

# SONOMETRIC MEASUREMENTS IN AGRICULTURAL APPLICATIONS – CASE STUDY

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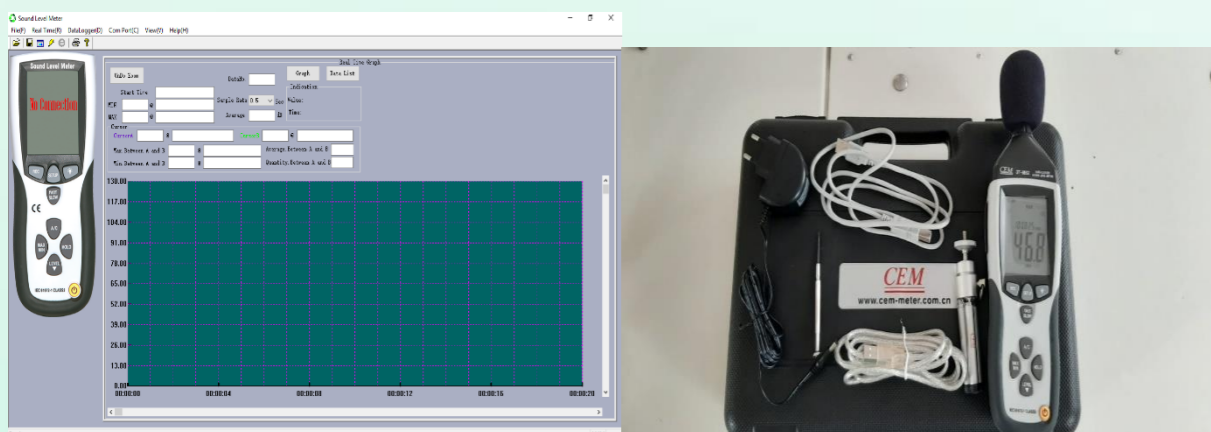
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## INTRODUCTION

Noise is detrimental when it surpasses 75 decibels (dB) and is uncomfortable when it exceeds 120 dB, according to the World Health Organization. Drivers blowing their horns, construction crews boring the road surface, planes passing overhead noise, noise and more noise. Cities have become the epicenter of a sort of pollution known as acoustics, which is extremely harmful to humans despite its invisibility and the fact that the coronavirus crisis reduced it to nearly zero.

Noise pollution is defined by the World Health Organization (WHO) as noise that exceeds 65 decibels (dB). Noise becomes hazardous when it exceeds 75 decibels (dB) and painful when it exceeds 120 dB. As a result, it is advised that noise levels be kept below 65 dB during the day, and that nighttime ambient noise levels of more than 30 dB make it hard to have a good night's sleep

