



LIFE 15 IPE IT 013



Progetto LIFE 15 IPE IT 013 PREPAIR

Po Regions Engaged to Policies of Air

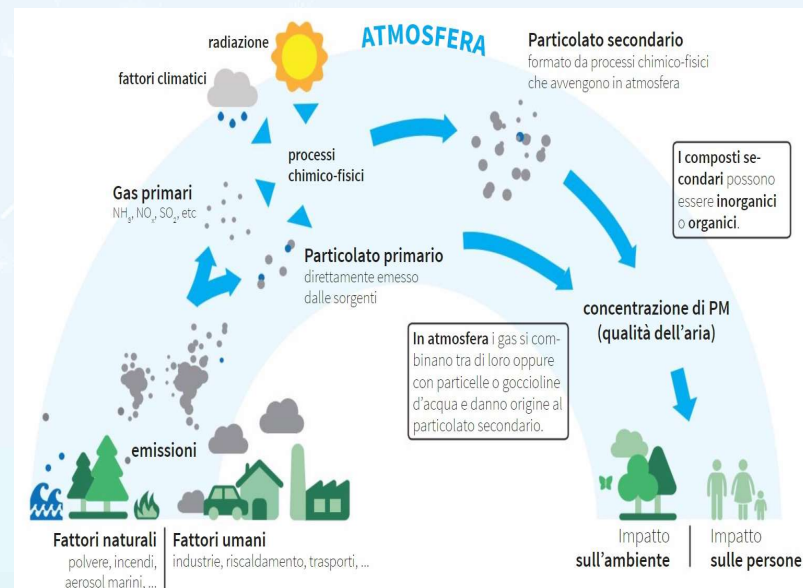
**Agriculture: from PREPAIR new tools
for evaluation of emissions
and improvement measures**

**Matteo Balboni,
Gianluca Iannuzzi
*Emilia-Romagna Region***



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PILLAR AGRICULTURE



Ammonia (NH_3) emissions come mostly from agriculture and zootechny and contribute significantly to the formation of secondary particles.

ACTION C.4: Promoting an ammonia low-emission application of fertilizers based on urea in agriculture

ACTION C.5: Implementation of a common model for evaluation of gaseous emissions and odour resulting from the intensive rearing of cattle, pigs and poultry



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ACTION C.4: Promoting an ammonia low-emission application of fertilizers based on urea in agriculture



Urea-based fertilizers may cause emissions of ammonia from urea degradation prior to the absorption by crops; it is therefore important to identify the best techniques to limit them.

RESULTS AND DELIVERABLES:

Final report on good practices to reduce ammonia emissions from the use of chemical fertilizers and assessment of avoidable ammonia emissions



Coordinator: Emilia-Romagna

Area: Emilia-Romagna,
Piemonte, Lombardia, Veneto

Other participants: Piemonte,
Lombardia, Veneto. Trento e
Friuli Venezia Giulia: data
sharing and participation to
project meetings.



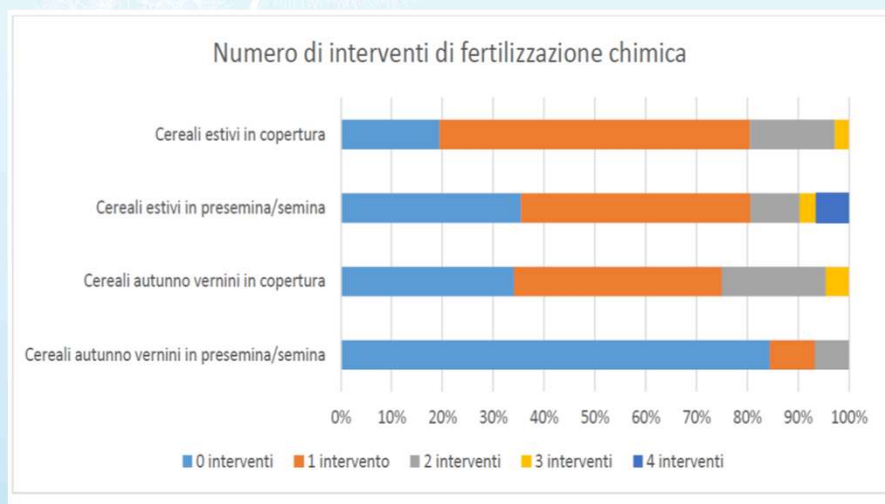
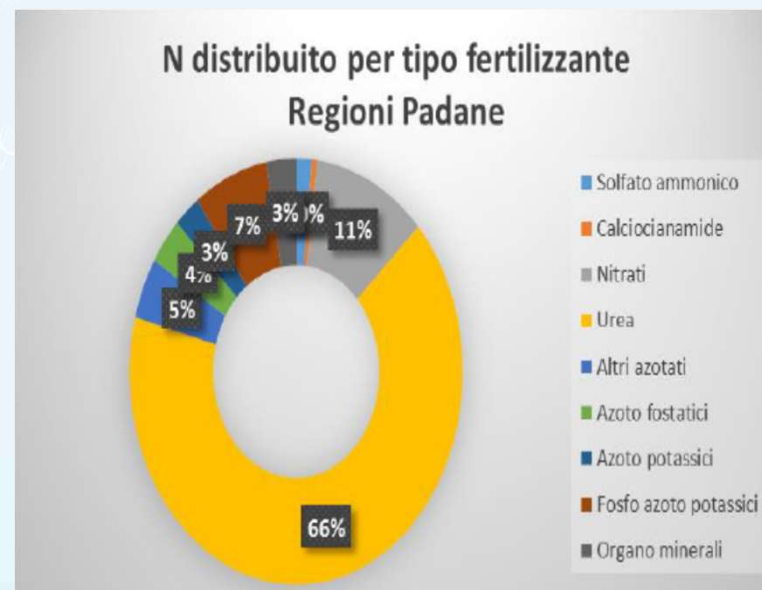
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ACTION C.4: Promoting an ammonia low-emission application of fertilizers based on urea in agriculture



