

Research areas



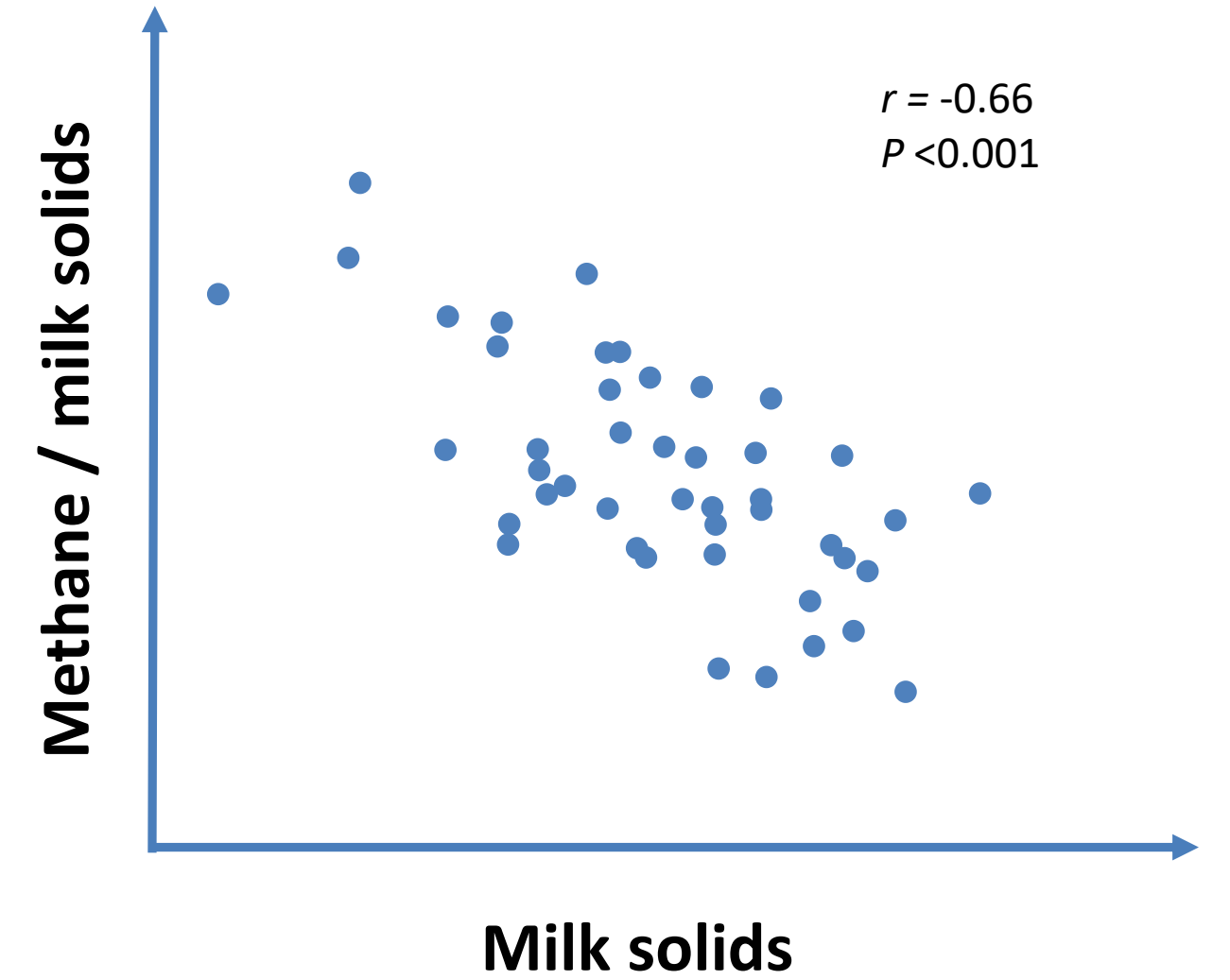
