



Evaluation of Mycotoxins in the Corn Silage Fed to Dairy Cows in Southeast of Brazil



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Content



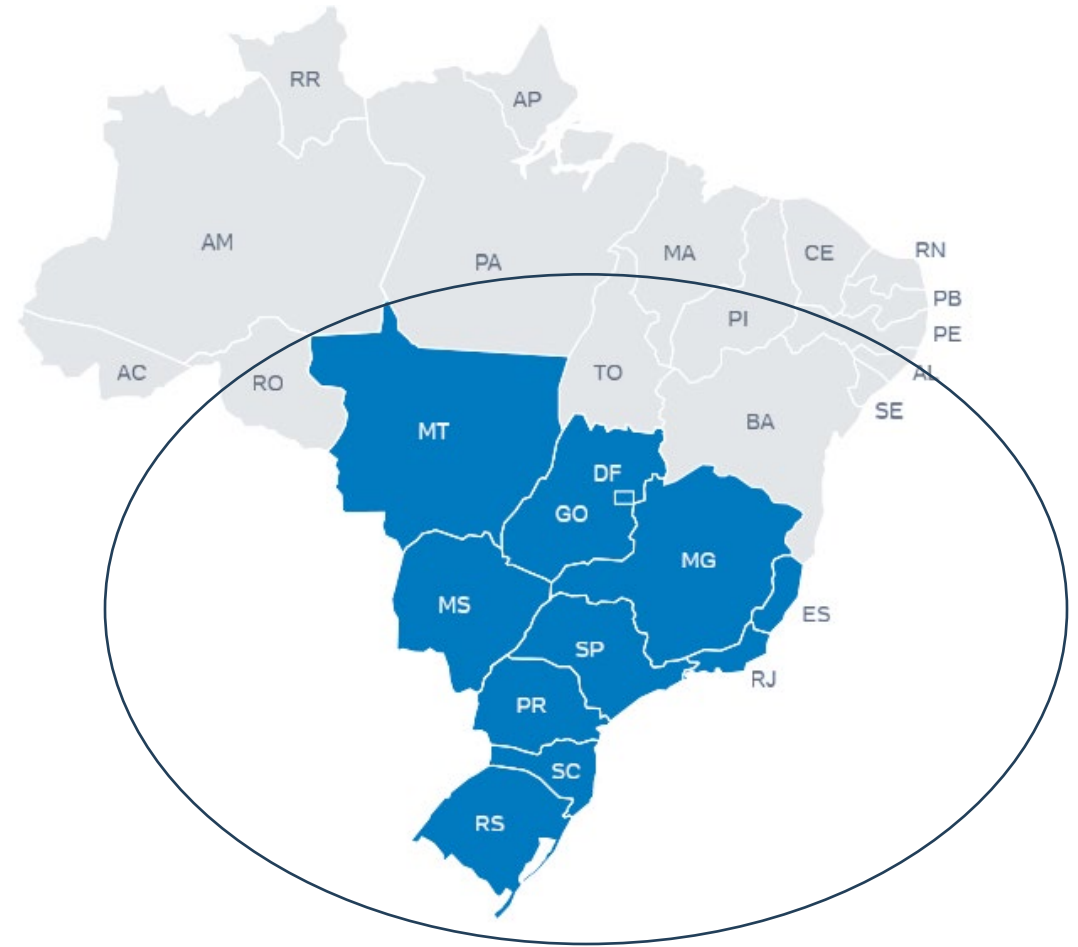
- Introduction.
- Survey of current mycotoxin situation in Brazil.
- Survey of mycotoxin contamination in Corn Silage fed to Dairy cows in Brazil.
- Conclusions and remarks.

Survey of current mycotoxin situation in Brazil

- Approximately 70% of the samples we received for analysis were contaminated with more than one mycotoxin. This contamination was not limited to ruminants but also included feed for other animal species.
- We found an abundance of Fumonisin, followed by Zearalenone, Deoxynivalenol and Aflatoxins.
- Fumonisin predominates in most multi-contaminations.
- They almost never occur in isolation.
- Co-occurrence is very alarming, but the contamination values are not high.
- Synergistic or additional effects must be assessed.
- This is becoming a growing concern for producers and technicians.
- Many "adsorbents" on the market, but they generally work for a single mycotoxin.