Steps:

- Analysis of the most common fertilizers used
- Experimental tests and case studies for different spreading techniques
- Interviews with farmers about advantages and problems in adopting good practices





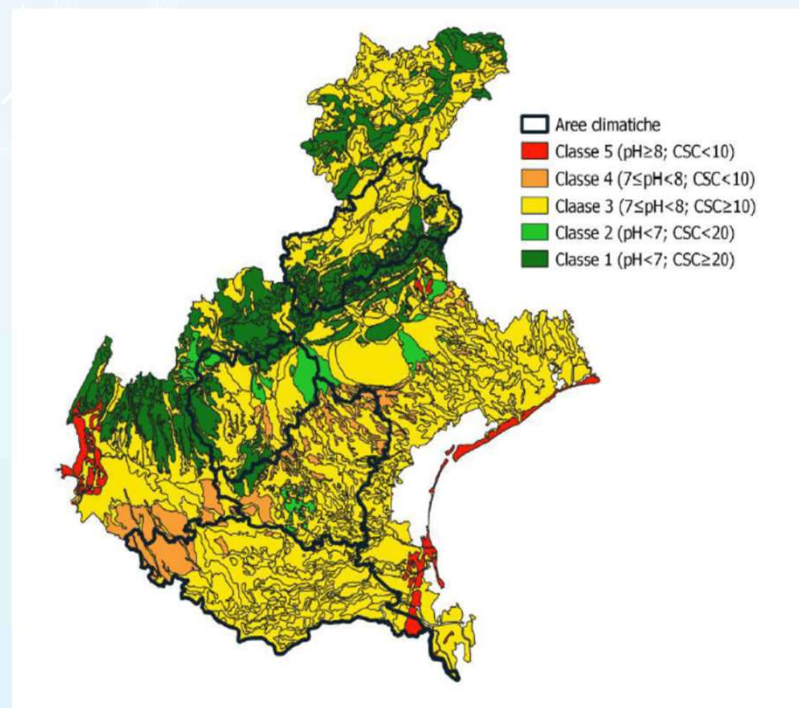
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ACTION C.4: Promoting an ammonia low-emission application of fertilizers based on urea in agriculture



Steps:

- Cost analysis and interviews to fertilizers' producers
- Evaluation of main crops and some soil characteristics of Po Basin
- Evaluation of main applicable techniques
- Assessment of reduction scenarios





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ACTION C.4: Promoting an ammonia low-emission application of fertilizers based on urea in agriculture



Pratica	Applicabilità			
	Cereali autunno-vernini		Cereali estivi	
	in presenza / semina*	in copertura	in presenza / semina	in copertura
Interramento superficiale (circa 3 cm)	0	0	+++	+++
Iniezione di urea a solco chiuso	0	0/+	+	++
Irrigazione a seguito dell'applicazione	0	0/+	0	+++
Fertirrigazione in manichette superficiali	0	0	0	++
Fertirrigazione in manichette interrate	0	0	0	+
Inibitore ureasi	0	+++	++	+++
Urea a rilascio controllato	0	+++	++	+++
Sostituzione di urea con nitrato ammonico	0	+++ /++++	++ /+++	+++ /++++
Agricoltura di precisione (rateo variabile)	0	+ /++	+ /++	+ /++

*Si considera che l'urea, nel caso dei cereali autunno-vernini, non sia il fertilizzante applicato in fase di pre-semina/semina.

