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Environmental Declaration of Product

ORGANO-MINERAL FERTILIZERS

SCAM S.p.A.

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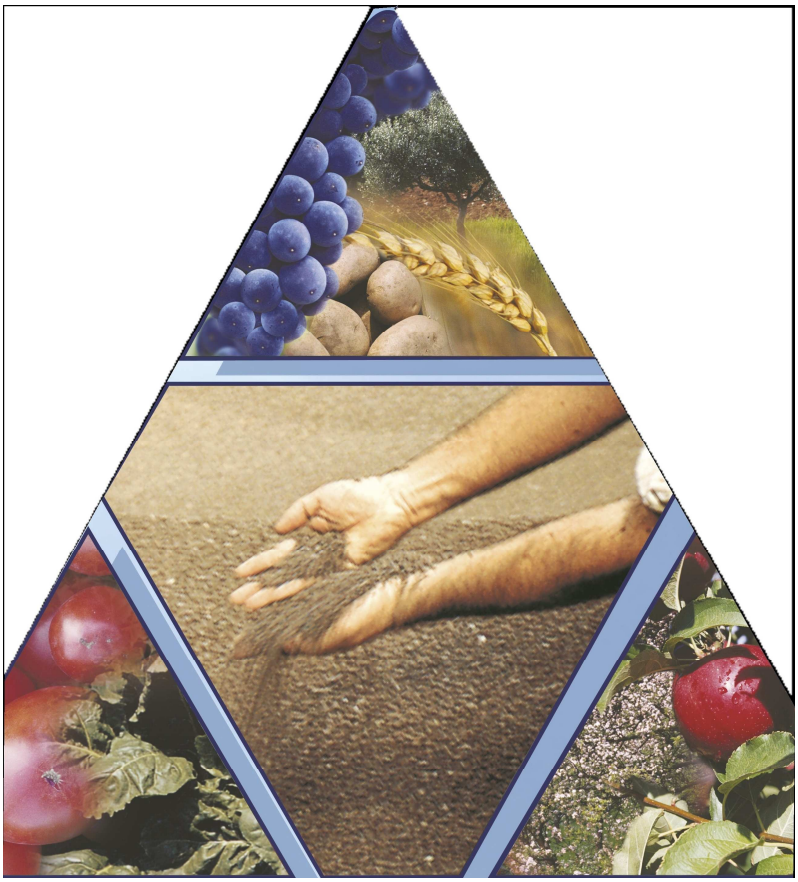

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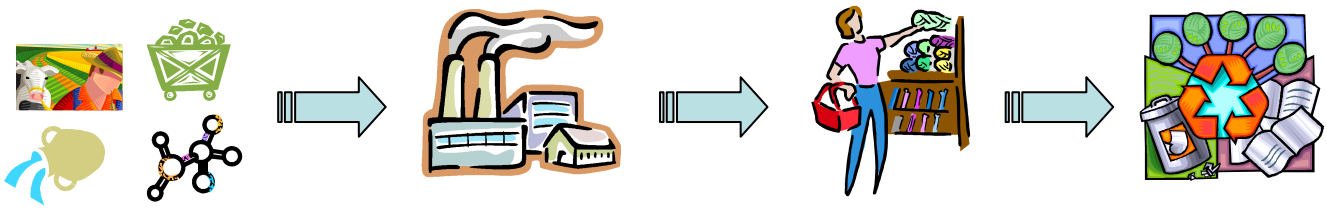
0 - INTRODUCTION

Environmental Product Declaration allows to communicate objectives (because of the use of ISO standards), comparable (the product category rules allows to compare different products within the same group) and reliable (the EDP information are verified and confirmed by an independent and accredited organism) information, related to the products environmental performance which is obtained by means of the quantification of the potential impacts of the life cycle (from cradle to grave).



SCAM S.p.A. started the action which led to the present EPD inside a project promoted by Regional Environmental Body of the region Emilia-Romagna. The aim of the project was to verify the applicability of the EPD certification scheme in meaningful companies in the national and international market and that are of high quality for quality of the product and environmental engagement. For such a reason the EMAS registration was a fundamental requirement to take part to this project.

The project partners were:

- Certification Bodies,
- Environmental Regional Agency (ARPA);
- Companies/Organizations of the region Emilia-Romagna;
- Category Associations;
- Universities.

The reasons which led SCAM to begin this difficult path, must be mainly found in the EPD contents that are similar to SCAM perspective. The expected result is the possibility to increase the value and to see recognized the environmental performance of its minerale-organic fertilizers, crucial condition in order to assure a greater effectiveness of the institutional and business communication.

SCAM is sure that the expected results will be achieved, also due to the support of the partners of the project and also in consideration of the EPD value. Besides, it will be possible to consolidate the relationship with Public Administrations in accordance with the company perspective, which is oriented to transparency and social responsibility.

1.0 – DESCRIPTION OF THE ORGANIZATION AND THE PRODUCT

1.1 - ORGANIZATION

SCAM S.p.A. is an industrial and business enterprise focussed on organo-mineral fertilizers (code NACE 24.15), in which it is a leader; it has also diversified to crop protection products and agrobiotechnical products meant also for biological agricultural production (code NACE 24.20 for production and code NACE 51.55 for sales).
The SCAM S.p.A. Head Office and factory are situated at Modena, in Strada Bellaria No. 164.

The range of technical means for agriculture proposed by SCAM consists of:

1) Products for plant nutrition, such as:
   - organo-mineral fertilizers;
   - soil conditioners;
   - organic fertilizers;
   - iron chelates;
   - biostimulants and physionutritional products;
   - leaf fortifying substances;
   - water-soluble fertilizers for mist-blowing systems.

2) Products for plant protection, such as:
   - insecticides
   - fungicides
   - acaricides
   - herbicides

3) Agrobiological products (which are only sold or, possibly packed, but not formulated at the Scam S.p.A. factory), used for plant nutrition as well as protection, such as biological insecticides, pheromone traps, useful insects, etc…

The average yearly production of the plants is as follows:

- 100,000 tons of organo-mineral fertilizers,
- 6,000 tons of crop protection products,
- 3,000 tons of nutritional supplements.

1.2 – CERTIFICATIONS AND VOLUNTARY INITIATIVES

In 1999, SCAM obtained certification of its Quality Management system in accordance with standard UNI EN ISO 9002 for the production of crop protection products and leaf fortifying substances, and from 2001 this certification was extended to the production of organo-mineral fertilizers.
In 2003 SCAM, upgraded its Quality System and obtained certification in compliance with the new standard ISO 9001:2000.

In 2002, SCAM obtained certification of its Environmental Management System in accordance with standard UNI EN ISO 14001, and in 2004, Registration in accordance with the EMAS Regulation (CE 761/01).

Owing to the quality and quantity of hazardous substances present at the site, SCAM is classified as a Company with relevant risk of accident according to L.D. 334/99, and during the first semester of 2005 it obtained certification for its Safety Management System in accordance with standards OHSAS 18001 and UNI 10617, thus obtaining the Excellence Certificate.

In 1994, SCAM also adhered to the Responsible Care program, which is a voluntary worldwide Program of the chemical industry based on the implementation of principles and behaviour regarding safety and health of employees and environmental safety, for an ongoing, significant and tangible improvement.

1.3 - PRODUCT

The object of this EPD are the organo-mineral fertilizers produced by SCAM and a hypothetical medium organo-mineral fertilizer (also see paragraph 2.3 – Environmental Parameters).

The organo-mineral fertilizers produced by SCAM are described in Table 1. The description takes into consideration:

- all the obligatory parameters envisaged by the Italian standards concerning organo-mineral fertilizers.
- parameters that can be attributed to the quality of the organic components used:
  - Formulation matrix/matrices;
  - Total organic carbon content TOC %;
  - Humic and fulvic carbon content C (HA+FA);
  - Humification rate (HR).
- Agronomic Efficiency Index (AEI).