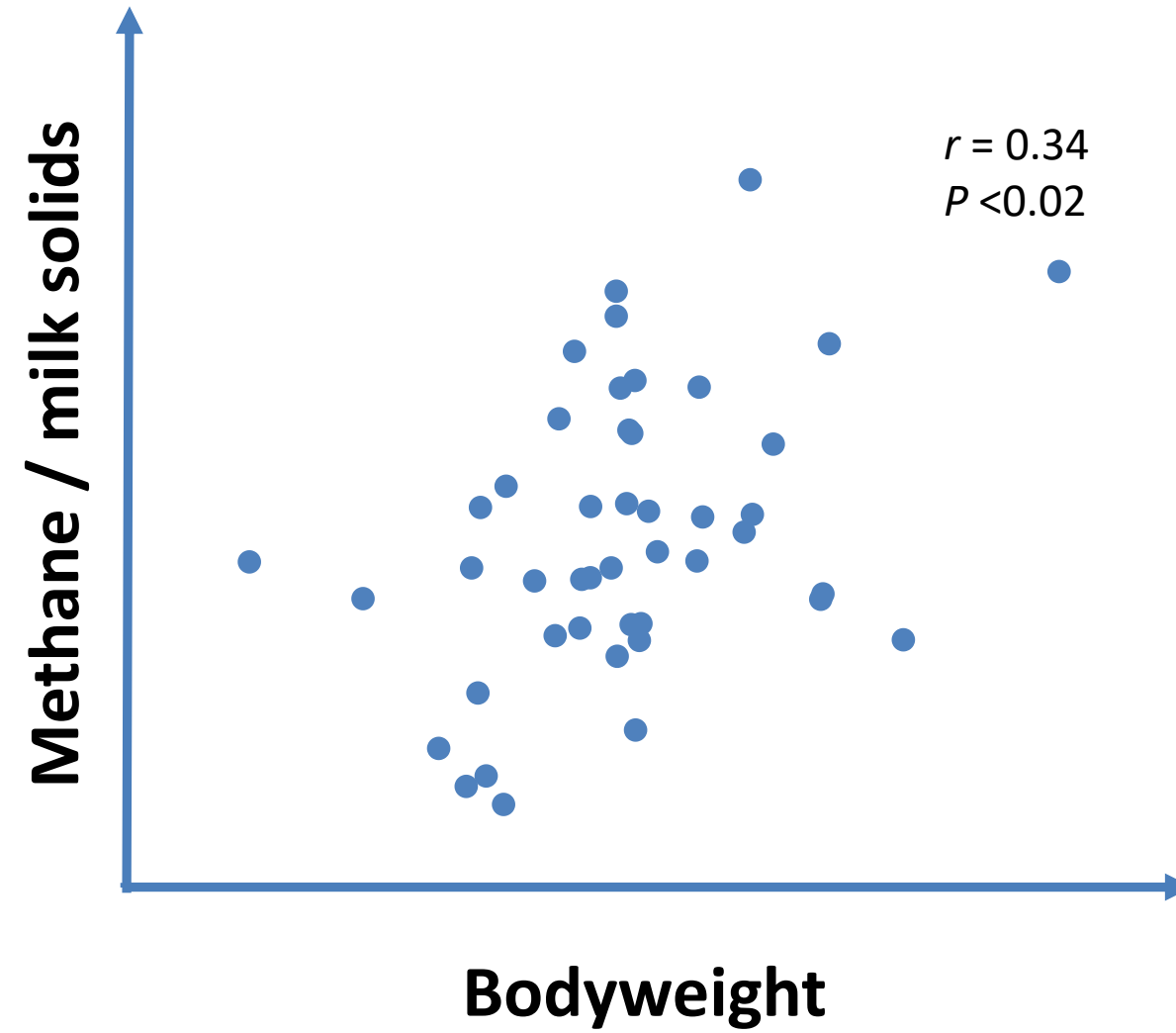
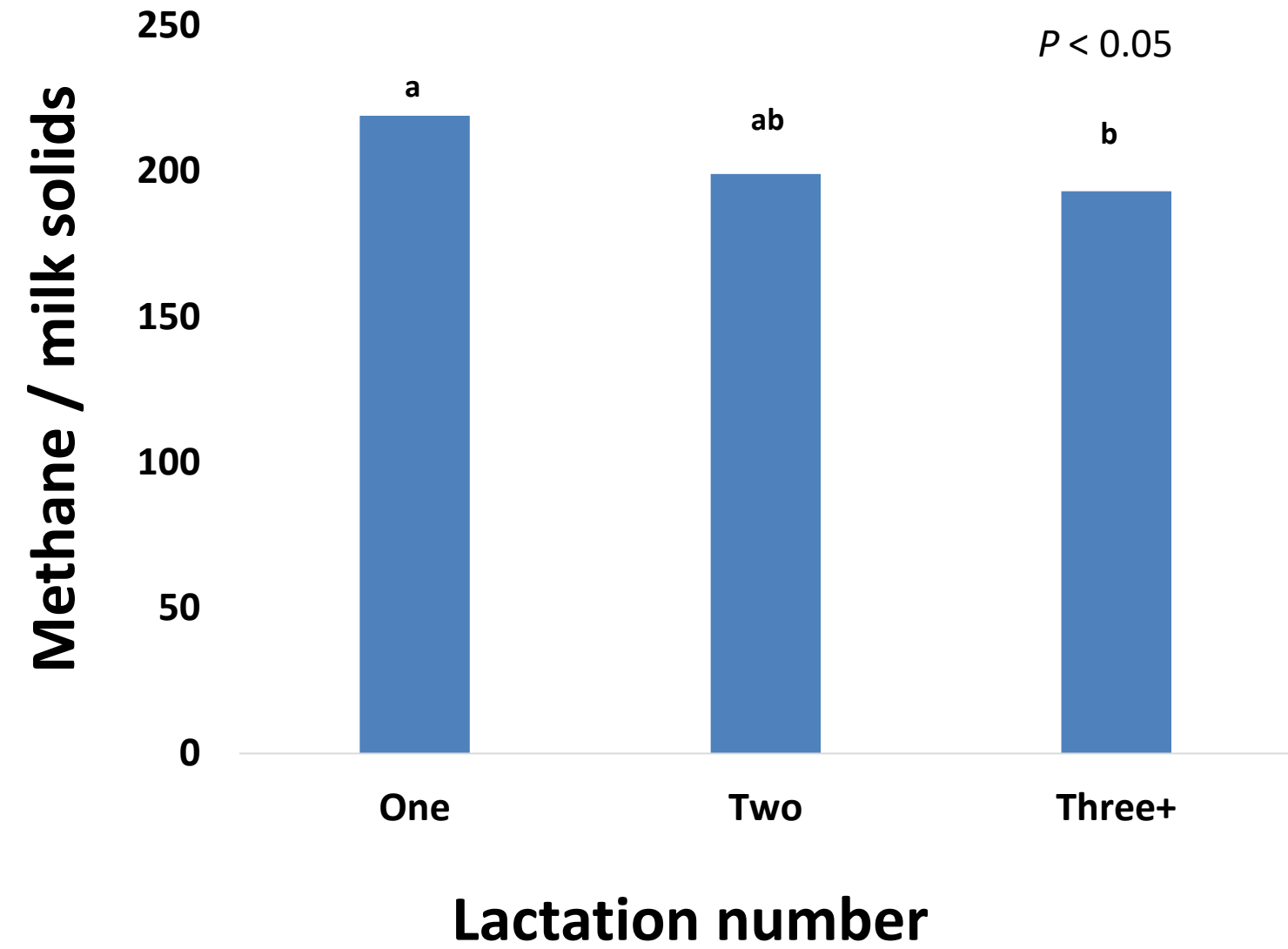
- Sward factors

