Effects of dietary sorghum on performance and certain health markers in weaning Topigs piglets

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WHY SORGHUM SEED FOR LIVESTOCK ?

SORGHUM *ALBANUS* - NUTRITIONAL CHARACTERICS

- Sorghum is an important energy grain, rich in various phytochemicals compound that could replace other less drought-tolerante cereals
- It is know that sorghum is a cereal widespread throughout the globe that became more and more important, being 5th cereal produced in the world after wheat, rice, maize and barley (Thorabi & Khaksar, 2016, https://www.feedipedia.org).
- Sorghum need less water compared to other grain and in dry years it can replace corn grain. The nutritional composition of the *sorghum is close to corn*.

Items (%)	Corn *Turda*	Sorghum *Albanus*
Dry matter	87.63	87.15
Protein	7.11	9.91
Fat	2.92	3.20
Cellulose	3.86	2.56
Calcium	0.04	0.02
Phosphorus	0.47	0.32
Metabolisable energy (kcal/kg)	3353	3317
Lyzine	0.345	0.266
Methionine + Cystine	0.367	0.344

BIOLOGICAL TESTING ON WEANED PIGLETS

TOPIGS STUDY

☞ CONTEXT

- Using of alternative feedstuffs in animal nutrition is important :
  - ➢from economic point of view,
  - ➢a large part of the waste industry is an option for animal feeding,
  - ➢drought- tolerant capacity of the classical feedstuffs is limited.

BIOLOGICAL TESTING ON WEANED PIGLETS

TOPIGS STUDY- WHAT WE KNOW????

!

- There are more than 30 species of sorghum, but only one is directed to human consumption, the others being used for animals.

- Due to low tannin content of modern variety (0.5%), this ingredient could be use as single cereal in monogastric diets (Mavromicalis, 2014).

BIOLOGICAL TESTING ON WEANED PIGLETS

OBJECTIVE:

This study was conducted to assess the effects of 20% dietary sorghum *Albanus* alone or associate with peas:linseed mixture on performances and certain health markers in weaning piglets:

- ❑ the degree of aggression of enteritis,
- ❑ biochemical profile: plasma protein and its fraction, cortisol, cholesterol, triglycerides.

BIOLOGICAL TESTING ON WEANED PIGLETS

! Weaning is the most critical period being associated with stress generators factors for piglets. Diet is one of these factors.

- In the piglet's weaning period the diet can be one of the factor that can generate imbalances follow by negative effects of health status.
- The dietary addition of these feedstuffs must be managed properly due to certain restriction of their using at animals with incomplete development of the enzymatic equipment.

WEANING PIGLETS TEST

☞**Effects of sorghum *Albanus* on:**

- **growth performance**
- **health markers concentration**

Experimental design

A total of 30 piglets (7 kg ± 3) were assigned randomly for 20 days to 3 groups:

TOPGS hybrids

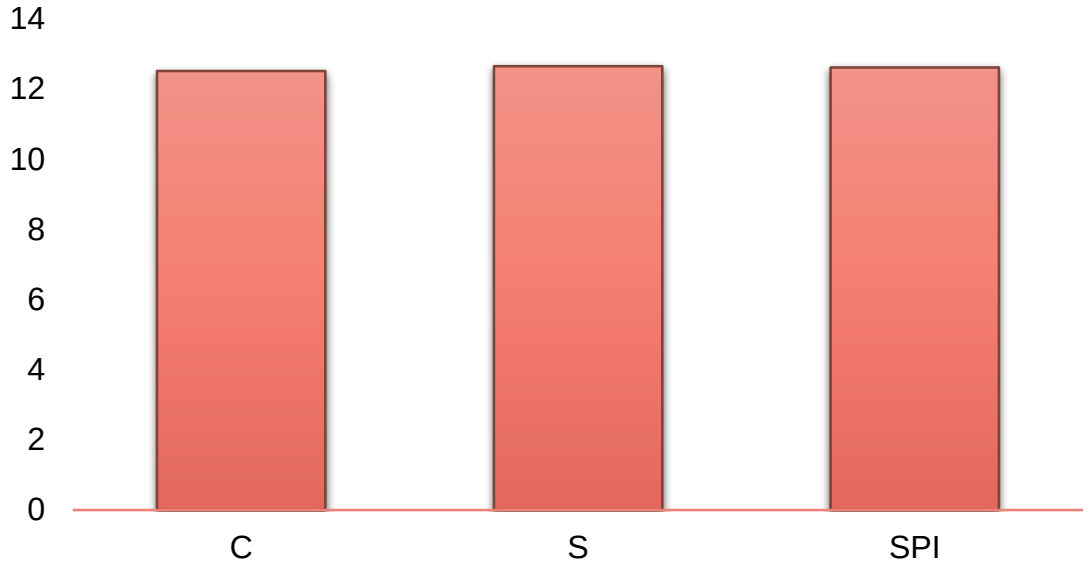
- C diet - fed with classical diet (corn and soybean)
- S diet- sorghum fed group
- SPI diet - sorghum + mixture of peas and linseed (3:1)