What are the most common mycotoxins found in ruminant feed in Brazil?

- Samples (n=303):
 - From the central west, south and southeast regions of Brazil.
- Corn silage, the main preserved forage used in Brazil, can carry 40-60% contamination over long periods of time (a silage bunk can last many months).
- Total mixed ration (TMR) indicates 100% contamination at a given time, allowing the entire animal diet to be assessed, rather than each ingredient individually (cost-effective approach).
- LC/MS/MS was used for determination.



Samples of Corn Silage

Mycotoxin Control and
Decontamination Laboratory –
LCDM/USP

Average values of mycotoxins determined in corn silage – Brazil, 1st semester 2025,
N=98 samples.

Mycotoxins	Average (µg/kg)
Total Aflatoxin (B1+B2+G1+G2)	15.26
Deoxynivalenol	158.34
Fumonisin (B1+B2)	2352.87
Zearalenone	37.04
T2 Toxin	4.02



Sample of Total Mixed Ration TMR

Mycotoxin Control and
Decontamination Laboratory –
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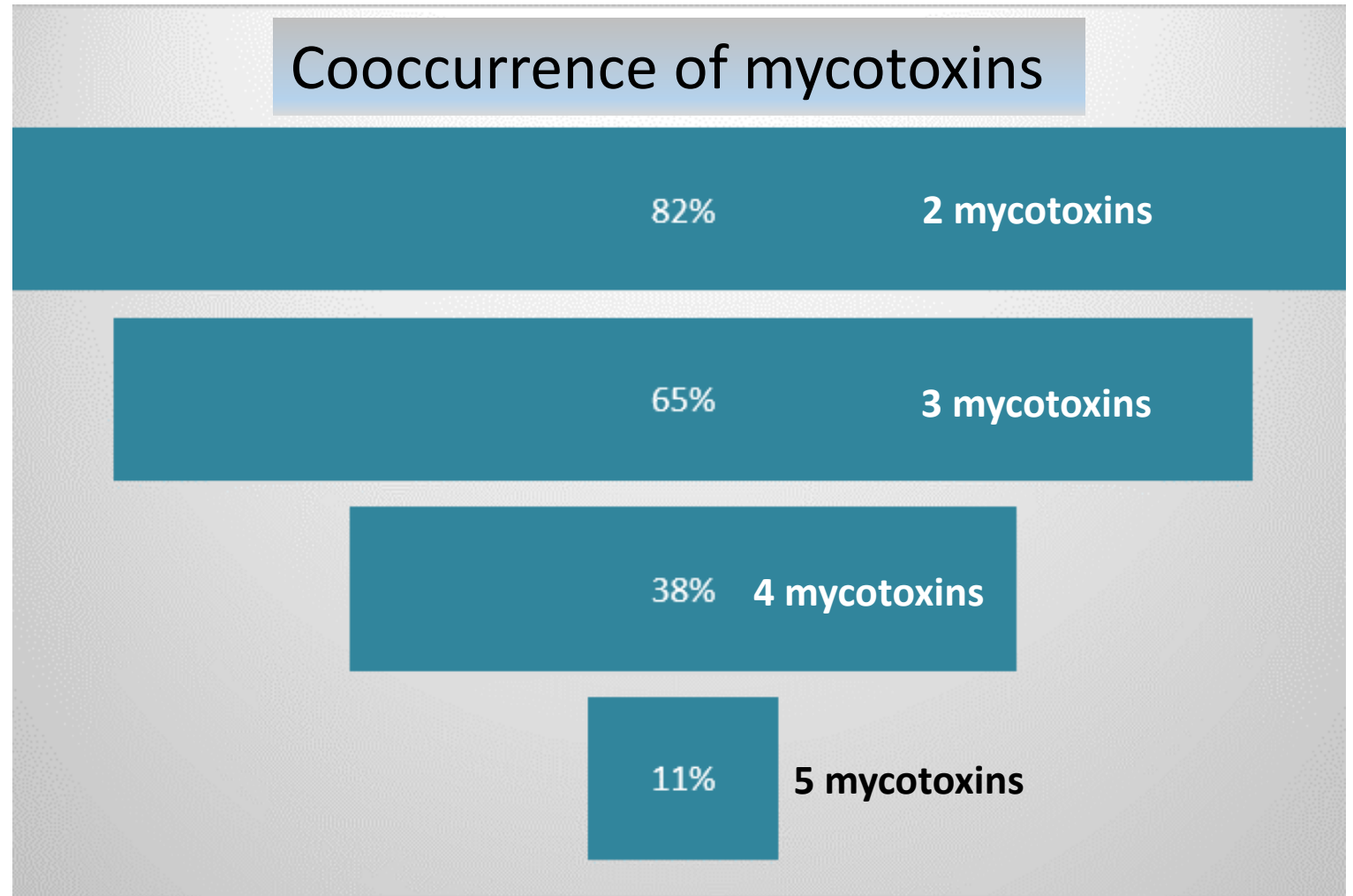
Average values of mycotoxins determined in total mixed ration (TMR) – Brazil, 1st semester 2025, N=205 samples.