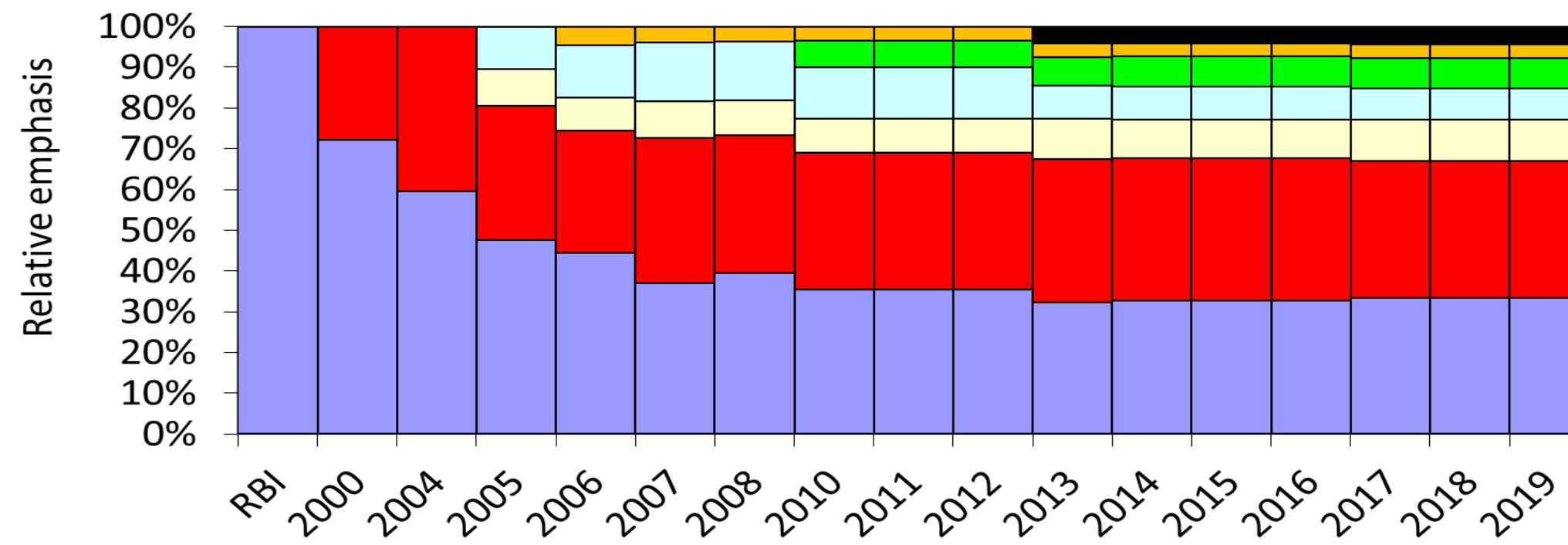
- **Animal factors / genetics**

- Feed additives

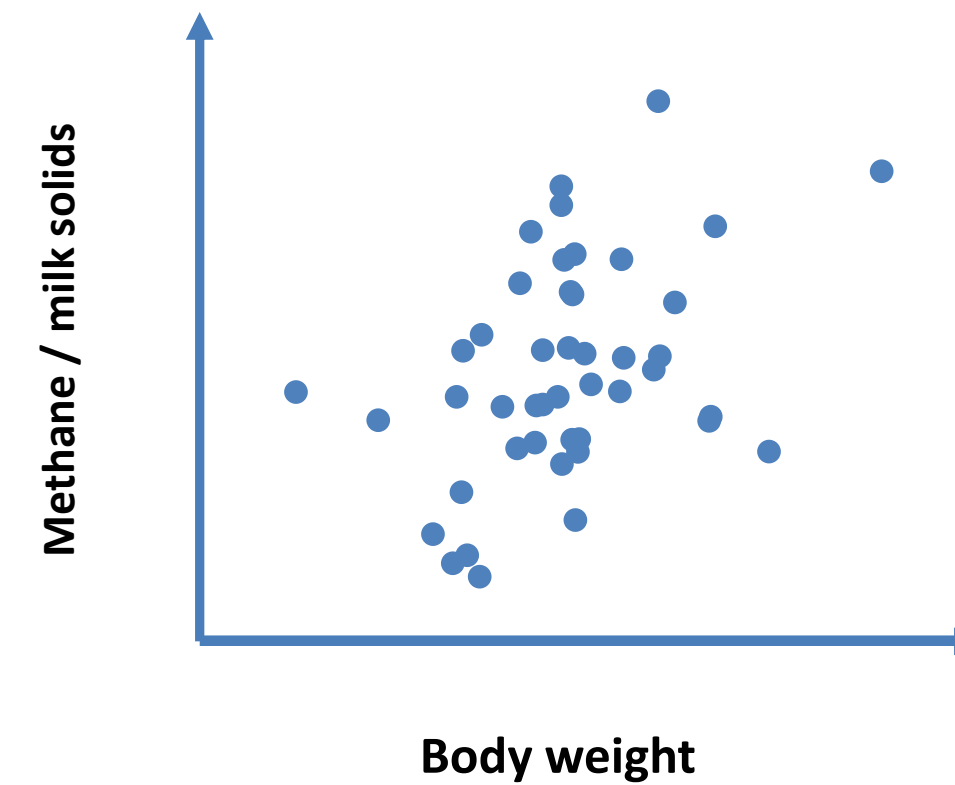