## MATERIAL AND METHODS



Sound Level Meter: Interface and tool bag



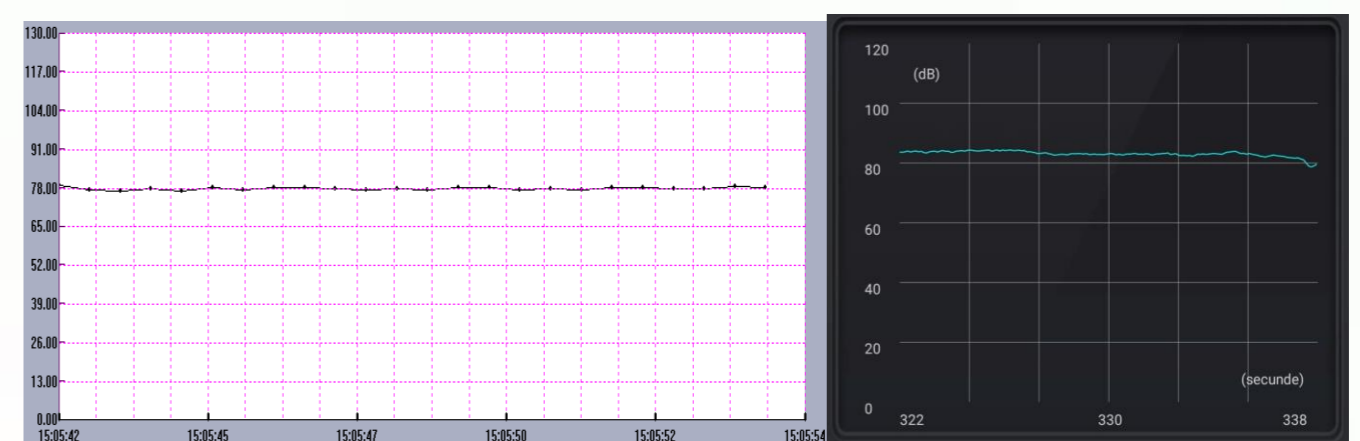
Tractor John Deere 3040



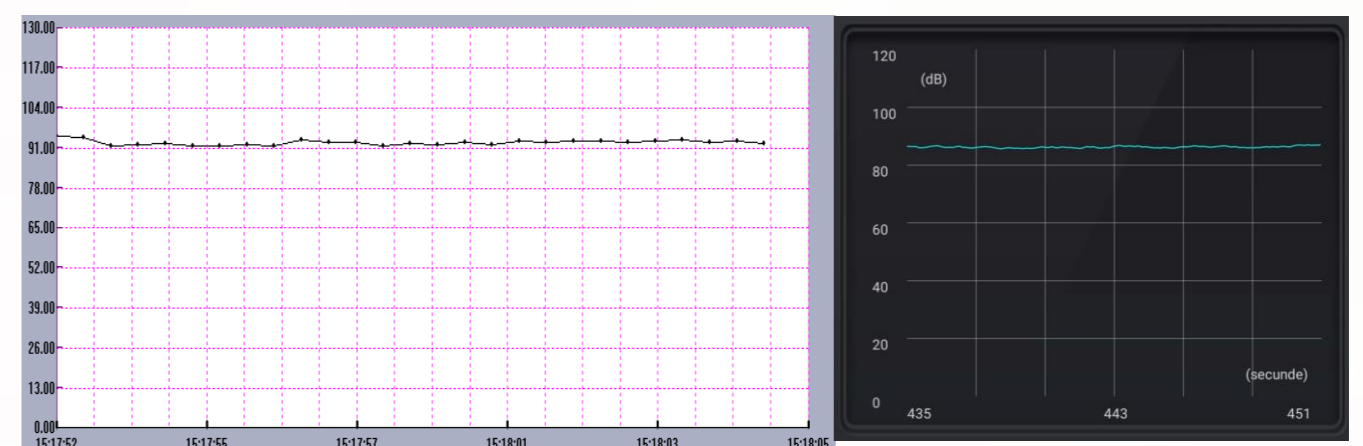
Tractor International 1055

## RESULTS AND DISCUSSION

### Tractor John Deere 3040

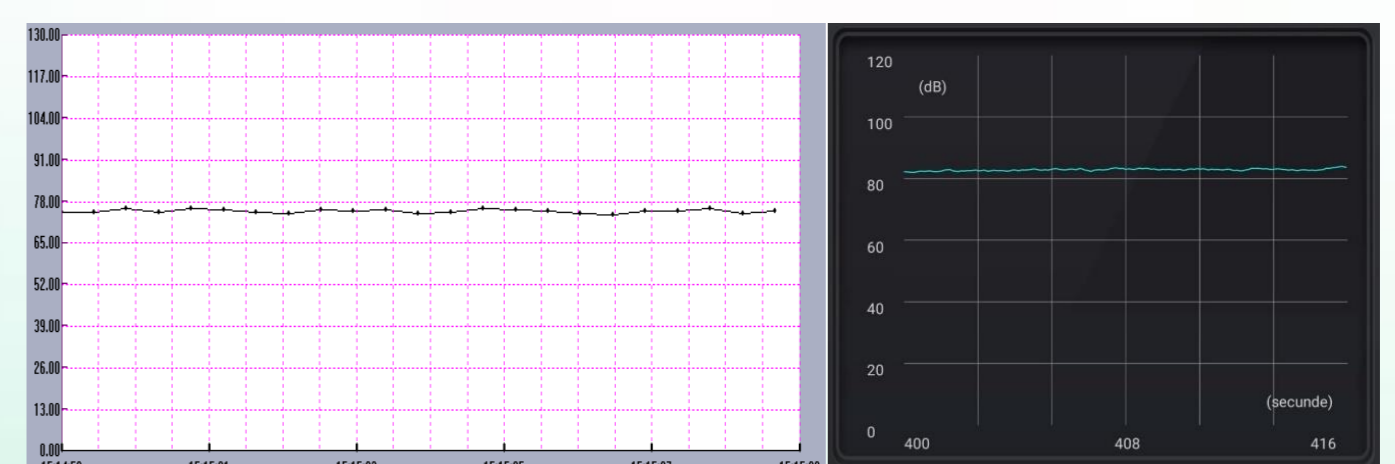


Inside the cabin, engine idling measurements: Sound Level Meter (left). Noise exceeds 75 decibels (dB) / Sound Meter (right). Noise exceeds 80 (dB)

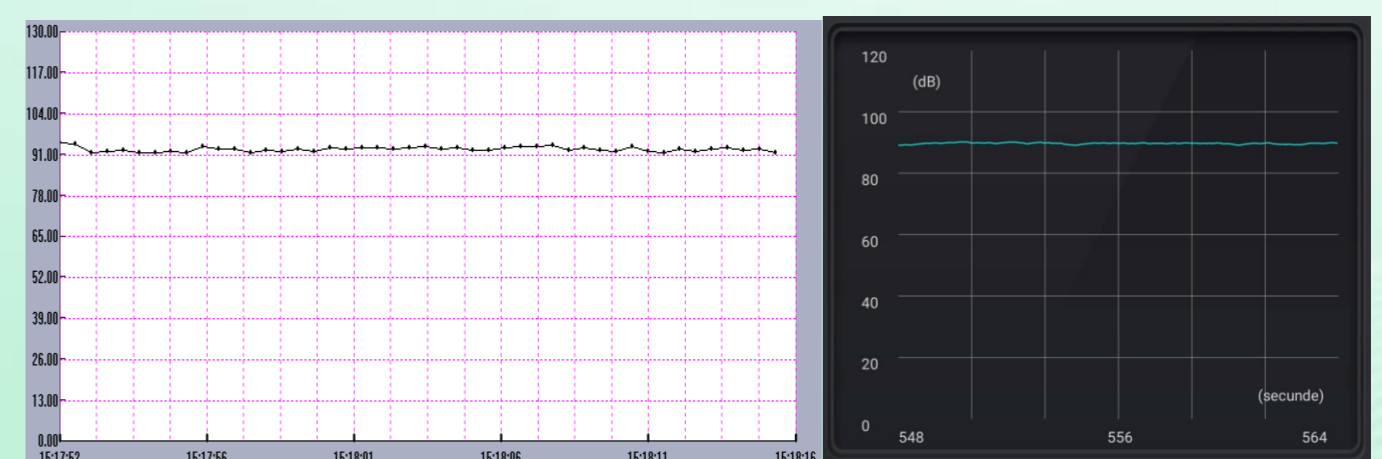


Outside, near engine at full throttle and working measurements: Sound Level Meter (left). Noise exceeds 90 decibels (dB) / Sound Meter (right). Noise exceeds 85 (dB)

### Tractor International 1055



Inside the cabin, engine idling measurements: Sound Level Meter (left). Noise exceeds 75 decibels (dB) / App Sound Meter (right). Noise exceeds 80 (dB)



Outside, near engine at full throttle and working measurements: Sound Level Meter (left). Noise exceeds 91 decibels (dB) / Sound Meter (right). Noise exceeds 92 (dB)

## CONCLUSIONS

The equipment of the machines drastically influences the propagation of the sound inside them. By their nature, work machines are polluting factors. Doors and windows seals play a crucial role in maintaining a sound threshold inside the vehicle. The construction of the cab is the most important factor when it comes to sound propagation to the machine operator. The fluctuations are due to uncontrollable external auxiliary factors as weather conditions, traffic, but also the shape and quality of the tread. The sound is perceived at a higher level outside the cab due to direct exposure to the noise source. The International tractor is more powerful, therefore more noise pollutant.