

Description and user guide of GOAL-QUASI: an IMGLP model for the exploration of future land use

M.K. van Ittersum, R.J. Hijmans & D. Scheele

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Preface

This manual is primarily written for the course QUASI (QUantitative Analysis of (agro-eco) Systems at higher Integration levels) given by the departments of Agronomy and Theoretical Production Ecology of Wageningen Agricultural University. The course focusses on a methodology for exploring future land use options, in which the Interactive Multiple Goal Linear Programming (IMGLP) technique plays a central role. In the course case studies with IMGLP are used. One of these case studies, GOAL-QUASI, is introduced in this report.

GOAL-QUASI has been modelled in the OMP software package (midsize or extra-large version) and can be run on an IBM PC under MS/DOS or OS/2 (80386 and higher). It is available on diskette (M.K. van Ittersum, Department of Theoretical Production Ecology, P.O. Box 430, 6700 AK Wageningen).

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Table of Contents

	page
Preface	
Samenvatting	1
Summary	1
1. Introduction	3
2. Aggregation of GOAL to GOAL-QUASI	5
3. Simplification of GOAL to GOAL-QUASI	9
3.1. Activities	9
3.1.1. Land use activities	9
3.1.2. Industrial conversion	11
3.1.3. Conversion of feed to nutritive value	12
3.1.4. Animal husbandry activities	12
3.2. Constraints or balances	13
3.2.1. Product balances	13
3.2.2. Area constraints	13
3.2.3. Water use constraints	14
3.2.4. Manure balances and regionally bound production	14
3.3. Objective functions	14
4. Description of GOAL-QUASI	15
4.1. Introduction	15
4.2. Product balances	15
4.3. Area constraints	16
4.4. Water use constraints	17
4.5. Manure balances	17
4.6. Goal equations	17
References	19
 APPENDICES	
Appendix I - Listing of GOAL-QUASI	8 pp.
Appendix II - OMP and GOAL-QUASI	4 pp.
Appendix III - IMGLP with GOAL-QUASI	2 pp.
Appendix IV - Acronyms	4 pp.
Appendix V - Data files	31 pp.
Appendix VI - Results of GOAL-QUASI	7 pp.

Samenvatting

Dit document bevat een beschrijving van en handleiding voor het Interactieve Meervoudige lineaire Doelprogrammering (IMDP) model GOAL-QUASI. GOAL-QUASI is een voor onderwijsdoeleinden aangepaste versie van het model GOAL (General Optimal Allocation of Land use), dat ontwikkeld en gebruikt is door de Wetenschappelijke Raad voor het Regeringsbeleid in de studie "Grond voor Keuzen - Vier perspectieven voor de landelijke gebieden in de Europese Gemeenschap". GOAL-QUASI is ontwikkeld om de IMDP techniek en de methodologie voor verkennende landgebruiksstudies te illustreren aan de hand van een concrete case-studie. De structuur van GOAL-QUASI is breed toepasbaar voor verkennende landgebruiksstudies op het regionale niveau.

De aanpassingen van GOAL om tot GOAL-QUASI te komen zijn beschreven in dit rapport: aggregatie van de ruimtelijke eenheden (NUTS-1 regio's werden geaggregeerd tot landen), vermindering van het aantal gewasrotaties, vereenvoudiging van de link tussen plantaardige en dierlijke productie en vereenvoudiging van de waterbalansen. Verder werd GOAL vertaald naar het gebruikersvriendelijke OMP-software pakket voor lineaire programmering. Het document beschrijft de structuur van GOAL-QUASI en bevat listings van het model, alle data files en enkele uitvoerfiles.

Summary

This document comprises a description of and manual for the Interactive Multiple Goal Linear Programming (IMGLP) model GOAL-QUASI. GOAL-QUASI is a modified version of GOAL (General Optimal Allocation of Land use) that has been developed and used by the Netherlands Scientific Council for Government Policy in the study "Ground for choices - Four perspectives for the rural areas in the European Community". GOAL-QUASI has been developed for educational purposes to illustrate the IMGLP technique and the methodology for explorative land use studies with a case study. The structure of GOAL-QUASI can be used also for other land use studies at the regional level.

