

# **Advanced crop quality**

## **Lecture- 4**

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**-Effect of moisture content at harvest on the quality  
traits of corn –wheat**

**(Presentation and discussion of research results)**

# **Effect of moisture content at harvest on some quality traits of corn**

- **The following data shows a study conducted in order to determine the most appropriate moisture at which the cob can be harvested for corn, and the following table shows the effect of late harvest (Low moisture) and early harvest on some qualitative traits.**

**Table 1: Effect of cob moisture on some qualitative traits of maize**

<b>Cob moisture %</b>	<b>unbroken grains%</b>	<b>broken grains%</b>	<b>Test weight (Kg m<sup>-3</sup>)</b>	<b>Protein %</b>	<b>Oil %</b>
<b>26</b>	<b>92.78</b>	<b>7.22</b>	<b>784.8</b>	<b>9.81</b>	<b>7.08</b>
<b>28</b>	<b>90.02</b>	<b>9.98</b>	<b>790.7</b>	<b>9.81</b>	<b>7.03</b>
<b>30</b>	<b>88.73</b>	<b>11.27</b>	<b>796.5</b>	<b>9.43</b>	<b>6.59</b>
<b>32</b>	<b>85.27</b>	<b>14.73</b>	<b>808.1</b>	<b>9.22</b>	<b>6.35</b>

# What is seed moisture content

The seed moisture content (Mc) is **the amount of water in the seed**. It is usually expressed as a percentage or weight basis in seed-testing laboratory. Importance. The seed moisture content is the most vital parameter which influence the seed quality and storage life of the seed.

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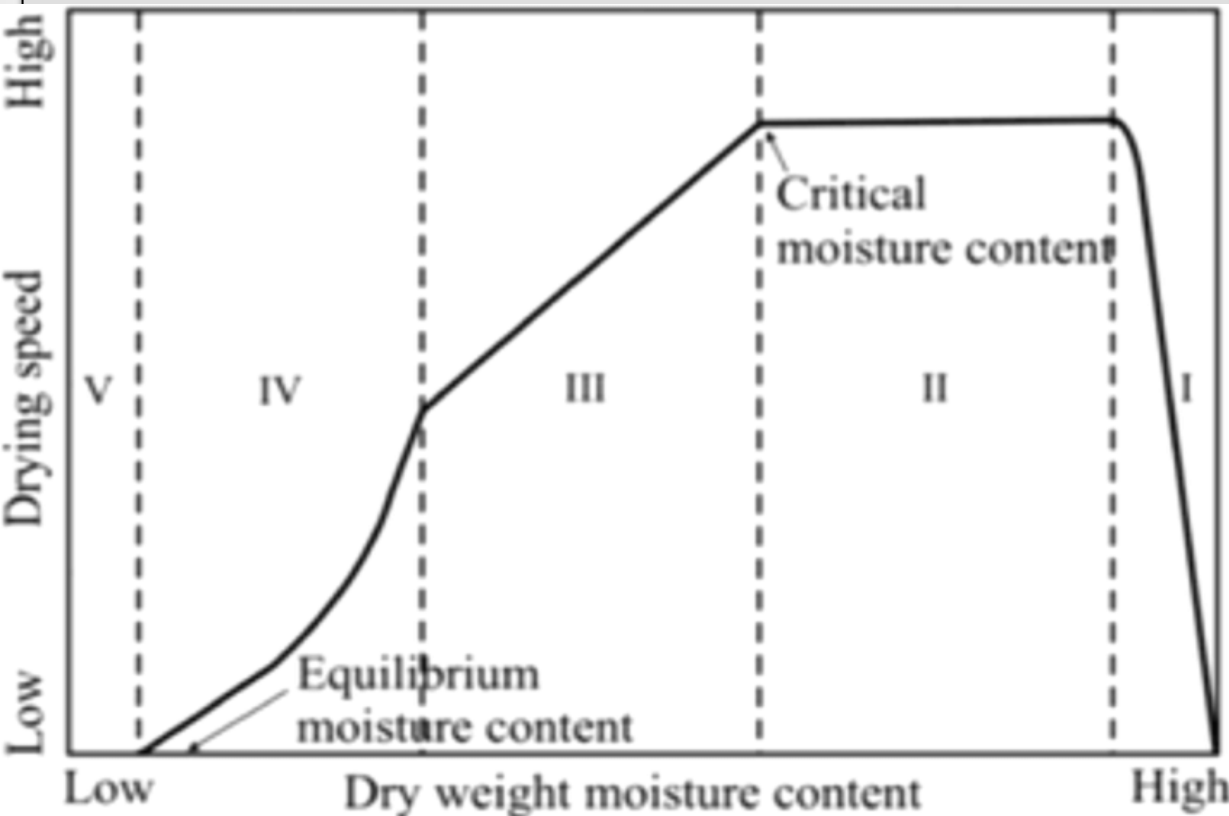
# The effect of grains moisture on some quality traits of crops

