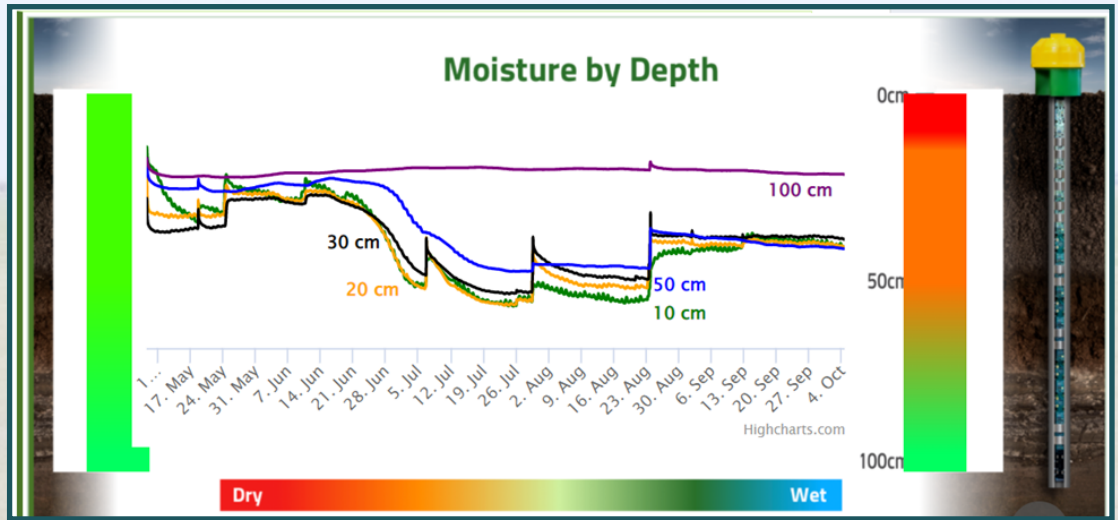
As you can see by this map of current conditions, that while the trend of drier to wetter going east to west still holds, we are well below our normal levels, with soils ranging from as low as 10 mm up to a maximum of 60 mm around Camrose.

Remember that these are generalized maps and the conditions on your farm may be very different. So while maps like these are useful (available at <https://acis.alberta.ca/acis/climate-maps.jsp>), they are no substitute for knowing what is happening in your own fields. You can get a ballpark idea on your own soil moisture with something as simple as a Browns Soil Moisture Probe, which is just a metal rod with a ball bearing on the end. When you push it into the soil, it penetrates easily as long as there is moisture. As soon as the ball bearing hits dry soil, it stops. In our soils we can generally figure on 1 to 2 inches of soil water per foot of penetration (sandier soils hold less water per foot and loam more). If you check several places across a field in fall prior to freeze up and then check the same field again in the spring, you not only get an idea on soil moisture reserves at the end of the year, you can estimate how much overwinter precipitation your soil was able to capture.

If you are looking for something a little more sophisticated and less labour intensive, there are several good soil moisture sensors on the market. We use a John Deere soil moisture probe with our Crop Intelligence sites and leave the sensors in the ground until just before the ground freezes if we can. This gives us a good idea of not just what the total soil moisture looks like, but where it is in the soil profile.

The picture below is from our Training Field south of Killam. The total soil moisture in the profile was about 4" in early October. This is well above the normal levels to be expected in the fall and does not line up well with the Provincial data. A quick look at the ending soil profile on the right explains a lot though. This crop tapped out during the extreme heat at the end of June and the roots never did penetrate anywhere near 1 meter in depth. In most years the crop would have been accessing that moisture by about the 3rd week of July. But in 2021 the moisture at depth was never touched by the crop. Meanwhile the top 50 cm (or more) was drawn down to permanent wilting point. A Brown Soil Moisture Probe was only able to penetrate about the top couple of inches of soil in this field in October, completely missing the reserves that are further below. I am actually optimistic that the winter /spring precipitation will give us enough water to connect with this pool of deeper moisture; letting the soil profile look more like it did at the start of 2021 – which is the solid green bar on the left. That unused moisture from 2021 makes this field a candidate for higher input levels than those on lighter soils or those that had a better crop in 2021.

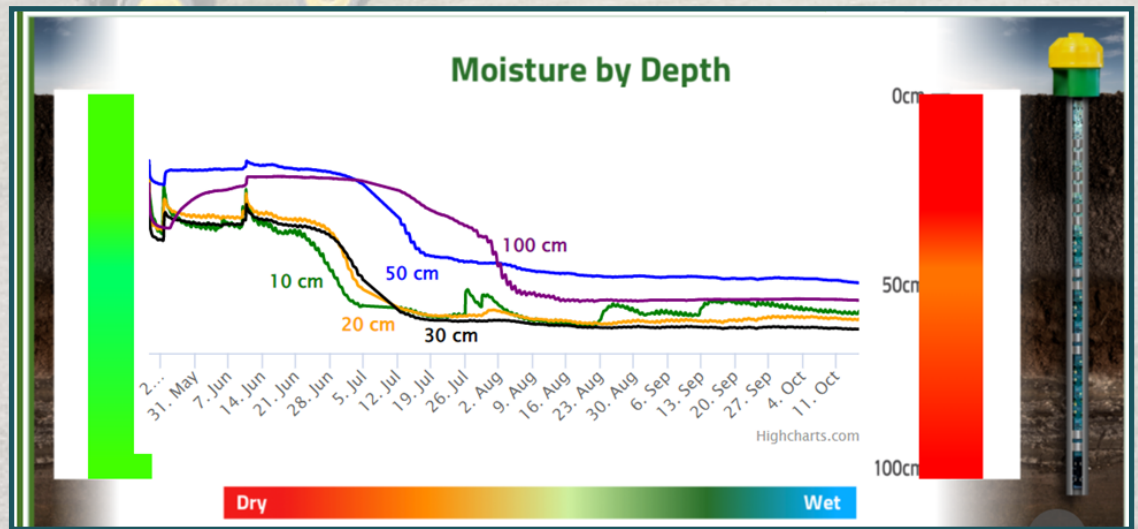
**Battle River
Training Field
2021 Soil
Moisture Profile**



Battle River Training Field 2021 Soil Moisture Profile

To give you an idea of the variability of soil moisture, below is another Crop Intelligence soil moisture probe taken from a field further east in sandier soil. But keep in mind it still falls within the same area as the Killam field on the Alberta Ag map of 2022 moisture above (20 to 40 mm of soil moisture)

**Crop
Intelligence
Field in
Flagstaff
County**



This field had an October soil moisture level of around 0.5" and is extremely dry throughout the profile. This is not a field I am particularly optimistic about going into 2022 unless we get significant moisture between now and seeding.

So as you can see, the provincial maps can give us an idea of what to expect from soil moisture going into the 2022 growing season. Like anything else in farming you will need to ground truth your own fields to see how optimistic or pessimistic you should be about throwing lots of expensive inputs at your crops this coming year.



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