Table 1 – Description of organo-mineral fertilizers produced by SCAM

	PARAMETRI OBBLIGATORI (N, P, K) %	TENORE IN CARBONIO ORGANICO TOTALE (TOC)%	TENORE IN CARBONIO UMICO E FULVICO C (HA+FA)%	TASSO DI UMIFICAZIONE (HR)
1. AGRESTE	7,5-12-21	7,5	2,7	36
2. AGROFERT MB ORTAGGI MG VIGOR SPECIAL	10-5-15	7,5	2,7	36
3. AGROFERT MBS	9,5-5-14,5	7,5	2,7	36
4. AZOTOP	18,5-0-0	8,4	3,2	38
5. AZOTOP 21	21-0-0	7,5	3,2	38
6. BELCAMPO BELFRUTTO MB	5-10-15	7,5	2,7	36
7. BELFRUTTO MBS	6-10-15	7,5	2,7	36
8. BELGRANO	11,5-24,5-0	7,5	2,7	36
9. FERTIKAL TOMATO TOP K+	9-17-15	7,5	2,7	36
10. FERTIL AGRESTE START	10-12-7	7,5	2,7	36
11. FERTIL MBS	9-14-13	7,5	2,7	36
12. FOSFOKAL MBS	3-12-20	7,5	2,7	36
13. NUTRIFOS	8-15-0	7,5	2,7	36
14. NUTRIGRAN TOP	12-24,5-0	8,4	3,2	38
15. OLIVETO SUPER ROBUR	15-5-5	7,5	2,7	36
16. PRECOCE MBS	9,5-13,5-13	7,5	2,7	36
17. SUPER ROBUR S	17-5-7	7,5	2,7	36
18. SUPERALBA	9-12-21	7,5	2,7	36
19. SUPERALBA MAX	8-9-18	7,5	2,7	36
20. VIGNAFRUT MB	10-5-14,5	7,5	2,7	36
21. VIGOR TOP 60	10-6-14	7,5	2,7	36
22. UNIFERT VIGOR K	7-7-7	7,5	2,7	36

For all the products shown in Table 1, the formulation matrices are composed of peat and mixture/s of nitrogen fertilizers/NP (as envisaged by the standard in force – Legislative Decree 217 of 29/04/2006 of the Italian Republic).

1.3.1 - EFFICIENCY OF ORGANO-MINERAL FERTILIZATION WITH SCAM PRODUCTS (USE)

In compliance with the experimental protocol proposed in Attachment A to PSR 2006:8 "Fertilizer" certain trials of cultivation in full field conducted by bodies involved in agricultural experimentation and research were evaluated:

1) Dipartimento di Scienze Chimico-Agrarie(Department of Chemical-Agrarian Sciences) of the "Federico II" University of Naples, Portici (NA): trials conducted on a three-year monoculture of grain maize by the experimental farm of the Department of Chemical-Agrarian Sciences of the "Federico II" University of Naples, Portici, located in the Castevolturno (CE) countryside in the three-year period 1990-1992. During this trial the results of fertilization with mineral fertilizers and organo-mineral fertilizers (SCAM) were compared on the basis of two increasing doses of N-P_2O_5-K_2O in the ratio 1:1:1. The doses used were 70-70-70 and 140-140-140 kg/ha in comparison with a control of the same crop not fertilized. The results of the crops production and the indices proposed are mentioned in Coppola (1993).

2) Azienda Agraria Sperimentale "A. Servadei" of the University of Udine in collaboration with the Coop. Cerealicola "Bassa Friulana" di Villa Vicentina (VI): trial conducted on a three-year monoculture of grain maize by the experimental farm Servadei of the University of Udine in the three-year period 1998-2000. During this trial the results of fertilization with mineral fertilizers and organo-mineral fertilizers (SCAM) were compared on the basis of one dose of N-P_2O_5-K_2O in the ratio 2.1:1:1. The doses used were 170-80-80 kg/ha in comparison with a control of the same crop not fertilized. The results of the crops production and the indices proposed are mentioned in Tassan Mazzocco and coll. (1999) and Tassan Mazzocco and Contin (2000).

3) Centro Ricerche Produzioni Vegetali (C.R.P.V.) of the Emilia Romagna Region, Bologna: trial conducted on a wheat crop during the four-year crop rotation conducted at the experimental farm Mario Neri (Imola) of the Centro Ricerche Produzioni Vegetali (CRPV) of the Emilia Romagna Region (A.A.V.V., 1996) in the period 1995-1998. The trial involving comparison between the mineral and organo mineral fertilizers (SCAM) was conducted throughout the rotation in the context of a national research project lasting four years. Specifically, the results of fertilization of the wheat crop with mineral fertilizers and organo-mineral fertilizers (SCAM) were compared on the basis of two increasing doses of N-P_2O_5 in the ratio 1.2:1. The doses used were 54-44 e 106-88 kg/ha in comparison with a control of the same crop not fertilized. The results of the crops production and the indices proposed are mentioned in Ferraresi and Contoli (1999).

4) Agenzia Regionale per lo Sviluppo e l'Innovazione in Agricoltura (ARSIA) of the Tuscany Region, in collaboration with the Istituto Sperimentale per la Nutrizione delle Piante del Consorzio per la Ricerca e la sperimentazione in Agricoltura (C.R.A.), Rome: trial conducted on a tomato crop conducted at the experimental farm at Cesa (AR) of the Agenzia Regionale per Sviluppo e l'innovazione in Agricoltura (ARSIA) of the Tuscany Region in collaboration with the Istituto Sperimentale per la Nutrizione delle Piante in the two-year period 1996-1997. During this trial, the results of fertilization with mineral fertilizers and organo-mineral fertilizers (SCAM) were compared on the basis of one dose of N-P_2O_5-K_2O in the ratio 1:1:4. The doses used were 60-60-240 kg/ha in comparison with a control of the same crop not fertilized. The results of the crops production and the indices proposed are mentioned in Quattrucci and Canali (1998).

In the trials mentioned above, the comparison between mineral and organo-mineral fertilization involved evaluation of the agronomic efficiency indices (**A.E.I.**) of fertilization and of uptake indices (**U.I.**) for the individual macronutritional elements (N, P and K).
In all the cases discussed there appears to be a greater capacity for utilization of the elements added by organo-mineral fertilization with the various SCAM products tested.

Agronomic Efficiency Index (A.E.I.) and Uptake Index (U.I.)

The **Agronomic Efficiency Index (A.E.I.)** expresses the increase of useful dry substance produced per Unit of Fertilization (U.C.) administered: it is useful for defining the efficiency of fertilization.

The A.E.I. makes it easy to evaluate the productive/economic aspects of the efficiency of the soil/plant systems where the crop yield is related to the different use of technical means or cultivation techniques.

For calculation purposes, the yields obtained in fertilized lots (nC) are compared with those obtained in unfertilized lots (0C), in relation to the nutritive unit, i.e. to the Units of Fertilization U.C. applied (nU.C.). The U.C. represent multiples of ratios defined between nutritive elements expressed in kg/ha (for example, a U.C. consisting of ratio N:P_2O_5:K_2O=1:1,5:2 represents a dose of 100, 150 and 200 kg/ha for N, P_2O_5 and K_2O, respectively), and can be translated into simple numbers (for more details, see Attachment A PSR 2006:8 "Fertilizer").

A.E.I. = (yield nC - yield 0C)/nU.C.

The **Uptake Index (U.I.)** constitutes the simplest method for evaluating the nutritive capacity of a fertilizer. It is based on the calculation of the uptake of a specific nutrient from the plant in relation that what is observed in the unfertilized control.