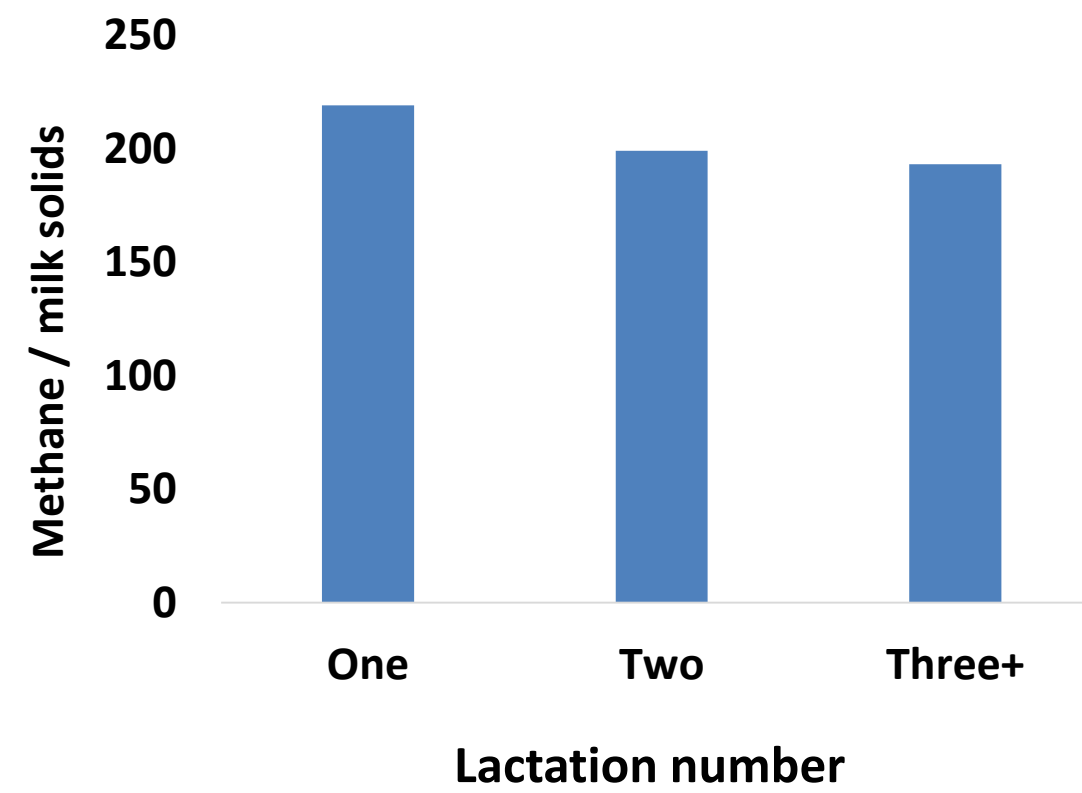
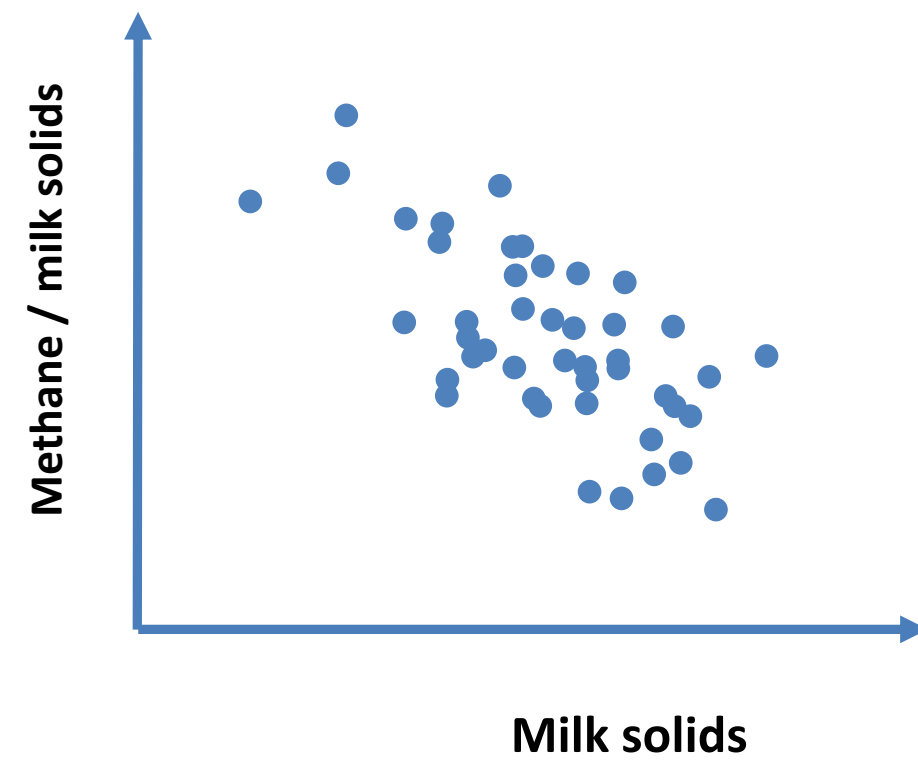
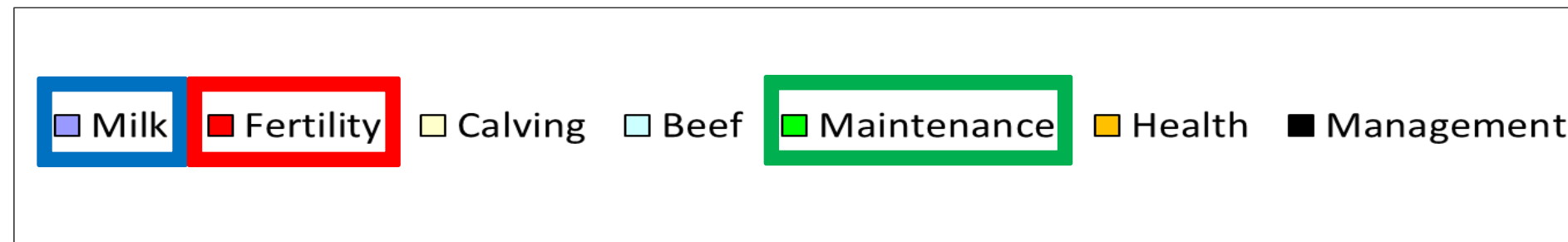