Potential reduction, ranging between 30% and 80%, estimated in various scenarios, depending on different decreases in the use of urea and on the application of good techniques.

Applicabilità

0 nessuna
+ bassa
++ media
+++ alta
++++ molto alta

Fonte: Crpa, documentazione di progetto Life Prepair.

ACTION C.5: Implementation of a common model for evaluation of gaseous emissions and odour resulting from the intensive rearing of cattle, pigs and poultry

GOALS:

- Development of a model for the qualitative and quantitative assessment of gases and odour emissions and of nitrogen compounds releases into water from farms («whole farm» approach);



BAT-TOOL

<https://bat-tools.datamb.eu/Visus/?cmd=AppOpen&file=app/CRPA/Prepair/Prepair.app.xml&action=Login;>

BAT-Tool (initial version) is freely available online at <https://bat-tools.datamb.eu/>

It's currently used for evaluations in the revisions of the IED permits (Directive 2010/75/UE).

Coordinator: Emilia-Romagna.

Veneto: "qualitative" module.

Lombardia: odour module
ARPAE Emilia-Romagna and ARPA Piemonte: guidelines related to meteorological and soil conditions.

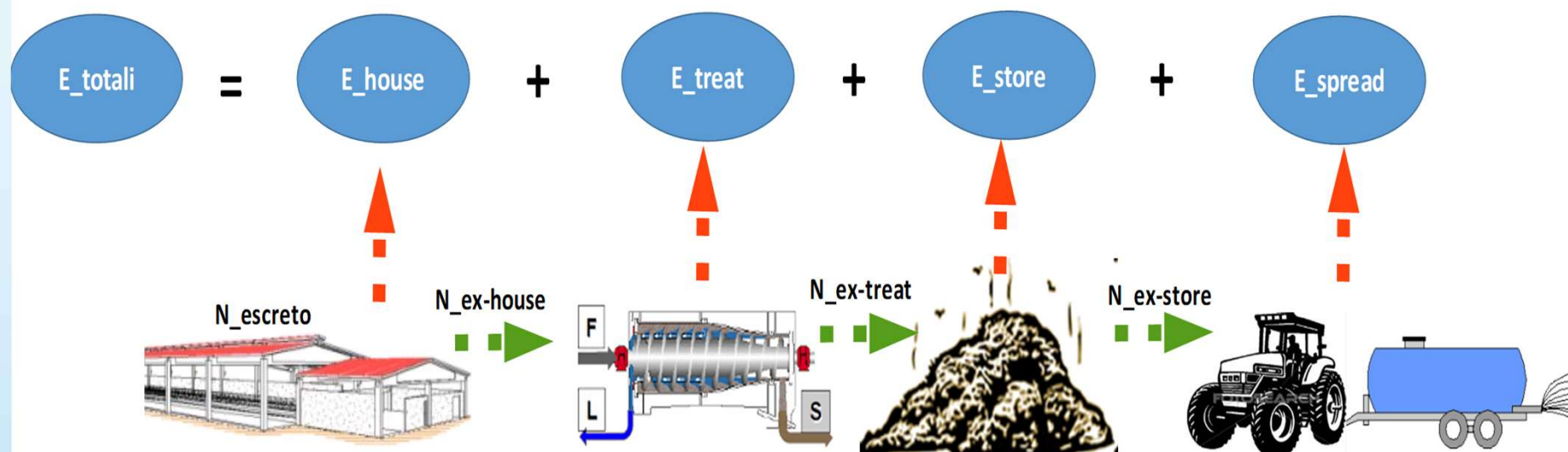
Area: Emilia-Romagna, Piemonte, Lombardia, Veneto.

Other participants: Piemonte, Trento e Friuli Venezia Giulia: data sharing and participation to project meetings.