U.I. (N o P o K) = [nutritive element (N or P o K) leached from the crop in the fertilized samples (kg/ha)] - [nutritive element leached from the crop in the unfertilized samples (kg/ha)] / [unit of nutrient (kg/ha)] * 100

For purposes of calculation, the uptake values were compared, referred to each element removed from the system, in the parts of the plant considered, obtained in fertilized lots (nC) with those obtained in unfertilized lots (0C), in relation to the unit of nutrient applied (for more details see Attachment A PSR 2006:8 "Fertilizer").

The Uptake Index (**U.I.**) and the Agronomic Efficiency Index (**A.E.I.**), calculated for the abovementioned 4 trials and 3 types of crops, each represent the 23 products declared in this EPD, in accordance with the specifications in PSR 2006:8 "Fertilizer" § 2:
"*for U.I. an average value shall be declared, while for AEI the values of each trial shall be declared*" (…) "*if the 'EPD includes many formulations of the same type of fertilizer, there will be only one U.I. average index and it shall be calculated with reference to the above-mentioned trials. These trials may be carried out with one or more of the formulations declared in the EPD and shall be representative of all the formulations declared in the EPD*".

This assumption is supported by the features of the SCAM products shown in Table 1 and, in particular, by the C (HA+FA) and HR indices which are common to all the SCAM organo-mineral fertilizers and characterize their field performance.
The C(HA+FA) and HR indices, which are the organic carbon content directly linked to the humic substances and its percentage in relation to the total organic carbon, are also facultative parameters for the organo-mineral fertilizers as envisaged by Legislative Decree 217 of 29/04/2006 of the Italian Republic.

The uptake indices relative to the aforementioned 4 trials for Nitrogen, Phosphorus and Potassium are described below.

1) Trial on grain maize crop (Coppola, 1993)

Fertilization method: single dose for basic fertilization of full field.

Agronomic Efficiency Index (A.E.I.)

Treatment	Dose	N-P_2O_5-K_2O (kg/ha)	A.E.I.
OM	1	70-70-70	1.29
OM	2	140-140-140	0.78
MN	1	70-70-70	0.79
MN	2	140-140-140	0.73
MN	3	210-210-210	0.71

The continuous reduction of the A.E.I. value with increase in the dose indicates how the fertilization has already reached and exceeded the maximum agronomic efficiency (mainly with the MN treatment in dose 3). There are no signs of stress due to hyper fertilization. It must be taken into consideration that the trial concerns a three-year monoculture, and however, with doses relatively low in relation to what has been ascertained in areas in the Centre-North where fertilization of grain maize even exceeded 500 kg/ha of nitrogen (situation checked in 1995).
The highest value of the index in dose 1 indicates this as the dose closest to the optimum dose. The considerable difference in values between A.E.I. calculated for dose 1 OM (1.29) and dose 1 MN (0.79) also indicates that, for reasons that can presumably be attributed to differences in the constitution (attention, not in formulation N-P-K), OM fertilizer is considerably more efficient in nutrition and therefore in determining the productive yield of the crop.
In these conditions, it is possible to calculate the U.I. on nutrients for all the doses.

Uptake Indices (U.I.)
The Uptake Index is calculated by evaluating that the residual fertility on the control is already considerable and the crop is in good condition as regards availability of nutrients.

Uptake Index for Nitrogen (U.I.-N)

Treatment	Dose	N (kg/ha)	U.I.-N
OM	1	70	97.0
OM	2	140	73.2
MN	1	70	60.8
MN	2	140	54.7
MN	3	210	40.0

Uptake Index for phosphorus (U.I.-P)

Treatment	Dose	P_2O_5 (kg/ha)	U.I.-P
OM	1	70	35.3
OM	2	140	24.0
MN	1	70	34.8
MN	2	140	28.9
MN	3	210	19.0

Uptake Index for Potassium (U.I.-K)

Treatment	Dose	K_2O (kg/ha)	U.I.-K
OM	1	70	28.0
OM	2	140	23.1
MN	1	70	27.9
MN	2	140	24.8
MN	3	210	20.2

The uptake indices values obtained confirm the hypothesis of an optimum conduction of the crop and, consequently, a good utilization of fertilizer (see the U.I. values of dose 1 in OM for OM nitrogen).
In the experimental conditions, the best productive performances were obtained by OM fertilizer in dose 1 (U.I.-N 97.0 and U.I.-P 35.3) for comparison with the U.I. values and for the MN fertilizer in dose 1 (U.I.-N 60.8 and U.I.-P 34.8): there are no significant differences between the two fertilizers for potassium.

2) Trial on grain maize crop (Tassan Mazzocco *et al.*, 1999; Tassan Mazzocco and Contin, 2000)

Fertilization method: three doses, one basic fertilization and two cover fertilization in full field.

Agronomic Efficiency Index (A.E.I.)

Treatment	Dose	N-P_2O_5-K_2O (kg/ha)	A.E.I.
OM	1	170-80-80	6.3
MN	1	170-80-80	6.4

It is not possible to determine other values for the A.E.I. index since, in higher doses, the N-P-K ratio changed with non-proportional increase of P and K

Uptake indices (U.I.)

The Uptake Index is calculated by evaluating that the residual fertility on the control is already considerable and the crop is in good condition as regards availability of nutrients. Therefore the uptake values for grain maize considered are those reported by Reuter and Robinson (1985).

Uptake Index for nitrogen (U.I.-N)

Treatment	Dose	N (kg/ha)	U.I.-N
OM	1	170	59.7
MN	1	170	52.5

Uptake Index for phosphorus (U.I.-P)

Treatment	Dose	P_2O_5 (kg/ha)	U.I.-P
OM	1	80	9.4
MN	1	80	12.3

Uptake Index for potassium (U.I.-K)

Treatment	Dose	K_2O (kg/ha)	U.I.-K
OM	1	80	26.7
MN	1	80	32.6

The uptake indices values obtained confirm the hypothesis of an optimum conduction of crop and, consequently, a discrete use of fertilizer.
In the experimental conditions, the best productive performances were obtained by OM fertilizer in dose 1 (U.I.-N 59,7) in comparison with the respective U.I. values for the MN fertilizer in dose 1 (U.I.-N 52.5).

3) Trial on wheat crop (Contoli and Ferraresi, 1999)

Fertilization method: two doses, one for basic fertilization and one cover fertilization in full field.

Agronomic Efficiency Index (A.E.I.)

Treatment	Dose	N-P_2O_5-K_2O (kg/ha)	A.E.I.
OM	1	54-44-0	1.41
OM	2	106-88-0	0.49
OM	3	158-132-0	-0.27
MN	1	54-44-0	1.34
MN	2	106-88-0	0.15
MN	3	158-132-0	-0.41

The continuous reduction of the A.E.I. value to negative values suggests that the fertilizer administered, in accordance with the indications of the *Disciplinare di Produzione Integrata* -DPI- (dose 2) is no longer suitable in the experimental conditions adopted.
The highest value of the index in dose 1 indicates this as the dose nearest to the optimum dose. The negative value of A.E.I. for the doses 3 suggests that the plant is under stress due to hyper fertilization (presumably nitrogenous as suggested by the flattening phenomena reported). The difference in the values of the A.E.I. calculated for dose 1 OM (1.41) and dose 1 MN (1.34) indicates that, for reasons that can presumably be attributed to differences in the constitution of the OM fertilizer which is more efficient in nutrition and therefore in crop production, in these conditions, it is possible to calculate the U.I. on nutrients for doses 1 and 2.

Uptake indices (U.I.)
The Uptake Index is calculated by evaluating that the residual fertility on the control is already considerable and the crop is in good conditions as regards availability of nutrients. Therefore the uptake values for wheat reported by Reuter and Robinson, (1985) were considered.