GOAL has been adapted to GOAL-QUASI in the following respects: aggregation of the spatial units (NUTS-1 regions were aggregated to countries), reduction of the number of crop rotations, simplification of the link between plant and animal production, simplification of water (for irrigation) balances. GOAL has been translated to the user-friendly OMP software package for linear programming. This document describes the structure of GOAL-QUASI, and comprises the listings of the model, all data files and some important report files.

1 Introduction

GOAL-QUASI is a simplified version of GOAL (General Optimal Allocation of Land use) which has been developed by the Netherlands Scientific Council for Government Policy (WRR, 1992; Scheele, 1992). In their study "Four perspectives for the rural areas in the European Community" the council used the model to explore options for future land use in the EC. It is an Interactive Multiple Goal Linear Programming (IMGLP) model.

IMGLP is a linear programming technique. A linear programming model is composed of: (i) activities or variables, (ii) linear constraints and (iii) a linear objective function for which the model is optimized. IMGLP models have more than one objective function. In each interactive run of an IMGLP model, the model is optimized for one of the objective functions with upper or lower bounds on the other objectives; in fact the latter objectives are used as constraints. In this way, the consequences of tightening one objective, in terms of other objectives are revealed; the trade-offs between objectives become visible.

In the IMGLP model technical information on land use and other resources, and information on food consumption and trade are confronted with different policy views. The technical information is derived by using the principles and concepts of production ecology. The policy views are operationalized by distilling a set of explicit objective functions. For each of the policy views, land use scenarios are generated by optimizing the model for the most relevant objectives. The results for the scenarios comprise the values for the objective functions and the optimal land allocation. The scenarios show the consequences of different aims and the conflicts between the various policy views.

For the GOAL model the technical information about land use was derived from a land evaluation (Rabbinge & Van Latesteijn, 1992). In the evaluation the characteristics of soil and climate were confronted with the requirements for mechanized growing of various crops. For the suitable areas the potential and water-limited yields were calculated with crop growth simulation models. Subsequently, production orientations, production techniques and croppings systems were defined using expert knowledge. The following production orientations were distinguished: yield-oriented agriculture, environmental-oriented agriculture and land use-oriented or extensive agriculture. In the yield oriented agriculture, a high soil productivity with efficient use of inputs was the primary aim. In the environmental oriented agriculture more account is taken of environmental hazards related to agriculture, by using less environmentally hazardous inputs per hectare (pesticides and nutrients), accepting some decrease in yield. In the land use oriented agriculture no pesticides are used and a low soil productivity is accepted to use more land for agricultural purposes. Input-output tables were generated with expert knowledge for these production orientations, with and without irrigation. The principle of best technical means was applied to calculate these input-output tables, which means that both the available knowledge and the available techniques are applied optimally in *all* areas of the EC. It was assumed that in 25 years the level of knowledge and techniques may increase in all areas of the EC and that the relative advantage of North Western Europe may disappear. Under this assumption, production possibilities are only determined by bio-physical conditions. Technical information on land use was derived for the crop and cropping system level. Farm structure and size is not included in GOAL. In fact, in the study the EC is considered as one super-farm.

Besides the technical information on land use, information on the demand for agricultural products in the European Community is included in the model. This demand was estimated for two diets (current diet and a diet with more animal products) and two trade situations (free trade and autarky) using results of e.g. demographic and econometric studies. The model can be run for each of the four levels of demand for agricultural products (two diets combined with two trade situations).

Four policy views were distilled from policy documents and discussions: (A) Free market and free trade; (B) Regional development; (C) Nature and landscape and (D) Environmental protection. From these policy views eight objective functions were distilled: agro-technical, socio-economic and environmental objectives. In various interactive runs with the IMGLP model, four land use scenarios were generated for the four policy views, each characterized by the values for the eight objective functions and the optimal regional land use allocation.