Mycotoxins	Average (µg/kg)
Total Aflatoxin (B1+B2+G1+G2)	46.18
Deoxynivalenol	273.41
Fumonisin (B1+B2)	2948.12
Zearalenone	48.03
T2 Toxin	5.06



Importance of evaluating samples for the most common mycotoxins

Data 2025,
Mycotoxin Control
and
Decontamination
Laboratory -
LCDM/USP



Remarks

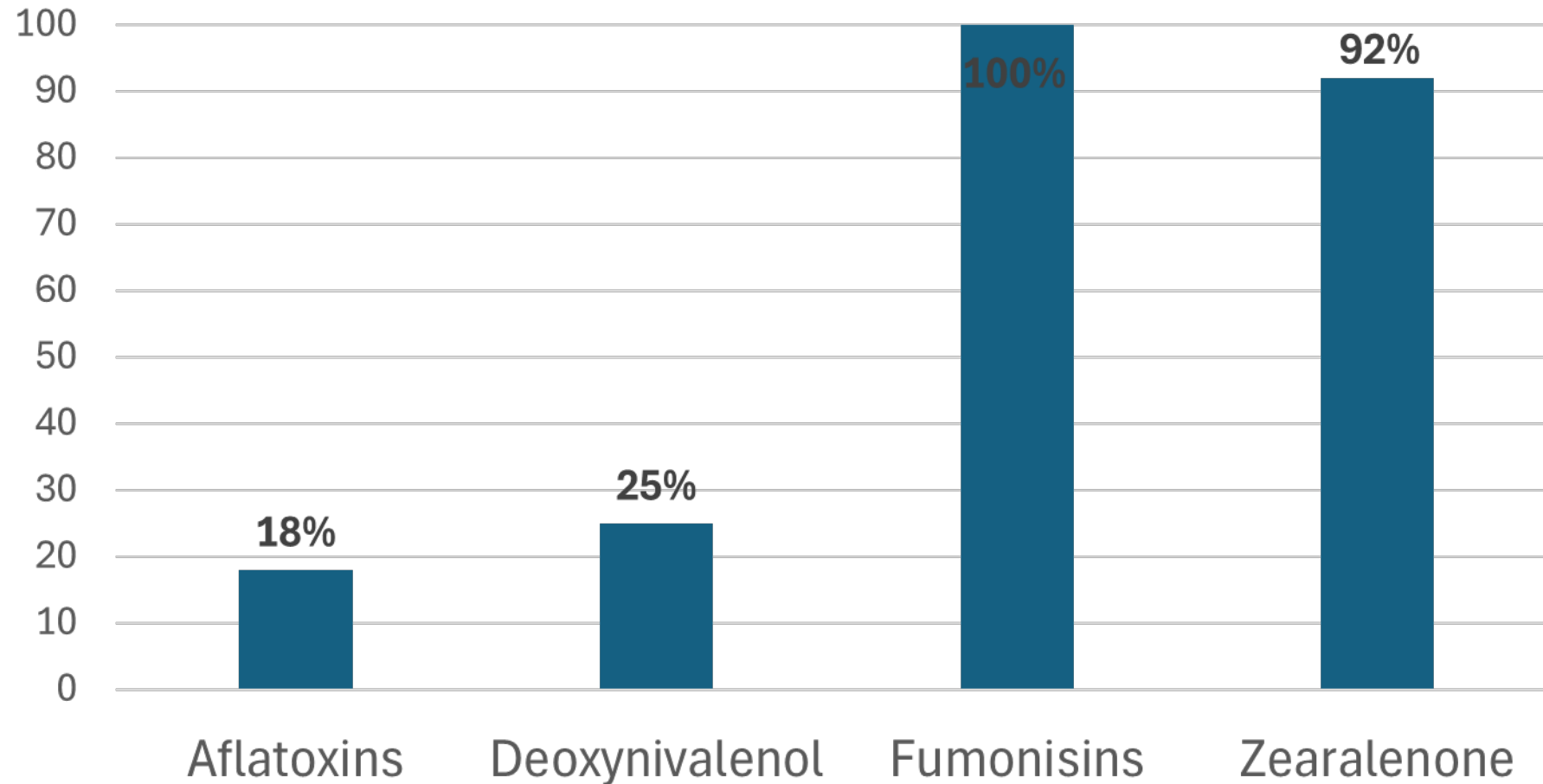
- We confirm:
 - An abundance of Fumonisin, followed by Zearalenone, Deoxynivalenol and Aflatoxins.
 - Fumonisin predominates in most multi-contaminations.
 - They almost never occur in isolation.
- Co-occurrence is abundant, but the contamination values are not high.