Uptake Index for nitrogen (U.I.-N)

Treatment	Dose	N (kg/ha)	U.I.-N
OM	1	54	42.0
OM	2	106	14.8
MN	1	54	39.9
MN	2	106	4.7

Uptake Index for potassium (U.I.-P)

Treatment	Dose	P_2O_5 (kg/ha)	U.I.-P
OM	1	44	40.7
OM	2	88	13.9
MN	1	44	38.6
MN	2	88	3.9

The uptake indices values obtained confirm a super-nutrition of the crop and, consequently a sub-utilization of the fertilizer (see the U.I. values of dose 2 although different for OM and MN, but in any case, extremely low). In experimental conditions, the best production performances are achieved by OM fertilizers in dose 1 (U.I.-N 42.0 and U.I.-P 40.7) in comparison with the U.I. values of MN fertilizer in dose 1 (U.I.-N 39.9 and U.I.-P 38.6).

4) Trial on crops of tomato for industry (Quattrucci and Canali, 1998)

Fertilization method: two distributions during pre-planting, partly broadcasting and partly localized on two sides of the paired row.

Agronomic Efficiency Index (A.E.I.)

Treatment	Dose	N-P_2O_5-K_2O (kg/ha)	A.E.I.
OM	1	60-60-240	24.2
MN	1	60-60-240	13.2

The trial plan is insufficient for understanding whether the A.E.I. is in the ascending or descending phase. However, it must be pointed out that the two-year production data is on an average 40% higher than that hypothesized initially for calibrating the fertilization. Such a high deviation from the initial forecast would probably mean an underestimation of the fertilization requirements.
The difference in the values of A.E.I. calculated for dose 1 OM (24.2) and dose 1 MN (13.2) indicates that, for reasons which can presumably be attributed to the difference in the constitution of the matrix, the OM fertilizer is more efficient in nutrition and therefore in determining the crop yield.
In such conditions, it is possible to calculate the U.I. on nutrients for dose 1.

Uptake indices (U.I.)

The Uptake Index is calculated by evaluating that the residual fertility on the control is already considerable and the crop is in good conditions as regards availability of nutrients.

Uptake Index for nitrogen (U.I.-N)

Treatment	Dose	N (kg/ha)	U.I.-N
OM	1	60	92
MN	1	60	65

Uptake Index for phosphorus (U.I.-P)

Treatment	Dose	P_2O_5 (kg/ha)	U.I.-P
OM	1	60	44
MN	1	60	31

Uptake Index for potassium (U.I.-K)

Treatment	Dose	K_2O (kg/ha)	U.I.-K
OM	1	240	30
MN	1	240	20

The uptake indices values obtained do not make it possible to confirm the initial hypothesis of a poor uptake of fertilizers.
In any case, in the experimental conditions adopted, the best production performances were achieved by the OM fertilizer in dose 1 (U.I.-N 92, U.I.-P 44, U.I.-K 30) in comparison with the U.I. values of the MN fertilizer in dose 1 (U.I.-N 65, U.I.-P 31 and U.I.-K 20).

Table 2 below shows the average U.I. index for nitrogen. As regards Phosphorus and Potassium, this operation is not carried out since these values have no influence on the calculation of environmental indicators, in accordance with what is mentioned in PSR 2006:8 "Fertilizer" § 5:
"*it is supposed that the Phosphorus and Potassium fraction not assimilated by the plants remain immobilized in the soil, or, in any case, the amount released is negligible. Therefore, the Phosphorus and Potassium released into the water and air are not taken into consideration*".

Table 2 calculation of Uptake Index (U.I.) and Agronomic Efficiency Index (A.E.I.) for Nitrogen (N)

Results for Crop 1:

Grain maize (Coppola, 1993)

Treatment	Dose	N kg/ha	U.I. (N)	Media	A.E.I.
OM	1	70	97.0	85,1	1.29
OM	2	140	73.2		0.78

Results for Crop 2:

Grain maize (Tassan Mazzocco, 1999)

Treatment	Dose	N kg/ha	U.I. (N)	A.E.I.
OM	1	170-80-80	59.7	6.3

Results for Crop 3:

Wheat (Contoli and Ferraresi, 1999)

Treatment	Dose	N kg/ha	U.I. (N)	Media	A.E.I.
OM	1	54	42.0	28,4	1.41
OM	2	106	14.8		0.49

Results for Crop 4:

Tomato (Quattrucci and Canali, 1997)

Treatment	Dose	N kg/ha	U.I. (N)	A.E.I.
OM	1	60	92	24.2

Legend for Table 2:

- **OM**: Organo Mineral
- **N**: Nitrogen
- **U.I. (N)**: Uptake Index for Nitrogen
- **A.E.I.:** Agronomic Efficiency Index

Therefore the **average U.I.** is given by:

$$\frac{92 + 28{,}4 + 59.7 + 85{,}1}{4} = \mathbf{66{,}3}$$

2.0 – ENVIRONMENTAL PERFORMANCE

2.1 - METHODOLOGY

The quantification of the environmental performance of the product has been carried out in accordance to the general rules of the EPD system and to the "PCR for preparing an environmental declaration for Fertilizer. PCR 2006:8". For this study it was used the Life Cycle Assessment (LCA) methodology which is regulated by the international standards ISO of series 14040. This methodology allows to determine the environmental impacts in terms of resources

consumption and releases to the environment, of a product or of a service, from a life cycle perspective ("from cradle to grave"). In the specific case, the LCA has been performed using LCA Database as a support. Besides, the study has been performed using the LCA software tool and the related Database GaBi 4.2.

2.2 – FUNCTIONAL UNIT

The functional unit is the production and use of 1000 kg of packaged fertilizer.
The packaging material consists of polypropylene (500 Kg bags) and low density polyethylene (25 and 50 kg bags).

2.3 – SYSTEM BOUNDARIES

The life cycle of the fertilizer includes both the pre-manufacturing, manufacturing and use phases according to Fig 1.