For the GOAL model the Council used the LP software programme GAMS. To be able to use the model in the QUASI course (QUantitative Analysis of (agro-eco) Systems at higher Integration levels) of the departments of Theoretical Production Ecology and Agronomy (WAU), the model was translated into the OMP computer language (Beyers & Partners, 1993). The model was reduced as well, because it was too extensive to be solved with the midsize version of OMP, and too complicated for educational purposes. This reduction has been accomplished by a combination of aggregation (Chapter 2) and simplification (Chapter 3). The original GOAL-model comprised 10853 variables, 2213 constraints and 135,484 non-zero coefficients, whereas GOAL-QUASI counts only 940 variables, 375 constraints and 10,596 non-zero coefficients. In this report, mainly the *differences* between the original model (GOAL) and the simplified model (GOAL-QUASI) are discussed (Chapter 4). For backgrounds and a detailed description of GOAL, we refer to Scheele (1992), WRR (1992) and De Koning *et al.* (1992). Hijmans & Van Ittersum (1996) analyzed the differences in results between GOAL and GOAL-QUASI. Their general conclusion is that for most of the objective functions, GOAL-QUASI gives a fair representation of the results of GOAL.

GOAL-QUASI has been developed to illustrate the IMGLP technique and the methodology for explorative land use studies with a case study. The structure of GOAL(-QUASI) can be used also as a basis for other land use studies at the regional level.

In the Appendices a complete listing of the model (Appendix I), a list of acronyms (Appendix IV) and a listing of all data files (Appendix V) are given. Moreover, an explanation is given for the way GOAL-QUASI is written in OMP (Appendix II) and how the IMGLP procedure works in OMP (Appendix III). Appendix VI gives the results of one particular run with the model.

2 Aggregation of GOAL to GOAL-QUASI

Land use activities and constraints in GOAL and GOAL-QUASI are defined and quantified for each of the spatial units (regions) within the EC. The most important difference between GOAL and GOAL-QUASI is the number of spatial units into which the EC has been subdivided. In GOAL the EC was split up in 58 (NUTS-1) regions. In GOAL-QUASI these 58 regions were aggregated to 16 regions (Table 1; Figures 1 and 2); the NUTS-1 regions were aggregated to countries (NUTS-0 level), with some exceptions:

- the bigger countries (UK, Germany, France, Italy and Spain) were subdivided into a northern and a southern part;
- Luxembourg was added to France North because it was much smaller than the other regions and its ecological, agro-technical and socio-economical characteristics are more similar to France North than to Belgium or Germany (Hengsdijk, 1990).

An aggregation to country level was chosen, since results at member state level are interesting, both from a political and educational point of view. Aggregation based on pedo-climatic characteristics, however, might have been better, because that allows aggregation of agro-ecologically similar regions (e.g. mountainous regions), thus avoiding outweighing differences between agro-ecological zones. Hijmans & Van Ittersum (1996) deal with the different aspects of aggregating spatial units in linear programming models used for exploring future land use options. They also discuss the effect of aggregating the GOAL model to the GOAL-QUASI model.

While most data could be aggregated by simple summation, the coefficients indicating the inputs (e.g. nitrogen or pesticides) and outputs (e.g. crop yields) of the crop activities were calculated using a weighted average. This was done according to Equation 1. For aggregating each input or output A of (e.g. crop) activities in regions $r1$ and $r2$ (A_{r1} and A_{r2}), to the input or output A_{r12} of an activity in the aggregated region $r(1+2)$:

$$A_{r12} = [(A_{r1} * \text{area}_{r1} * \text{suit}_{r1}) + (A_{r2} * \text{area}_{r2} * \text{suit}_{r2})] / [\text{area}_{r1} * \text{suit}_{r1} + \text{area}_{r2} * \text{suit}_{r2}] \quad (\text{Eqn 1})$$

area_{r1} - total area of region 1

suit_{r1} - the fraction of the area of region 1 suitable for (e.g. crop) activity X .

Example: aggregation of an output (sugar beet yield) of the Wheat-Oilseed-Wheat-Fieldbean-Sugarbeet crop activity for the two NUTS-1 regions in Belgium: VLAAMSGWST and WALLON to the output of this activity for Belgium:

$$18.00 = [(17.46 * 1.349 * 0.881) + (19.08 * 1.691 * 0.351)] / [1.349 * 0.881 + 1.691 * 0.351]$$

In GOAL, the NUTS-1 regions were grouped in 3 clusters, according to their precipitation deficit. Per cluster, the costs for the use of machines differs, because of a faster depreciation rate in regions with a higher precipitation deficit (De Koning et al., 1992). In GOAL-QUASI, the aggregated regions belong to the same cluster as (most of) their non-aggregated NUTS-1 regions.