- ❑ Harvest below 20 % moisture content of grain increases the percentage of grain breakage of all varieties with short and medium grain.
- ❑ harvested at optimum grain maturity at which the grains have an average moisture content of 20 –25 %.
- ❑ Generally, the harvest is conducted when the average moisture content in grain is below 18 %. when paddy was harvested with moisture content above 20 % and below 18 %.
- ❑ Higher moisture content results in more losses from bad grain quality.

# Critical moisture content

The critical moisture content is :

The average material moisture content at which the drying rate begins to decline.



# Safe moisture content

Table 2 : Safe moisture content levels for cereals and pulses stored below 27°C

Product	Safe moisture content (%)
Cereals: maize flour	11.5
Maize shelled	13.5
Millet	16.0
Rice (milled)	13.0
Rice	15.0
Sorghum	13.5
Wheat	13.5
Wheat flour	12.0
Pulses: broad bean, cow pea	15.0
Lentil, pea	14.0



# How does seed moisture affect seed quality?

- ❑ The amount of moisture in the seeds is the most important factor influencing seed viability during storage. Generally if the seed moisture content increases storage life decreases.
- ❑ Since the life of a seed largely depends around its moisture content it is necessary to dry seeds to safe moisture contents.



- In this study the aim is to determining the storage conditions and avoiding damage that may occur during storage and understanding the effect of seed moisture on some qualitative traits of soft wheat (*Triticum aestivum* L.) The following results in Table 2.

**Table 3: Effect of moisture content of wheat grains stored at 28°C on some qualitative characteristics of wheat grains.**

<b>Grains moisture%</b>	<b>Germination%</b>	<b>1000 grains weight (g)</b>	<b>Test weight (Kg m<sup>-3</sup>)</b>
<b>10</b>	<b>88.72a</b>	<b>38.31 a</b>	<b>70.11 a</b>
<b>12</b>	<b>86.67a</b>	<b>38.31 a</b>	<b>69.86 a</b>
<b>14</b>	<b>73.56b</b>	<b>38.16 b</b>	<b>67.37 b</b>
<b>16</b>	<b>43.89c</b>	<b>38.16 b</b>	<b>65.40 c</b>

Table 1: Effect of time of harvest on starch, protein, water soluble carbohydrate (WSC) and fat percentage of pea seeds grown in the field in 1999

DAFF	Starch %	Protein %	WSC %	Fat %
23	29.2	25.8	3.4	1.2
31	32.3	21.8	3.5	1.5
44	45.2	21.3	3.8	1.5
60	47.3	23.1	3.8	1.4
79	40.1	22.8	5.0	1.4

(DAFF = days after first flowering)

	SED	LSD
Starch	3.58	7.64***
Protein	0.67	1.43***
Water soluble carbohydrate	0.14	0.29***
Fat	0.17	NS



THANKS