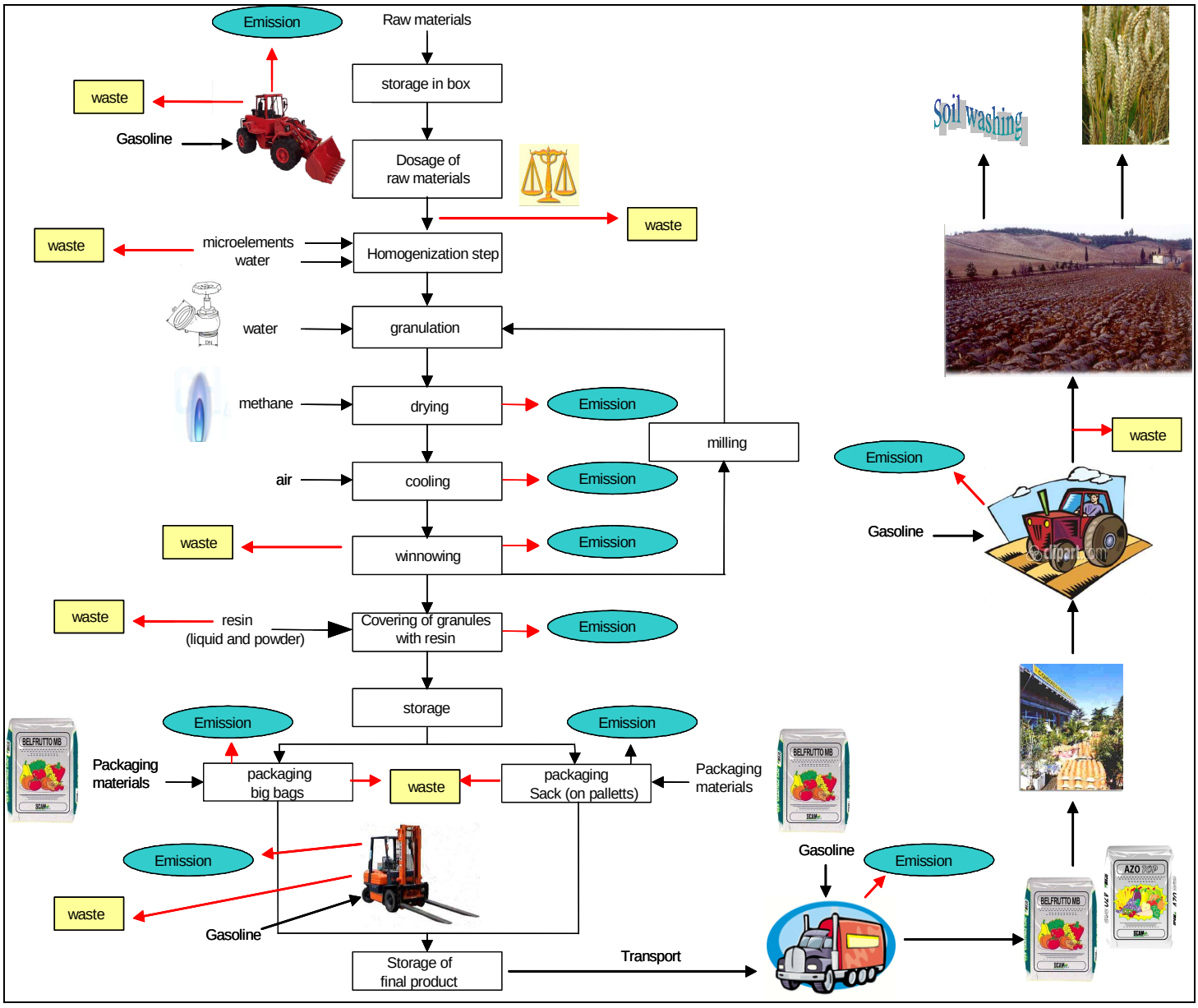


Figure 1 Life Cycle of Mineral-Organic Fertilizer

2.4 – ENVIRONMENTAL PARAMETERS

The environmental parameters are declared for each phases of the life cycle of the mineral-organic fertilizer and for each kind of fertilizer. For each environmental parameters an acronym has been adopted. The acronyms are listed in Table 3 and at the bottom of Table 5.

Table 3 – Acronyms for impact categories

ENVIRONMENTAL PARAMETERS	ACRONYM	UNIT
Non-renewable Resources o without energy content o with energy content	 NRR NRRE	 [Kg] [MJ]
Renewable Resources o without energy content o with energy content	 RR RRE	 [Kg] [MJ]
Electricity consumption	EE	[kWh]
Emission of greenhouse gases	GWP	[kg CO2-Equiv.]
Emission of ozone-depleting gases	ODP	[kg R11-Equiv.]
Emission of acidifying gases	AP	[mol H+/g max]
Emission of substances to water contributing to oxygen depletion	EP	[g O2/g max]
Emission of gases that contribute to the creation of ground-level ozone	POCP	[kg Ethene-Equiv.]
Waste generation		
o Hazardous Waste	HW	[Kg]
o Non-Hazardous Waste	NHW	[Kg]

Environmental parameteres are declared in Table 4 for an hypotetic medium mineral-organic fertilizer. This medium mineral-organic fertilizer is the mean of the values obtained for the 23 products considered in Table 1 and Table 5.

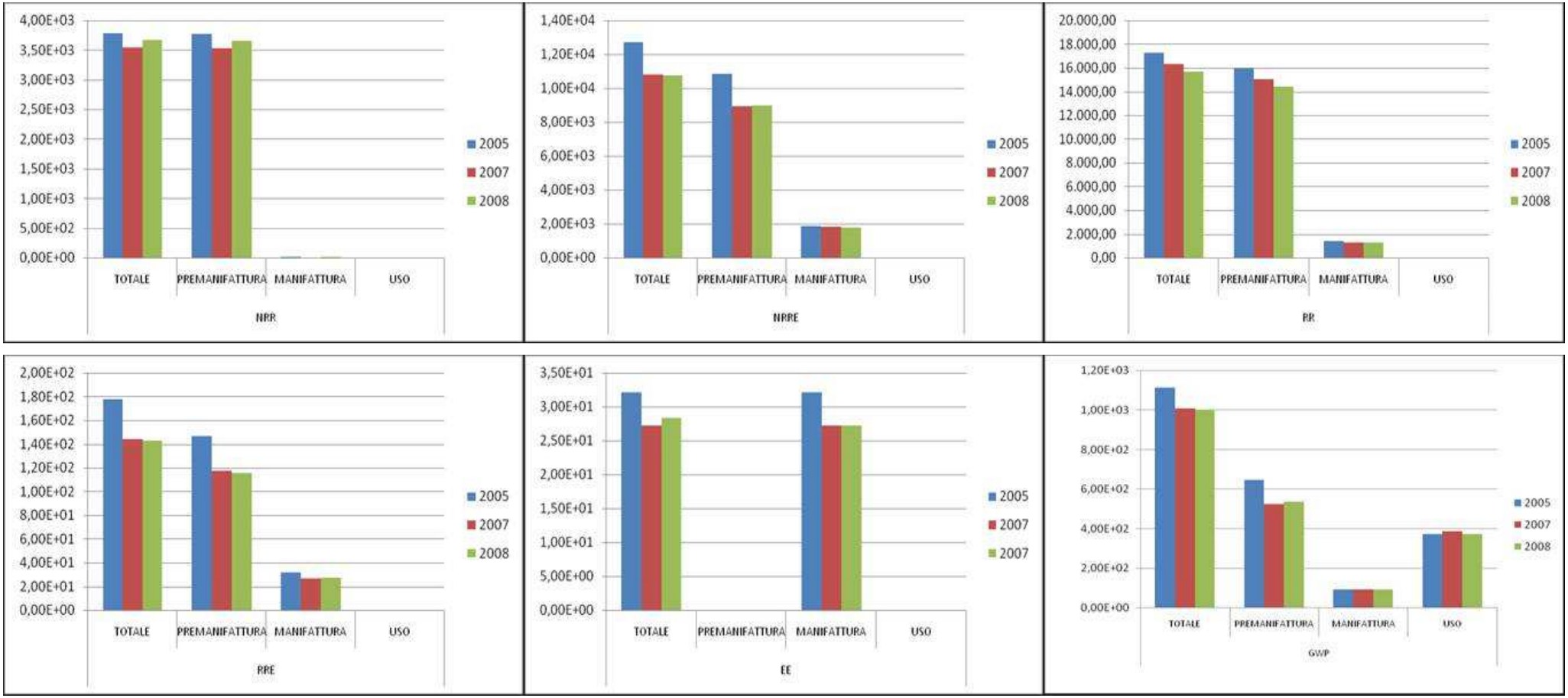
The results refers to year **2008.**

Table 4 – Environmental Parameteres for the medium mineral-organic fertilizer - values per tons of packaged fertilizer.

