

The online support-tool “RAX”: fertilization recommendation with slurry in grasses and forage crops

García-Pomar MI¹, Báez D¹, Castro J¹

¹ Agricultural Research Centre of Mabegondo, INGACAL, Xunta de Galicia, Apartado de correos 10, 15080 A Coruña
maria.isabel.garcia.pomar@xunta.gal

INTRODUCTION



In GALICIA, the first milk production region of Spain, livestock feed in dairy farms is based on concentrates and grasses, winter forages and forage maize and accordingly in these systems, the best use of slurry is as fertilizer in the crops of the farm itself.

If recycled of nutrients is improved putting in value the slurries and with a good managing of them, dairy farms will achieve a high degree of self-sufficiency in fertilization. All this will improve the economic margin and the sustainability of Galician dairy farms.

The INGACAL-CIAM in association with Cooperativa Agraria Provincial de A Coruña, has developed an online support-tools (www.ciam.gal), which present the great advantage that farm organic nutrients are integrated and valued, helping to technicians and farmers to get fertilization recommendations.

MODEL/TOOL DESCRIPTION

Best nutrient source in dairy farms is in recycling slurry as organic fertilizer

(recommendation that if it is necessary can be completed with mineral fertilizers)

Inputs

Soil analysis

- ✓ % Al
- ✓ P (ppm)
- ✓ K (ppm)

Dry matter yield (t ha⁻¹)

Chemical composition of the slurry

- ✓ Laboratory analysis of slurry
- ✓ Mean value of dairy slurry nutrients
- ✓ Estimation from the slurry density
- ✓ Estimation from the slurry density and electrical conductivity

Grass management and botanical composition

Techniques, times and conditions of application

Outputs

Fertilizer value

- ✓ kg N/m³
- ✓ kg P₂O₅/m³
- ✓ kg K₂O/m³

Liming recommendation

- ✓ t CaCO₃ ha⁻¹

Nutrient needs of the crop

- ✓ m³ to supply nitrogen
- ✓ m³ to supply phosphorus
- ✓ m³ to supply potassium

Dose of slurry (m³ ha⁻¹)

Dose of complementary mineral fertilizer (kg ha⁻¹)

RESULTS & DISCUSSION

RAX Support-Tools

- RAX- Forage maize fertilization.



Disponible: Fertilización do Millo forraxeiro
Este programa permítelle obter unha recomendación de fertilización do millo forraxeiro, baseada no uso do xurro como fertilizante principal. Entrar | [User guide](#)

- RAX- Grasslands annual fertilization.



Disponible: Fertilización Anual de Pradeiras
Este programa permítelle obter unha recomendación de fertilización anual en pradeiras baseada no uso do xurro como fertilizante principal. Entrar | [User guide](#)

- RAX- Grasslands establishment fertilization.



Disponible: Fertilización de Establecemento de Pradeiras
Este programa permítelle obter unha recomendación de fertilización no establecemento de pradeiras, baseada no uso do xurro como fertilizante principal. Entrar | [User guide](#)

- RAX- Winter forages fertilization.



Disponible: Fertilización de Cultivos Forraxeiros de Inverno
Este programa permítelle obter unha recomendación de fertilización de cultivos forraxeiros de inverno (raigrás italiano, cereal), e cereal con veza ou chícharo. Entrar | [User guide](#)

Fertilizer recommendations can be saved and consulted on line (www.ciam.gal)

Future improvements:

- ✓ Estimation of nutrients of pig slurry
- ✓ Previous crops
- ✓ Mineralization of organic matter

CONCLUSION

The support-tools RAX for grasses and forage crops, is helping to technicians and farmers to get fertilization recommendations in Galician dairy farms, considering that the main nutrient source in the dairy farm is in recycling slurries as fertilizers, which can be completed if it is necessary with the use of mineral fertilizers.

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