Table 1. Regions used in GOAL-QUASI and their aggregated NUTS-1 regions in the original GOAL-model

name	abbreviation	NUTS-1*
Germany North	GN	1-3
Germany South	GS	4-8
France North	FN	9-13, 34
France South	FS	14-16
Italy North	IN	17-21
Italy South	IS	22-27
Netherlands	NL	28-31
Belgium	BE	32-33
United Kingdom South	UKS	35-43
United Kingdom North	UKN	44-45
Ireland	IR	46
Denmark	DE	47
Greece	GR	48-50
Spain North-West	SNW	51-54
Spain South-East	SSE	55-56
Portugal	PO	57-58

* Numbers as used in WRR (1992), pp. 134-136 and in Fig. 1 of this report

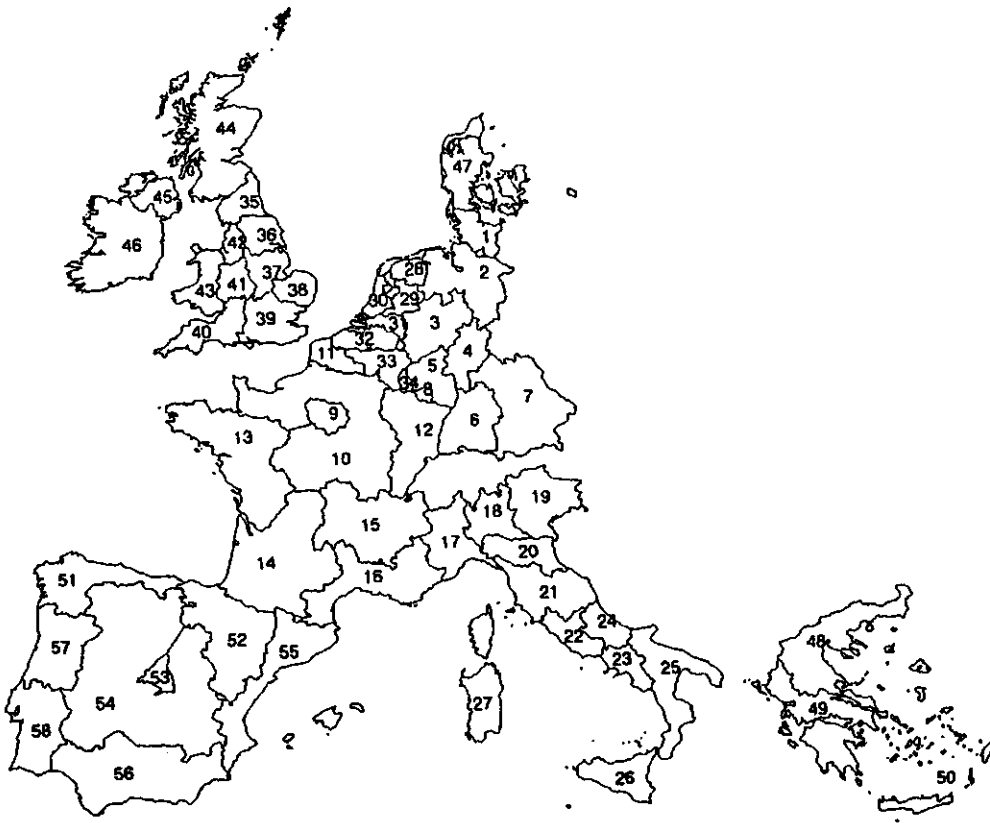


Figure 1. The NUTS-1 regions of the EC as used in GOAL (WRR, 1992)