WEANING PIGLETS TEST

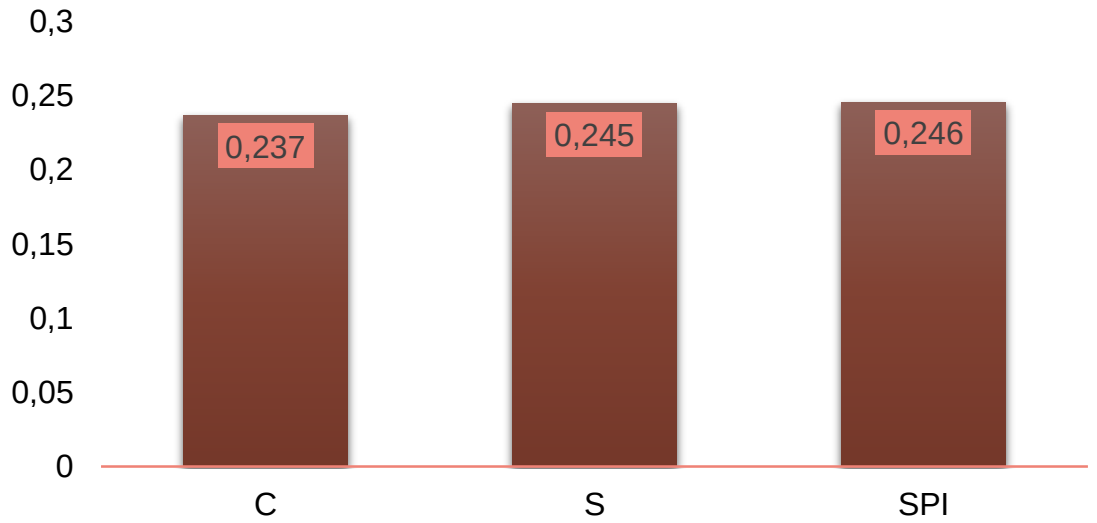
☞Effects of sorghum *Albanus* on:

- growth performance

Body weight



Average daily gain



P>0,05

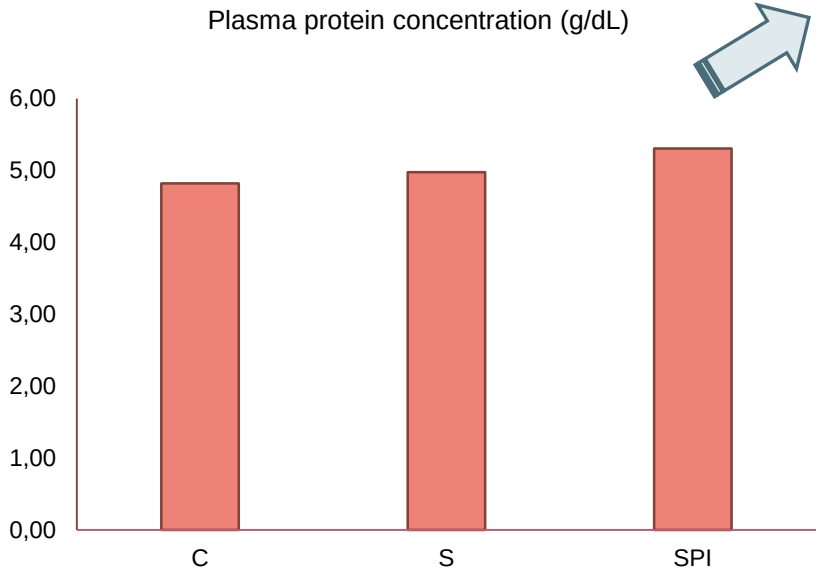
- Dietary sorghum addition did not affected significantly the growth performance (> 3% in S diet and SPI diet compared to C diet).