	MEDIUM MINERAL-ORGANIC FERTILIZER			
Impact category	TOTAL	PRE-MANUFACTURING	MANUFACTURING	USE
NRR	3,67E+03	3,66E+03	1,05E+01	0,00E+00
NRRE	1,08E+04	8,99E+03	1,78E+03	0,00E+00
RR	1,57E+04	1,44E+04	1,25E+03	0,00E+00
RRE	1,43E+02	1,15E+02	2,75E+01	0,00E+00
EE	2,83E+01	0,00E+00	2,83E+01	0,00E+00
GWP	1,00E+03	5,37E+02	9,32E+01	3,73E+02
ODP	6,51E-05	6,28E-05	2,25E-06	0,00E+00
AP	1,88E+02	1,11E+02	2,23E+01	5,45E+01
EP	2,29E+01	1,02E+01	4,67E+00	8,02E+00
POCP	2,81E-01	2,37E-01	4,38E-02	0,00E+00
HW	3,12E+00	2,59E+00	5,29E-01	0,00E+00
NHW	4,28E+02	4,26E+02	2,06E+00	0,00E+00

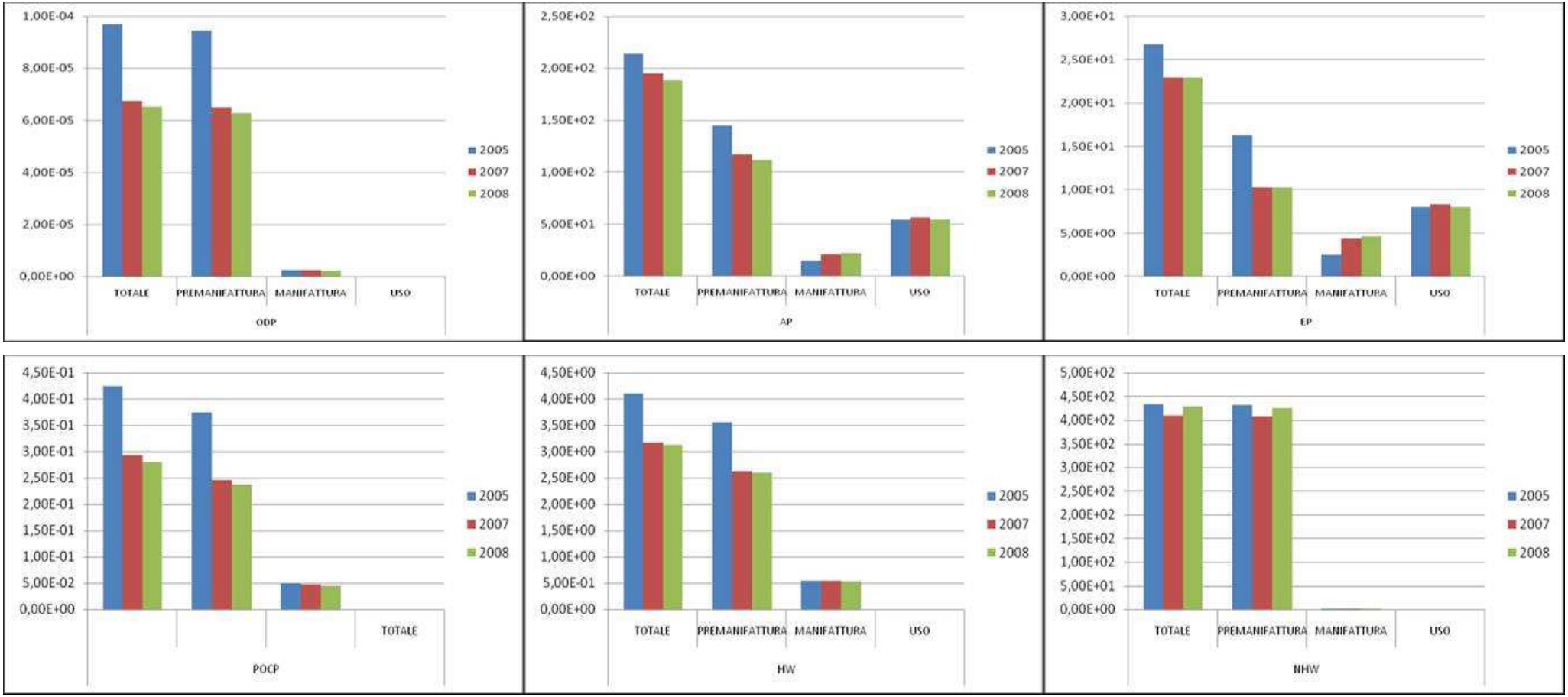
In graph 1 the comparison between environmental performances of the medium organic-mineral fertilizer in 2005 and 2007 are presented. Data 2005 came from the verified and approved EPD, Rev.0 – 20th April 2007 and data 2007 form update EPD Rev.1 – 15th July 2008. The improvement of the performance between 2005 and 2007 is related to two factors: the choice of new formulations of the raw materials and a reduction of the electrical power consumption per unit produced also dependent from an increase of the production volumes. Between 2007 and 2008 no significant variation occurred.

Graph 1 – Comparison between environmental performance of medium mineral-organic fertilizer 2005_2007_2008



LEGEND: 2005 2007 2008

NRR= Non- renewable Resources without energy content (Kg); **NRRE**= Non- renewable Resources with energy content (MJ); **RR**= Renewable Resources without energy content (Kg); **RRE**= Renewable Resources with energy content (MJ); **EE**= Electricity consumption (kWh); **GWP**= Emission of greenhouse gases (kg CO2-Equiv.);



LEGEND: 2005 2007 2008

ODP= Emission of ozone-depleting gases (kg R11-Equiv.); **AP**= Emission of acidifying gases (mol H^+/g max); **EP**= Emission of substances to water contributing to oxygen depletion (g O_2/g max); **POCP**= Emission of gases that contribute to the creation of ground-level ozone (kg Ethene-Equiv.); **HW**= Hazardous Waste (Kg); **NHW**= Non-Hazardous Waste (Kg).

Table 5 – Environmental Parameters for the 22 mineral–organic fertilizer produced by SCAM S.p.A. - values per tons of packaged fertilizer.

Nome	N.	FASE CICLO DI VITA	NRR	NRRE	RR	RRE	EE	GWP	ODP	AP	EP	POCP	HW	NHW
AGRESTE	1	TOTALE	4,06E+03	9,44E+03	9,70E+03	1,10E+02	2,81E+01	7,77E+02	3,83E-05	1,34E+02	1,90E+01	2,01E-01	2,94E+00	4,77E+02
		PREMANIFATTURA	4,05E+03	7,66E+03	8,44E+03	8,27E+01	0,00E+00	3,45E+02	3,60E-05	6,21E+01	7,01E+00	1,57E-01	2,41E+00	4,75E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,38E+02	0,00E+00	4,94E+01	7,28E+00	0,00E+00	0,00E+00	0,00E+00
AGROFERT MB - ORTAGGI MG - VIGOR SPECIAL	2	TOTALE	2,41E+03	9,42E+03	9,52E+03	1,01E+02	2,83E+01	8,97E+02	4,47E-05	1,29E+02	1,96E+01	2,27E-01	3,14E+00	3,84E+02
		PREMANIFATTURA	2,40E+03	7,62E+03	8,26E+03	7,31E+01	0,00E+00	4,29E+02	4,25E-05	5,16E+01	6,86E+00	1,83E-01	2,60E+00	3,82E+02
		MANIFATTURA	1,06E+01	1,80E+03	1,26E+03	2,76E+01	2,83E+01	9,38E+01	2,26E-06	2,24E+01	4,70E+00	4,41E-02	5,32E-01	2,08E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,74E+02	0,00E+00	5,47E+01	8,05E+00	0,00E+00	0,00E+00	0,00E+00
AGROFERT MBS	3	TOTALE	2,78E+03	1,24E+04	2,75E+04	2,00E+02	2,81E+01	1,10E+03	8,26E-05	2,66E+02	2,54E+01	3,07E-01	2,73E+00	3,64E+02
		PREMANIFATTURA	2,77E+03	1,06E+04	2,63E+04	1,72E+02	0,00E+00	6,56E+02	8,04E-05	1,93E+02	1,33E+01	2,63E-01	2,21E+00	3,62E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,49E+02	0,00E+00	5,10E+01	7,51E+00	0,00E+00	0,00E+00	0,00E+00
AZOTOP	4	TOTALE	8,39E+02	8,82E+03	8,45E+03	8,22E+01	2,81E+01	1,24E+03	5,85E-05	1,65E+02	2,61E+01	2,91E-01	3,47E+00	1,92E+01
		PREMANIFATTURA	8,28E+02	7,04E+03	7,20E+03	5,48E+01	0,00E+00	4,13E+02	5,62E-05	3,49E+01	5,64E+00	2,47E-01	2,94E+00	1,71E+01
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,36E+02	0,00E+00	1,07E+02	1,58E+01	0,00E+00	0,00E+00	0,00E+00
AZOTOP 21	5	TOTALE	3,81E+02	4,40E+03	4,49E+03	4,27E+01	2,81E+01	6,05E+02	2,67E-05	8,24E+01	1,31E+01	1,33E-01	1,61E+00	5,25E+00
		PREMANIFATTURA	3,76E+02	3,59E+03	3,92E+03	3,02E+01	0,00E+00	1,86E+02	2,57E-05	1,72E+01	2,83E+00	1,13E-01	1,37E+00	4,31E+00
		MANIFATTURA	4,79E+00	8,15E+02	5,73E+02	1,25E+01	2,81E+01	4,26E+01	1,03E-06	1,02E+01	2,13E+00	2,00E-02	2,41E-01	9,42E-01
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,77E+02	0,00E+00	5,50E+01	8,10E+00	0,00E+00	0,00E+00	0,00E+00
BELCAMPO - BELFRTUTTO MB	6	TOTALE	3,62E+03	8,30E+03	8,14E+03	9,43E+01	2,81E+01	7,63E+02	3,94E-05	1,09E+02	1,60E+01	2,03E-01	2,95E+00	6,11E+02
		PREMANIFATTURA	3,61E+03	6,51E+03	6,89E+03	6,69E+01	0,00E+00	4,65E+02	3,72E-05	5,70E+01	6,94E+00	1,59E-01	2,42E+00	6,09E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,04E+02	0,00E+00	2,98E+01	4,39E+00	0,00E+00	0,00E+00	0,00E+00