Animal traits





EBI



Environmental footprint of the Next Generation Herd



Elite (€181) **NatAv (€80)**

CO₂-eq, tonnes / ha

16.2

16.3

- Lactating herd enteric CH₄: 50.6%
- Replacements: 11.5%
- Other: 37.9%

- Lactating herd enteric CH₄ : 46.2%
- Replacements: 16.9%
- Other: 36.8%

Journal of Dairy Science (*in press*)

Environmental footprint of the Next Generation Herd



Elite (€181) **NatAv (€80)**

CO₂-eq, tonnes / ha

16.2

16.3

FPCM, kg

16879

15326

Journal of Dairy Science (*in press*)

Environmental footprint of the Next Generation Herd



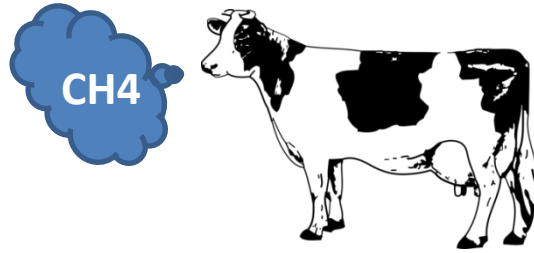
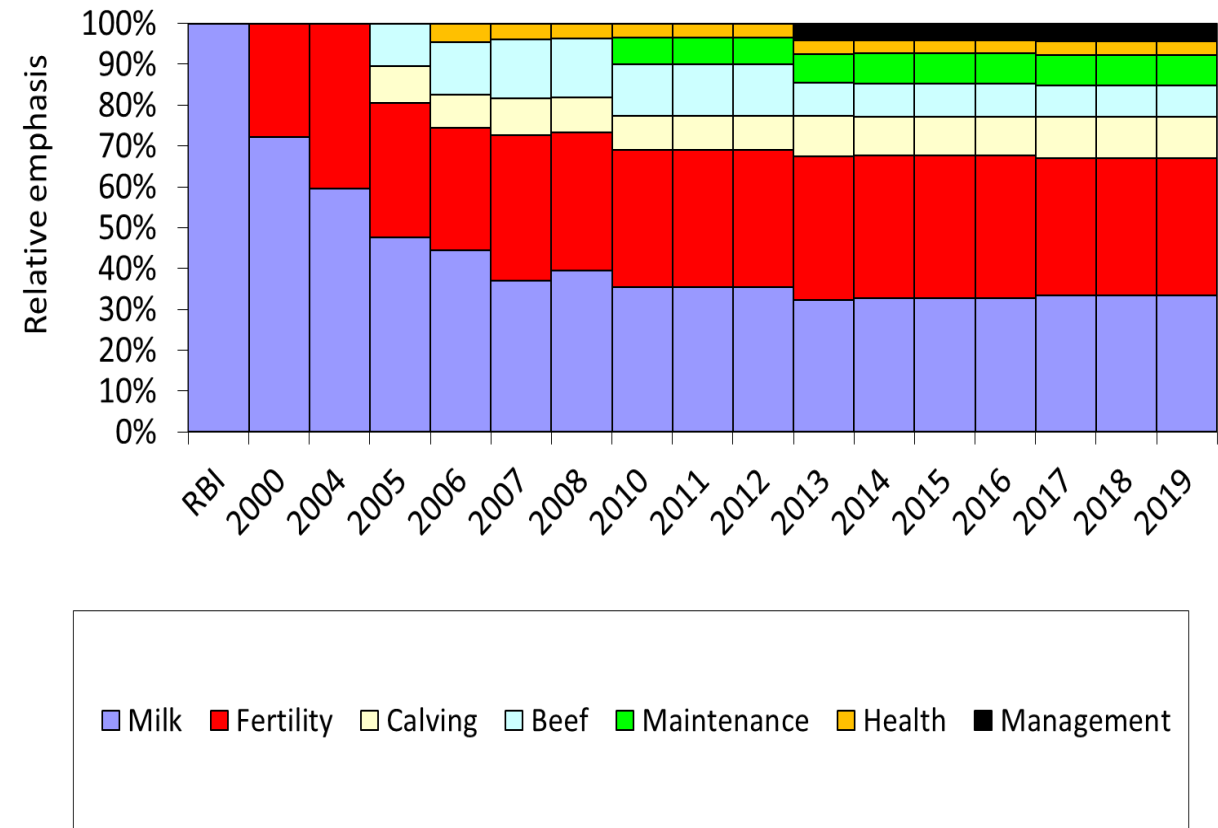
Elite (€181) **NatAv (€80)**