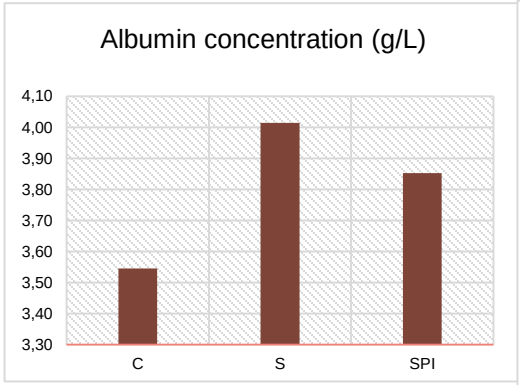
- The ADFI was slightly higher in group fed with sorghum diet (0.381 kg/d) compared to corn fed group (0.296 kg/d), maybe due to lower energy content of sorghum grains.
- Feed conversion ratio (feed:gain) was similar between groups.

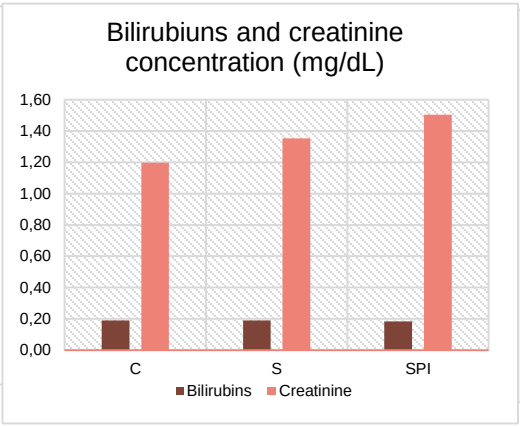
WEANING PIGLETS TEST

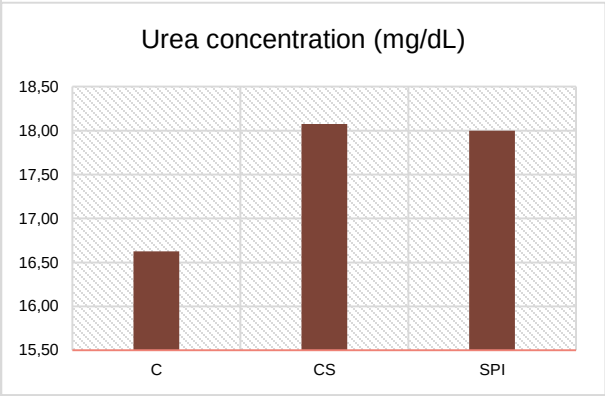
☞Effects of sorghum *Albanus* on:

- health markers concentration





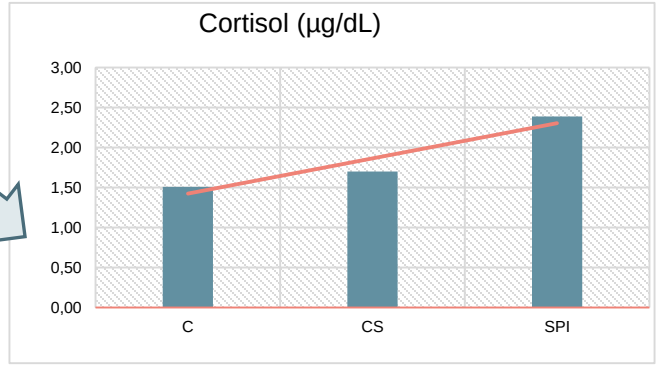




Protein fractions

- Except magnesium (p<0.01), plasma parameter were not modify significantly by diet.
- The plasma protein was 1.06 times higher in SPI diet compared to S diet and 1.09 times higher vs. C diet.
- More protein was metabolized creatinine secretion was increased also.