Nome	N.	FASE CICLO DI VITA	NRR	NRRE	RR	RRE	EE	GWP	ODP	AP	EP	POCP	HW	NHW
BELFRUTTO MBS	7	TOTALE	4,36E+03	1,26E+04	2,86E+04	2,15E+02	2,81E+01	1,06E+03	8,12E-05	2,68E+02	2,38E+01	2,93E-01	2,78E+00	6,14E+02
		PREMANIFATTURA	4,35E+03	1,08E+04	2,74E+04	1,87E+02	0,00E+00	7,35E+02	7,89E-05	2,13E+02	1,42E+01	2,49E-01	2,25E+00	6,11E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,30E+02	0,00E+00	3,36E+01	4,94E+00	0,00E+00	0,00E+00	0,00E+00
BELGRANO	8	TOTALE	7,40E+03	1,04E+04	1,21E+04	1,37E+02	2,81E+01	1,01E+03	5,44E-05	1,88E+02	2,50E+01	2,69E-01	3,60E+00	9,14E+02
		PREMANIFATTURA	7,39E+03	8,60E+03	1,08E+04	1,10E+02	0,00E+00	4,57E+02	5,22E-05	9,88E+01	1,04E+01	2,26E-01	3,07E+00	9,12E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,60E+02	0,00E+00	6,72E+01	9,89E+00	0,00E+00	0,00E+00	0,00E+00
FERTIKAL - TOMATO TOP K+	9	TOTALE	5,27E+03	1,01E+04	1,04E+04	1,20E+02	2,81E+01	8,26E+02	5,81E-05	1,58E+02	2,25E+01	2,87E-01	3,64E+00	6,67E+02
		PREMANIFATTURA	5,26E+03	8,29E+03	9,19E+03	9,26E+01	0,00E+00	3,98E+02	5,59E-05	8,72E+01	1,06E+01	2,43E-01	3,11E+00	6,65E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,35E+02	0,00E+00	4,89E+01	7,20E+00	0,00E+00	0,00E+00	0,00E+00
FERTIL AGRESTE START	10	TOTALE	3,94E+03	8,80E+03	8,92E+03	1,00E+02	2,81E+01	9,31E+02	5,57E-05	1,48E+02	2,15E+01	2,75E-01	3,43E+00	5,83E+02
		PREMANIFATTURA	3,93E+03	7,01E+03	7,66E+03	7,29E+01	0,00E+00	4,32E+02	5,34E-05	6,69E+01	8,07E+00	2,31E-01	2,91E+00	5,81E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,06E+02	0,00E+00	5,93E+01	8,74E+00	0,00E+00	0,00E+00	0,00E+00
FERTIL MBS	11	TOTALE	5,34E+03	1,36E+04	2,86E+04	2,24E+02	2,81E+01	1,14E+03	8,24E-05	2,82E+02	2,76E+01	3,09E-01	3,10E+00	7,38E+02
		PREMANIFATTURA	5,33E+03	1,18E+04	2,74E+04	1,96E+02	0,00E+00	6,85E+02	8,02E-05	2,07E+02	1,53E+01	2,65E-01	2,58E+00	7,36E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,59E+02	0,00E+00	5,24E+01	7,71E+00	0,00E+00	0,00E+00	0,00E+00
FOSFOKAL MBS	12	TOTALE	4,78E+03	1,44E+04	3,68E+04	2,58E+02	2,81E+01	1,04E+03	9,68E-05	3,18E+02	2,51E+01	3,27E-01	2,59E+00	4,22E+02
		PREMANIFATTURA	4,77E+03	1,26E+04	3,56E+04	2,31E+02	0,00E+00	8,24E+02	9,45E-05	2,78E+02	1,77E+01	2,83E-01	2,06E+00	4,20E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,25E+02	0,00E+00	1,83E+01	2,69E+00	0,00E+00	0,00E+00	0,00E+00
NUTRIFOS	13	TOTALE	4,76E+03	6,99E+03	7,02E+03	8,13E+01	2,81E+01	7,66E+02	4,37E-05	1,21E+02	1,72E+01	2,30E-01	2,83E+00	4,26E+02
		PREMANIFATTURA	4,75E+03	5,20E+03	5,77E+03	5,38E+01	0,00E+00	3,62E+02	4,14E-05	5,32E+01	5,83E+00	1,86E-01	2,30E+00	4,24E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,11E+02	0,00E+00	4,54E+01	6,69E+00	0,00E+00	0,00E+00	0,00E+00

