



# Effects of Oxygen Deficient Atmosphere on Dairy Cattle Performance in Pakistan



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## Short Communication

Heat stress, humidity stress are major causes of summer stress to dairy cattle, but low oxygen stress is definitely the worst.

As July & August months came in, we noticed a massive drop in dairy cattle productivity. A 4 liter average drop with conception rates dropping and cows looked exhausted, labored mouth breathing and totally stressed out.

Many people actually thought it's due to heat and humidity, but we had heat & humidity in June with minimal effects on our cow comfort and productivity, which totally puzzled me & pushed me to my limits in trying to understand the reasons.

Spending hours observing cows' behavior astonished me to see that their body was actually cool & had no heat or humidity stress, yet they are mouth breathing & their pulse was increased??

I started thinking of all possibilities which led me to atmosphere Oxygen levels; from here I found my answers.

I learned that normal atmosphere contains 20.8-21% Oxygen, but below 19.5% it's deficient, and above 22% it's enriched.

Looking into negative effects of low Oxygen levels I saw the following:

**A. 19.5 - 15 % levels**

Impaired thinking and attention, increased pulse and breathing rates, reduced coordination, and decreased ability to work strenuously, reduced physical and intellectual performance without awareness.

**B. 15-12 % levels**

Poor judgment, faulty coordination, abnormal fatigue, emotional upset.

**C. 12-10 % levels**

Above signs become worse.

**D. Below 10% levels**

Can be Fatal



Figure 1



Figure 2

from there we got an Oxygen Meter and no surprise after that Figure 1 & 2.

As you can see the ALARM is on, The range was 18.2- 18.7 which was below normal Oxygen requirements of the cattle which explains the full picture of fast breathing, fast pulse rates, drop in production etc.

This incident happens on seasonal basis as we checked previous years. The graph below shows the seasonality in milk production drop in 2015 and 2016 (Figure 3).

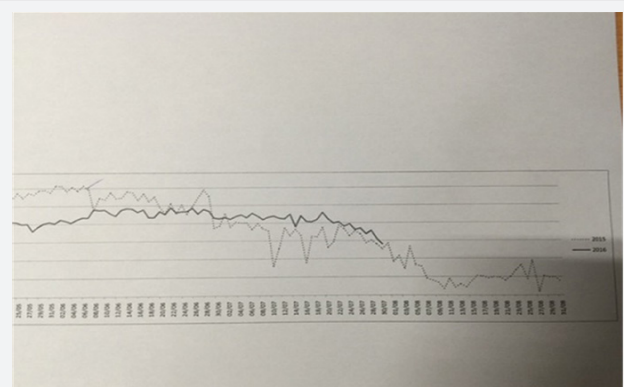


Figure 3

But as the main cause of this is not fully understood, our main suspicion is the rice season where all the land is flooded, but no confirmation of that suspicion. Totally stressed mouth breathing with tongue out (Figure 4).



Figure 4



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