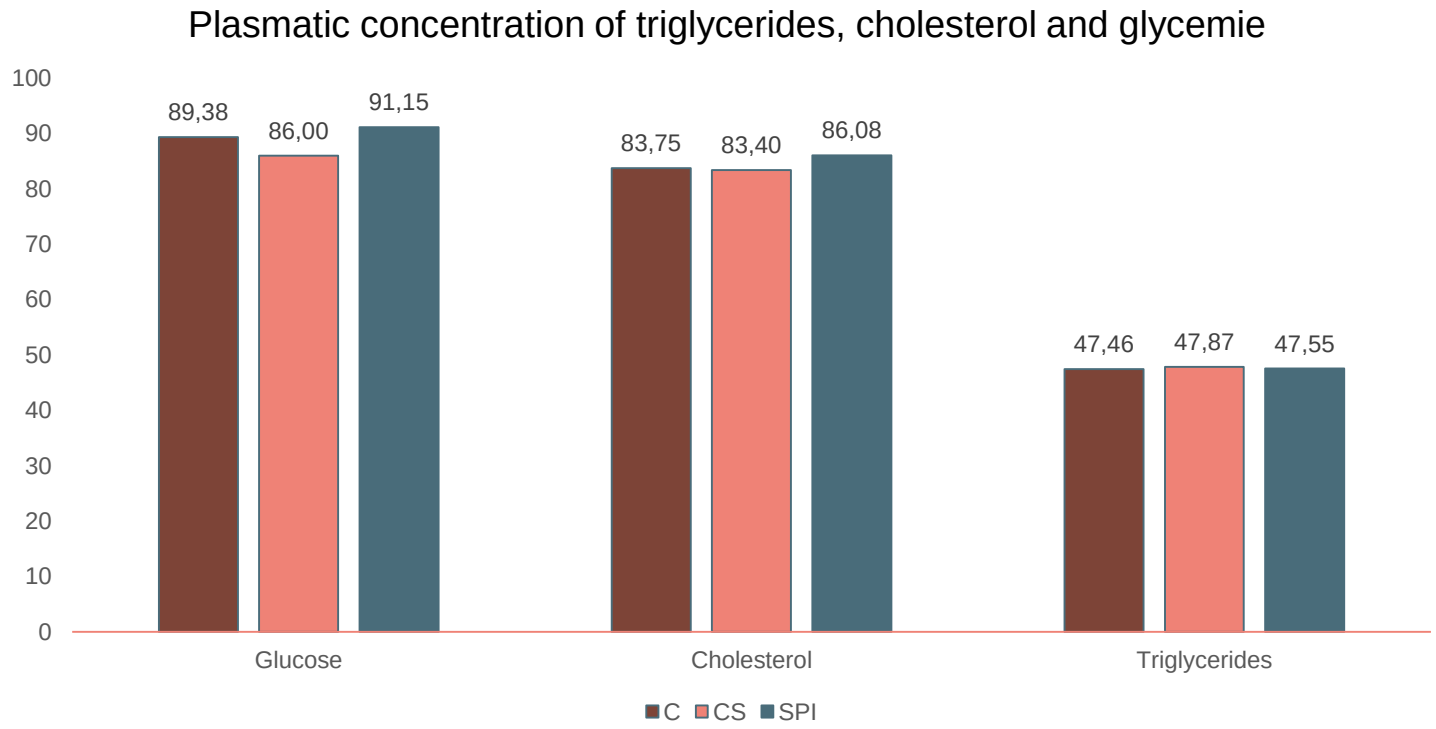
The cortisol higher in SPI group then C and S groups (p>0.05), was positive correlated with plasma protein and creatinine.