CO ₂ -eq, tonnes / ha	16.2	16.3
FPCM, kg	16879	15326
CO ₂ -eq, kg / kg FPCM	0.96	1.06

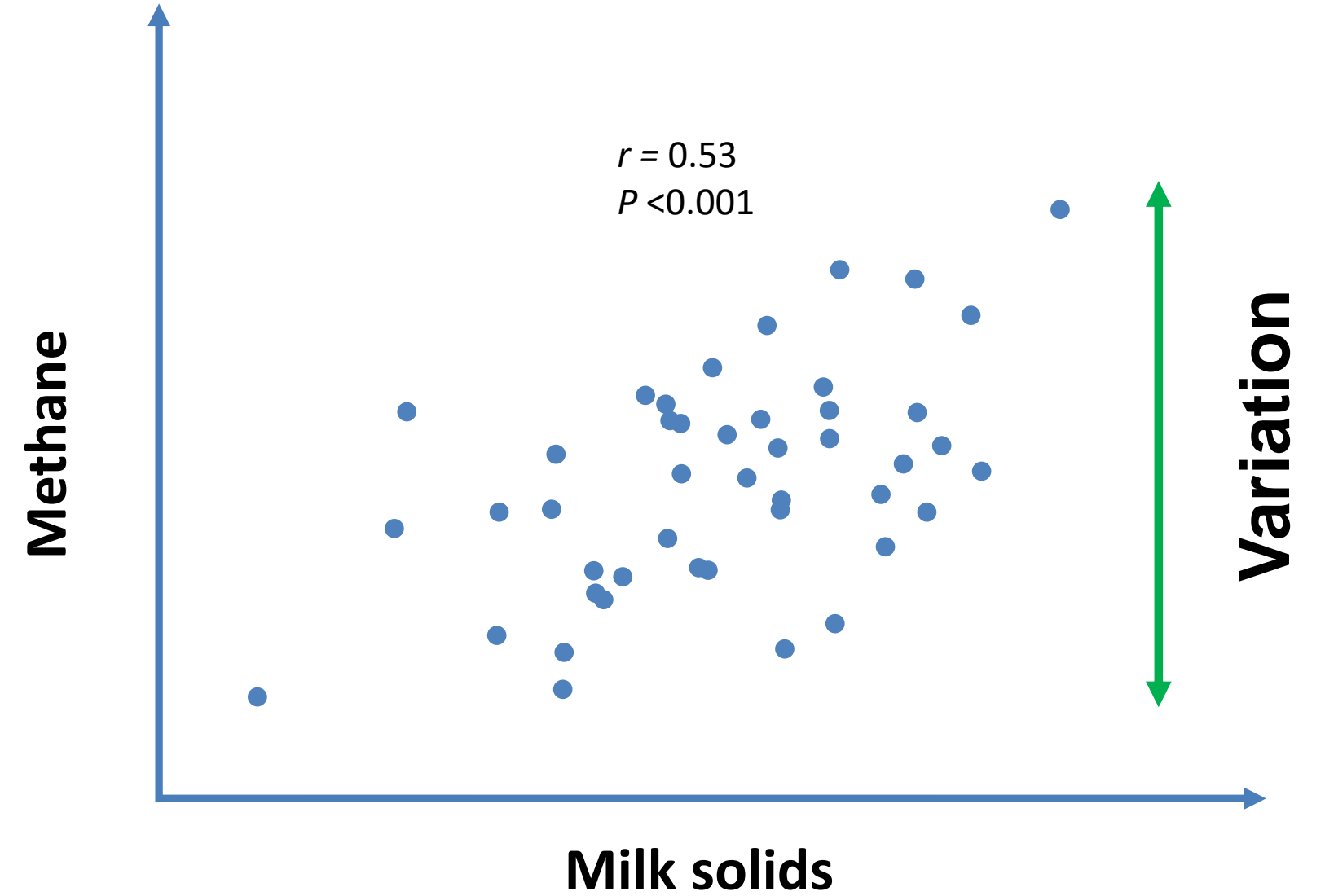
**€10 increase in EBI = 1% less
CO₂-eq kg / kg FPCM**

Journal of Dairy Science (*in press*)

Direct selection for methane?



Is it worth including ?



- Trait definition: gross methane, methane per unit output or methane per unit of feed intake?

Feed additives



PENN STATE NEWS

HOME RESEARCH ACADEMICS IMPACT CAMPUS LIFE ATHLETICS ADMINISTRATION ARTS AND ENTERTAINMENT

Seaweed feed additive cuts livestock methane but poses questions

- Up to 80% reduction and no effect on milk yield when fed up to 0.5% of DMI
- Questions raised:
 - Is it effective long term? Adaptation?
 - Stability of active ingredients?
 - Palatability?