ACTION C.5: Implementation of a common model for evaluation of gaseous emissions and odour resulting from the intensive rearing of cattle, pigs and poultry



Calculation of transformations and losses during the different phases with a «mass flow» approach



ACTION C.5: Implementation of a common model for evaluation of gaseous emissions and odour resulting from the intensive rearing of cattle, pigs and poultry



BAT-TOOL

Emissions of:

- Ammonia (NH_3);
- Nitrous oxide (N_2O);
- Methane (CH_4);
- Nitrates (NO_3^-);
- Carbon dioxide (CO_2).

from

- Cattle



- Pigs



- Poultry



during

- Manure management («in farm»)



- Manure distribution («on field»)



BAT-Tool plus will be released in its final version in the next future

REFERENCES

- DM 25/02/16 on manure management
- Emilia-Romagna Regional Regulation n.3, 15/12/2017 on manure management
- BAT Conclusions published on the Official Journal of EU, 21/02/2017
- Options for Ammonia Mitigation Guidance, UNECE
- EMEP/EEA Air pollutant emission inventory Guidebook, 2019
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 Agriculture, Forestry and Other Land Use, Chapter 10 - Emissions From Livestock And Manure Management (Refinement 2019)
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 Agriculture, Forestry and Other Land Use, Chapter 11 - N2O Emissions From Managed Soils, and CO2 Emissions From Lime And Urea Application (Refinement 2019)

ACTION C.5: Implementation of a common model for evaluation of gaseous emissions and odour resulting from the intensive rearing of cattle, pigs and poultry

Example of input: Storage techniques.

Choice from dropdown list corresponding to BAT conclusions where applicable

	Fase ↑	Macrocategoria ↑	Tipologia	Nome ↑	Riduzione	Cessione	Forma
▶	Stoccaggio		Liquami	Liquami - 16.b.3 - crostone naturale	40 %	No	
▶	Stoccaggio		Liquami	Liquami - 16.b.3 - materiali leggeri alla rinfusa (es. LECA)	50 %	No	
▶	Stoccaggio		Liquami	Liquami - 16.b.3 - paglia	40 %	No	
▶	Stoccaggio		Liquami	Liquami - 16.b.3 - piastrelle geometriche galleggianti	50 %	No	
▶	Stoccaggio		Liquami	Liquami - 16.b.3 - sfere plastica galleggianti	50 %	No	
▶	Stoccaggio		Palabili	Palabili - REF: cumulo scoperto	0 %	No	
▶	Stoccaggio		Palabili	Palabili - ceduto a terzi senza stoccaggio	100 %	Sì	
▶	Stoccaggio		Palabili	Palabili - stoccaggio compost	90 %	No	
▶	Stoccaggio		Palabili	Palabili - stoccaggio pollina da tunnel essiccazione	80 %	No	
▶	Stoccaggio		Palabili	Palabili - 14.a. - ridurre rapporto superficie/volume	10 %	No	
▶	Stoccaggio		Palabili	Palabili - 14.b. - coprire il cumulo in concimaia	40 %	No	
▶	Stoccaggio		Palabili	Palabili - 14.c. - stoccare effluenti in capannone	40 %	No	
▶	Stoccaggio		Liquami	stoccaggio in vasca scoperta di fango da flottazione, assimilato a REF	0 %	-	

ACTION C.5: Implementation of a common model for evaluation of gaseous emissions and odour resulting from the intensive rearing of cattle, pigs and poultry

Example of output: quantification of emissions and reductions

Dati Anagrafici		Emissioni NH ₃ REF		Emissioni NH ₃ Situazione attuale		Riduzione NH ₃ rispetto a REF	
Nome Allevamento	prova Laura	Totali	22.090 Kg	Totali	16.814 Kg	Totali	5.276 Kg 23,9 %
CUAA	-	Ricovero	8.344 Kg	Ricovero	5.890 Kg	Ricovero	2.454 Kg 29,4 %
Codice ASL	-	Trattamento	0 Kg	Trattamento	373 Kg	Trattamento	-373 Kg - %
Attività IPPC	-	Stoccaggio	3.905 Kg	Stoccaggio	3.693 Kg	Stoccaggio	212 Kg 5,4 %
Indirizzo	-	Distribuzione effluenti	9.841 Kg	Distribuzione effluenti	6.858 Kg	Distribuzione effluenti	2.983 Kg 30,3 %
Comune	- CAP -	Calcoli					
Provincia	Bologna						
Regione	Emilia-Romagna						
Note	-						
Identificativo Calcolo	2/22-02-2019 12:58						

- Single stage emissions quantifications and emission reductions quantifications with respect to the reference system, expressed as an absolute value and as a percentage
- Comparison of possible future scenarios



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With the contribution
of the LIFE Programme
of the European Union



Thank you for your attention

matteo.balboni@regione.emilia-romagna.it

www.lifeprepare.eu – info@lifeprepare.eu



ARSO ENVIRONMENT
Slovenian Environment Agency