WEANING PIGLETS TEST

☞Effects of sorghum *Albanus* on:

- **health markers concentration**

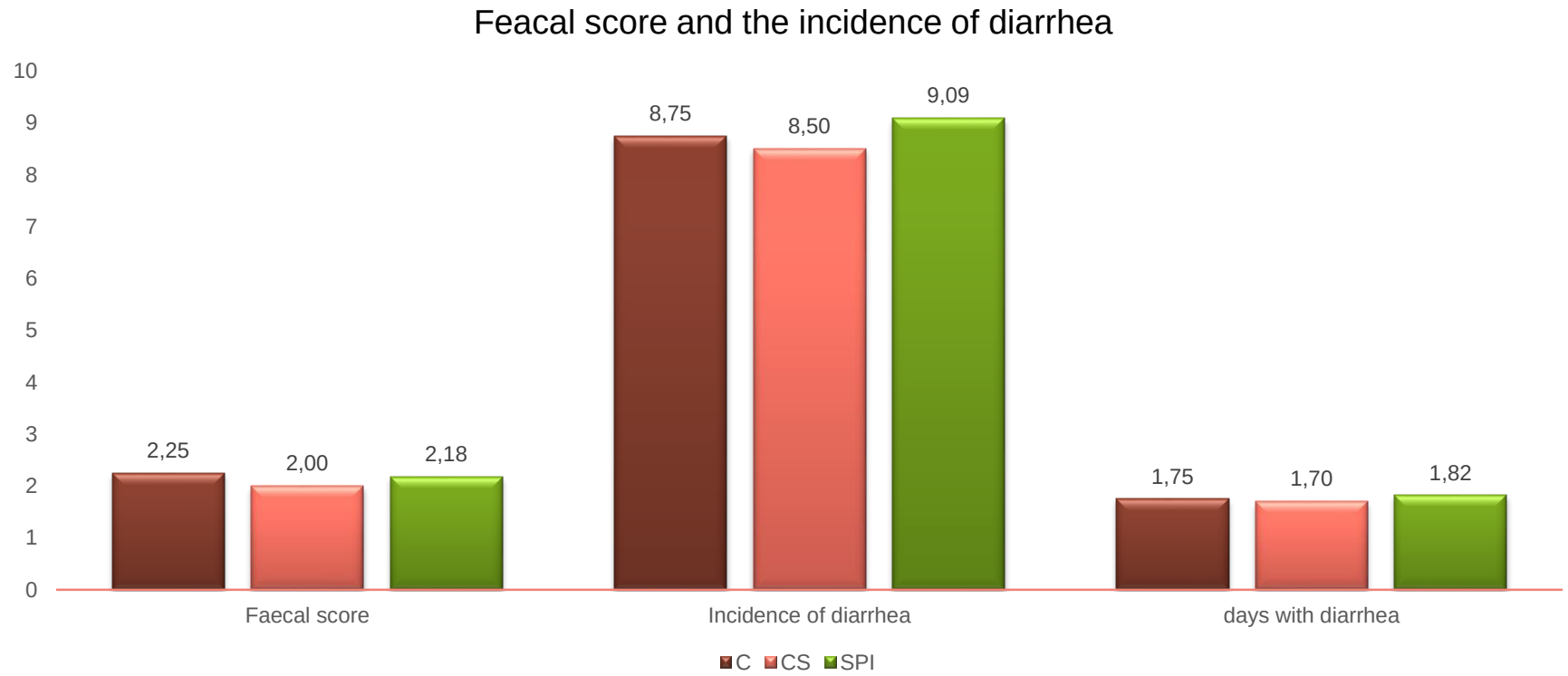


- A high content in blood cholesterol and triglycerides is associated with an increased risk of disorder in the animals body and a sign of metabolic syndrom, but association between sorghum + peas:linseed mixture due to increasing level of cholesterol by 2,7%.
- The triglycerides concentration was similary between group

WEANING PIGLETS TEST

☞Effects of sorghum *Albanus* on:

- **health markers concentration**



The animal were monitored daily and a scoring system 1 to 3 was used in order to determine the degree of aggression of enteritis .

No difference between score of diarrhoea severity and incidence of diarrhoea were observed (P>0.05).

CONCLUSION

Sorghum became an important alternative vegetable source for swine feeding due to its excellent nutritive value.

Dietary addition of sorghum grain improve the growth parameters although, sorghum digestibility is lower, due probably to bioactive compound as phytochemical constituents.

We conclude that sorghum addition in two different type of diet had positive effects on performance, faeces microbiota, enteritis and plasma profile

Thank you for your attention!