DSM: Dutch dairy cattle trial shows efficacy of methane reducing feed additive

By Jane Byrne

04-Feb-2021 - Last updated on 05-Feb-2021 at 09:26 GMT



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RELATED TAGS: methane emissions

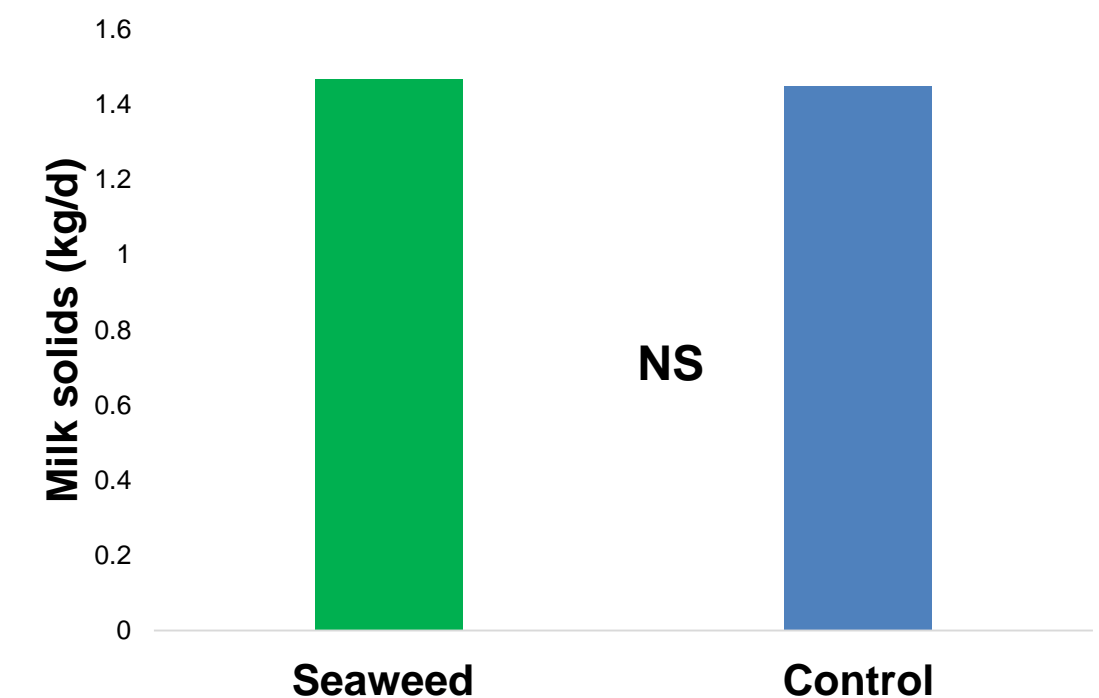
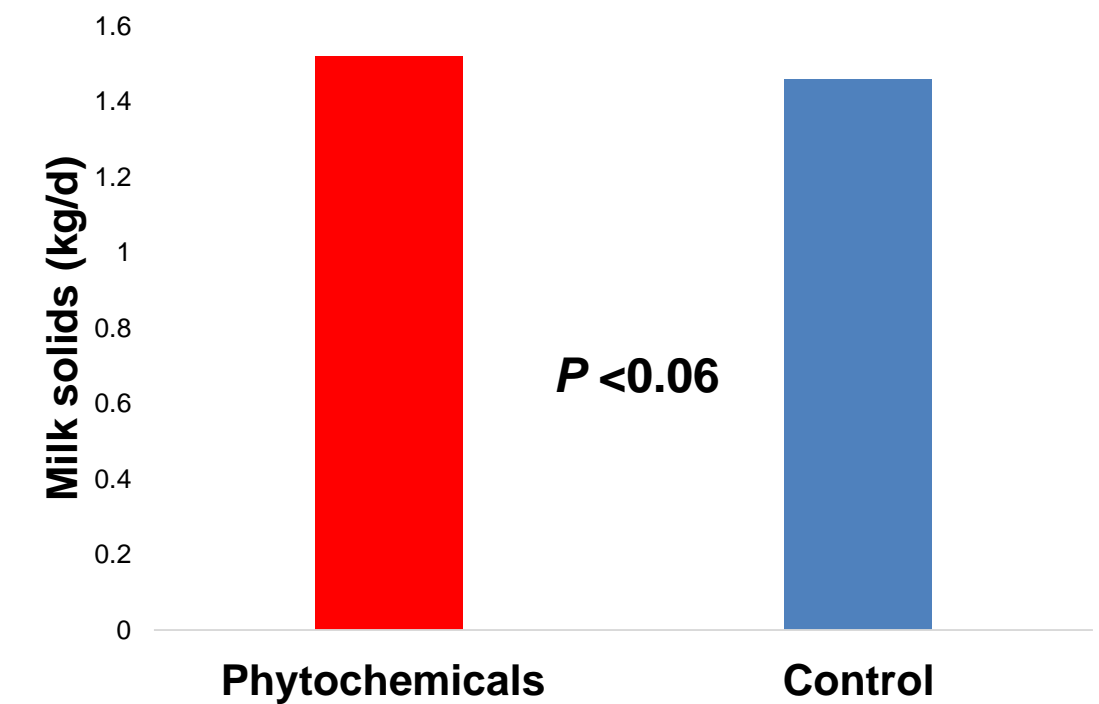
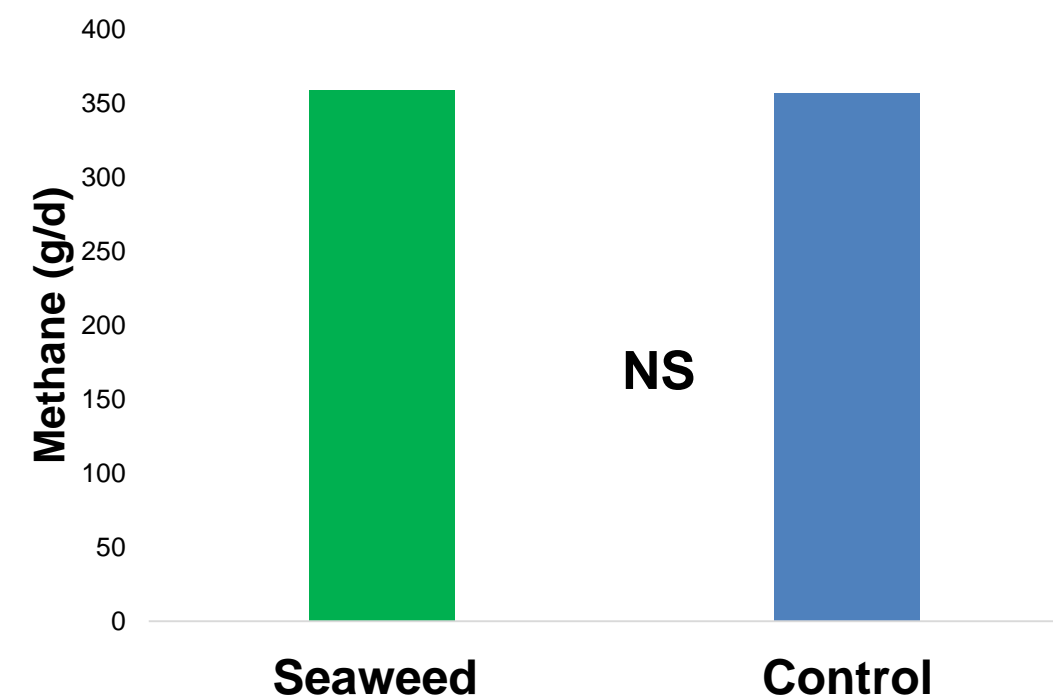
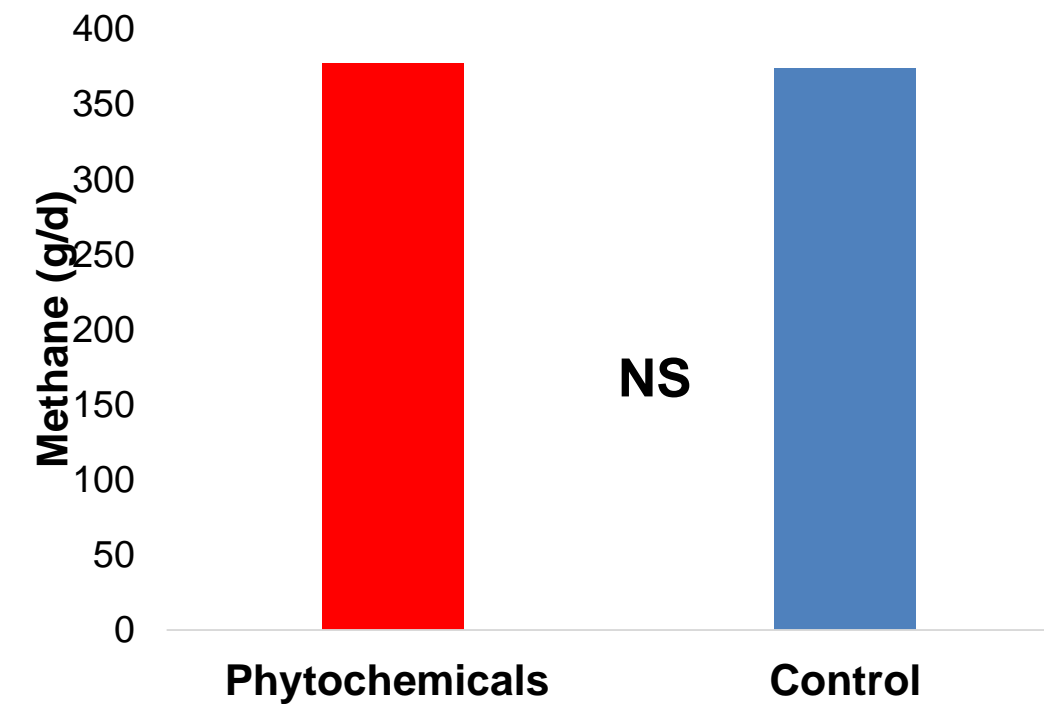
Feed additives



Study	Supplement	Average methane reduction
<i>Vracken et al. (2019)</i>	Garlic and citrus extract	30%
<i>Moreno (2020)</i>	3-NOP	26%
<i>Belanche et al. (2020)</i>	Essential oils	10%
<i>Roque et al. (2019)</i>	Seaweed extract	47%

Additive experiments at pasture

- Two studies were conducted in 2020 evaluating: 1) phytochemicals and 2) a blend of seaweeds on methane emissions and milk production in grazing dairy cows.
- Animals within each study randomly assigned to a treatment and control group. Methane emissions and milk production recorded daily.



Conclusion



- **Swards characteristics and methane need more research**
- **EBI breeding more efficient animals**
 - **Direct selection for methane may be required**
- **Virtually all additive research globally is in indoor systems**
 - **Focus on additives suitable for grazing systems needed**

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