Nome	N.	FASE CICLO DI VITA	NRR	NRRE	RR	RRE	EE	GWP	ODP	AP	EP	POCP	HW	NHW
NUTRIGAN TOP	14	TOTALE	7,40E+03	1,04E+04	1,21E+04	1,37E+02	2,81E+01	1,01E+03	5,44E-05	1,88E+02	2,50E+01	2,69E-01	3,60E+00	9,14E+02
		PREMANIFATTURA	7,39E+03	8,60E+03	1,08E+04	1,10E+02	0,00E+00	4,57E+02	5,22E-05	9,88E+01	1,04E+01	2,26E-01	3,07E+00	9,12E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,60E+02	0,00E+00	6,72E+01	9,89E+00	0,00E+00	0,00E+00	0,00E+00
OLIVETO - SUPER ROBUR	15	TOTALE	2,16E+03	8,40E+03	8,33E+03	8,69E+01	2,81E+01	1,04E+03	5,55E-05	1,58E+02	2,34E+01	2,77E-01	3,26E+00	2,15E+02
		PREMANIFATTURA	2,15E+03	6,61E+03	7,08E+03	5,94E+01	0,00E+00	3,68E+02	5,33E-05	5,06E+01	6,29E+00	2,34E-01	2,74E+00	2,13E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,80E+02	0,00E+00	8,47E+01	1,25E+01	0,00E+00	0,00E+00	0,00E+00
PRECOCE MBS	16	TOTALE	5,34E+03	1,36E+04	2,86E+04	2,24E+02	2,81E+01	1,14E+03	8,24E-05	2,82E+02	2,76E+01	3,09E-01	3,10E+00	7,38E+02
		PREMANIFATTURA	5,33E+03	1,18E+04	2,74E+04	1,96E+02	0,00E+00	6,85E+02	8,02E-05	2,07E+02	1,53E+01	2,65E-01	2,58E+00	7,36E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,59E+02	0,00E+00	5,24E+01	7,71E+00	0,00E+00	0,00E+00	0,00E+00
SUPER ROBUR S	17	TOTALE	2,57E+03	1,17E+04	1,88E+04	1,54E+02	2,81E+01	1,27E+03	6,96E-05	2,34E+02	2,91E+01	2,99E-01	3,30E+00	2,16E+02
		PREMANIFATTURA	2,56E+03	9,89E+03	1,75E+04	1,26E+02	0,00E+00	5,07E+02	6,73E-05	1,14E+02	1,01E+01	2,56E-01	2,77E+00	2,14E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,67E+02	0,00E+00	9,74E+01	1,43E+01	0,00E+00	0,00E+00	0,00E+00
SUPERALBA	18	TOTALE	4,06E+03	9,44E+03	9,70E+03	1,10E+02	2,81E+01	7,77E+02	3,83E-05	1,34E+02	1,90E+01	2,01E-01	2,94E+00	4,77E+02
		PREMANIFATTURA	4,05E+03	7,66E+03	8,44E+03	8,27E+01	0,00E+00	3,45E+02	3,60E-05	6,21E+01	7,01E+00	1,57E-01	2,41E+00	4,75E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,38E+02	0,00E+00	4,94E+01	7,28E+00	0,00E+00	0,00E+00	0,00E+00
SUPERALBA MAX	19	TOTALE	3,20E+03	8,46E+03	8,41E+03	9,41E+01	2,81E+01	7,68E+02	4,33E-05	1,26E+02	1,80E+01	2,22E-01	2,94E+00	3,63E+02
		PREMANIFATTURA	3,19E+03	6,67E+03	7,15E+03	6,67E+01	0,00E+00	3,63E+02	4,10E-05	5,82E+01	6,59E+00	1,78E-01	2,41E+00	3,61E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,12E+02	0,00E+00	4,56E+01	6,71E+00	0,00E+00	0,00E+00	0,00E+00
VIGNAFRUT MB	20	TOTALE	2,41E+03	9,42E+03	9,52E+03	1,01E+02	2,83E+01	8,97E+02	4,47E-05	1,29E+02	1,96E+01	2,27E-01	3,14E+00	3,84E+02
		PREMANIFATTURA	2,40E+03	7,62E+03	8,26E+03	7,31E+01	0,00E+00	4,29E+02	4,25E-05	5,16E+01	6,86E+00	1,83E-01	2,60E+00	3,82E+02
		MANIFATTURA	1,06E+01	1,80E+03	1,26E+03	2,76E+01	2,83E+01	9,38E+01	2,26E-06	2,24E+01	4,70E+00	4,41E-02	5,32E-01	2,08E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,74E+02	0,00E+00	5,47E+01	8,05E+00	0,00E+00	0,00E+00	0,00E+00

Nome	N.	FASE CICLO DI VITA	NRR	NRRE	RR	RRE	EE	GWP	ODP	AP	EP	POCP	HW	NHW
VIGOR TOP 60	21	**TOTALE**	2,97E+03	1,91E+04	3,13E+04	2,89E+02	2,81E+01	1,36E+03	1,29E-04	3,11E+02	3,20E+01	4,20E-01	2,57E+00	2,07E+02
		PREMANIFATTURA	2,96E+03	1,73E+04	3,00E+04	2,62E+02	0,00E+00	8,97E+02	1,27E-04	2,34E+02	1,92E+01	3,76E-01	2,04E+00	2,05E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,75E+02	0,00E+00	5,47E+01	8,06E+00	0,00E+00	0,00E+00	0,00E+00
UNIFERT - VIGOR K	22	**TOTALE**	2,92E+03	7,81E+03	7,79E+03	8,17E+01	2,81E+01	9,68E+02	4,84E-05	1,20E+02	1,78E+01	2,39E-01	3,17E+00	3,00E+02
		PREMANIFATTURA	2,91E+03	6,03E+03	6,54E+03	5,42E+01	0,00E+00	5,91E+02	4,62E-05	5,68E+01	7,01E+00	1,95E-01	2,65E+00	2,98E+02
		MANIFATTURA	1,05E+01	1,78E+03	1,25E+03	2,75E+01	2,81E+01	9,32E+01	2,25E-06	2,23E+01	4,67E+00	4,38E-02	5,29E-01	2,06E+00
		USO	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,84E+02	0,00E+00	4,14E+01	6,10E+00	0,00E+00	0,00E+00	0,00E+00

Note: The parameters for each product family, are included in the limits defined by the D. Lgs.217 of 29/04/2006 Italian Republic. This means that, to calculate the environmental impacts, they have been considered as the same composition.

LEGEND: **NRR**= Non- renewable Resources without energy content (Kg); **NRRE**= Non- renewable Resources with energy content (MJ); **RR**= Renewable Resources without energy content (Kg); **RRE**= Renewable Resources with energy content (MJ); **EE**= Electricity consumption (kWh); **GWP**= Emission of greenhouse gases (kg CO2-Equiv.); **ODP**= Emission of ozone-depleting gases (kg R11-Equiv.); **AP**= Emission of acidifying gases (mol H^+/g max); **EP**= Emission of substances to water contributing to oxygen depletion (g O_2/g max); **POCP**= Emission of gases that contribute to the creation of ground-level ozone (kg Ethene-Equiv.); **HW**= Hazardous Waste (Kg); **NHW**= Non-Hazardous Waste (Kg).

2.5 – RECYCLING DECLARATION

The product or parts of it must not be reused. The completely empty container must not be dumped in the environment, neither re-used or recycled for other purposes, but must be disposed as waste according to the standards applicable.

2.6 – OTHER ENVIRONMENTAL INFORMATION

Further environmental aspects related to SCAM production site (for instance smell, visual impact, etc...) are evaluated in terms of significance in accordance to the procedures of the Environmental Management System and are described in the Environmental Declaration in accordance to the Regulations CE 761/01 - EMAS.
SCAM has a qualified and efficient presence all over the national territory.
The sales department of SCAM has the most advanced informatic and telematic technologies. As a consequence, SCAM is able to supply, timely, any kind of consultancy to his customers.
SCAM has a territorial organization, on a national basis, trough commercial areas; each area has its own area manager.
The customers of SCAM can:

- use reliable products and services that have been tested for any kind of cultivation and agronomic use;
- get support from a net of cooperators who are technically prepared with a continous presence all over the different areas;
- use the most advance available technologies in order to develop solutions of electronic commerce business to business.

3 – CERTIFICATION BODY

This EPD and the related Life Cycle Assessment study, have been reviewed and approved by the certification body **Certiquality** for the certification according to the MSR 1999:2 published by the Swedish Environmental Management Council. Deadline for this EPD is 19/04/2010.

4 – REFERENCES

- Requirements for Environmental Product Declarations, EPD, (MSR 1999:2) published by the Swedish Environmental Management Council at www.environdec.com
- PCR for preparing an environmental declaration for Fertilizer. PSR 2006:8, Version 1.0 2006-12-28 (www.environdec.com).
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