Evaluation Of Mycotoxins In The Corn Silage Fed To Dairy Coys In Southeast Of Brazil.

- The objective of this study was to determine and quantify which mycotoxins were present in the corn silage fed to dairy cows in the Southeast region of Brazil.
- 180 corn silage samples from dairy farms from southeast of Brazil.
- Search for multiple mycotoxins in corn silages: aflatoxins (AF) B1, B2, G1 and G2, deoxynivalenol (DON), fumonisins (FB) B1 and B2, ochratoxin A (OTA), HT-2, toxin T2 (T2) and zearalenone (ZEN)



Results for occurrence of mycotoxins in Corn Silage (n=180)



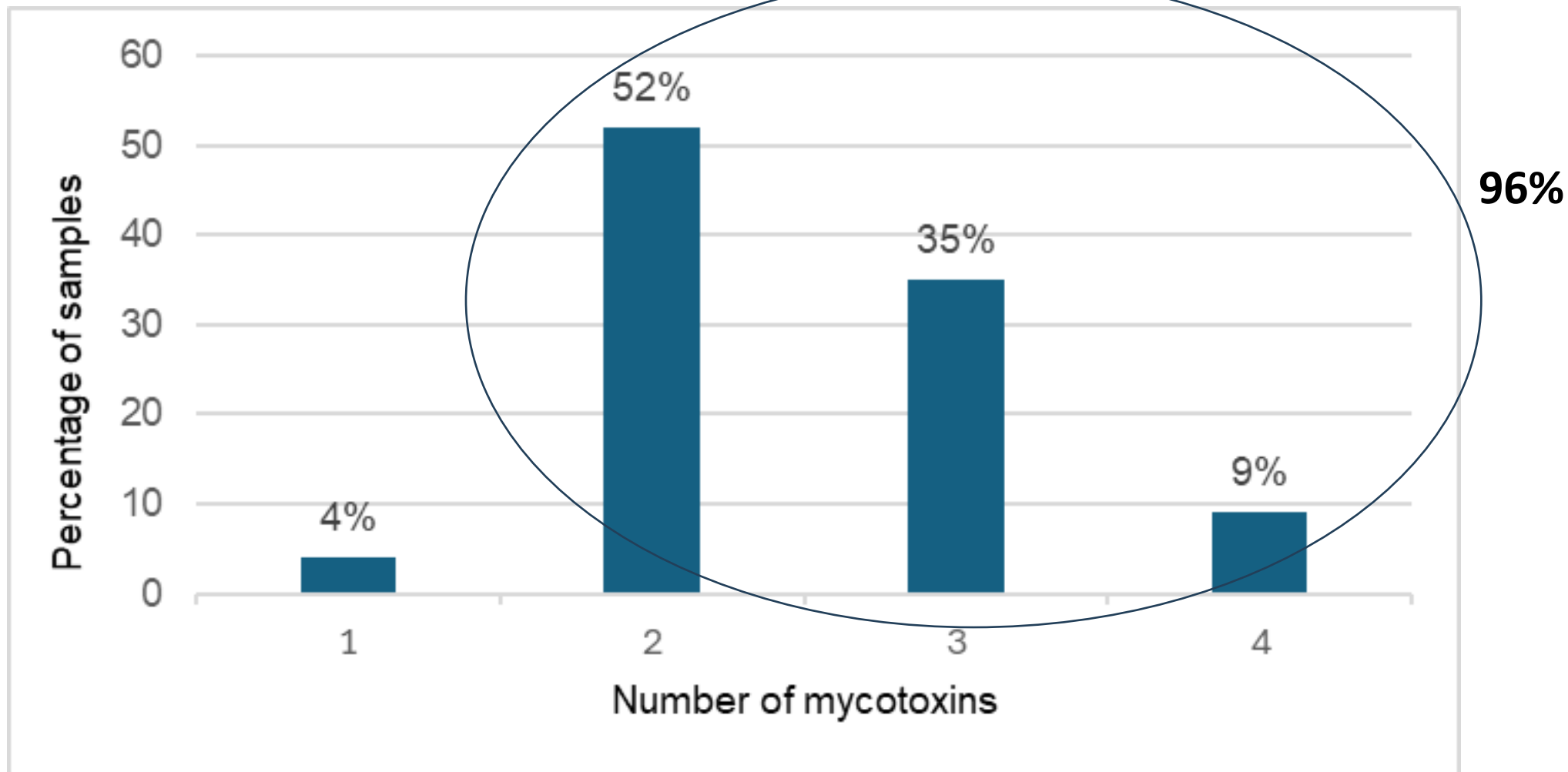
Results for occurrence of mycotoxins in Corn Silage (n=180)

Table 1. Mean values, standard error (SE), and minimum and maximum concentrations of mycotoxins in corn silage (n = 180) consumed by dairy cows from the southeastern region of Brazil.

Mycotoxin	<i>n</i> (%)	Mean ± SE (µg/kg)	Minimum (µg/kg)	Maximum (µg/kg)
Aflatoxins (B ₁ + B ₂ + G ₁ + G ₂)	32 (18)	26.8 ± 13.47	4.92	68.4
Deoxynivalenol	46 (25)	236.1 ± 93.65	49.21	2688.1
Fumonisin (B ₁ + B ₂)	180 (100)	586.9 ± 58.92	43.19	12798.2
Zearalenone	161 (92)	92.33 ± 18.08	13.29	813.4

n: number of positive samples.

Results for co-occurrence of mycotoxins in TMR (n=98)



Remarks

- The high prevalence and levels of aflatoxins, fumonisins, deoxynivalenol and zearalenone identified in this research suggest a potential concern regarding the co-occurrence of these mycotoxins.
- The findings of this study indicate a possible issue concerning the occurrence of multiple mycotoxins, a phenomenon that is becoming increasingly prevalent.
- Measures to prevent fungal contamination of silage are extremely important to reduce problems with the formation of mycotoxins.
- Highlighting the importance to prevent the presence of mycotoxins in the diet, to use anti-mycotoxin additives capable of acting against the various types of mycotoxins that may be present in corn silage.

Future Research

- We need a better understanding of the transfer rates of mycotoxins from the diet to the milk.
- Improve the use of biomarkers to predict herd contamination (Blood and milk samples instead of just feed ingredients).

Thank you very much for your attention

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