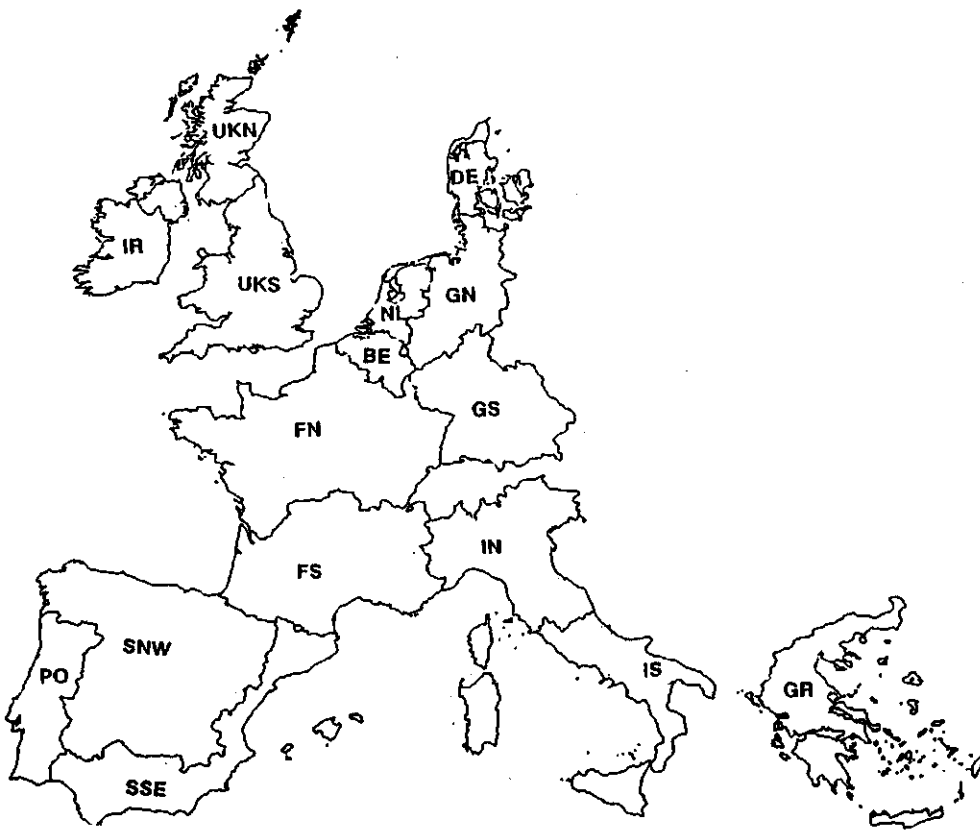


Figure 2. The aggregated regions as used in GOAL-QUASI

3 Simplification of GOAL to GOAL-QUASI

This chapter further describes the 'building blocks' of the GOAL-QUASI model: activities (3.1), constraints (3.2) and objective functions (3.3), with special reference to the differences between GOAL and GOAL-QUASI.

3.1 Activities

Four groups of agricultural and agriculture-related activities can be distinguished in GOAL and GOAL-QUASI:

1. land use activities (crop rotations, roughage growing) for each of the regions;
2. (industrial) conversion of crop and animal husbandry products to products for human consumption, for the EC;
3. (mathematical) conversion of crop products, roughage and industrial residues to (animal) feed with a certain nutritive value, some for each of the regions, some for the EC;
4. animal husbandry and pig and poultry activities for the EC.

These activities and the differences between GOAL and GOAL-QUASI are described in the following paragraphs. The diagram in Fig. 3 shows the relation between the different activities and their inputs and outputs.

3.1.1 Land use activities

Land use activities were defined and quantified for the cropping system (crop rotation) level. To make the GOAL-QUASI model much smaller and faster to solve, the number of land use activities was reduced drastically. The original number of 41 crop rotations, was reduced to 15 (Table 2). Permanent crop (olives, fruit) and forestry activities were omitted in GOAL-QUASI, because areas with these agricultural activities are relatively small. Moreover, the latter activities do not have a strong interaction with the crop and animal husbandry activities.

It is difficult to make a proper selection of 15 rotations. First, crop rotations should be as diverse as possible to allow the model to make different choices, e.g. between long and short rotations. Since land use activities are defined at the crop rotation level, growth of the various crops is interrelated. Therefore, the flexibility of the model with a selected set of rotations should receive ample attention. The selected set of rotations should allow some flexibility in total areas per crop and demands for each of the agricultural products and feed substances, e.g. some rotations should comprise sugar beet and potato, some either sugar beet or potato, and some rotations should comprise no sugar beet and potato. There must be rotations with (many) root crops, and rotations without root crops, to allow the model to use the available area which is suitable for root crops and the area unsuitable for root crops.

After making a selection of 15 rotations, taking into account the forementioned considerations, it appeared necessary to define an extra, new rotation to close all balances of the model. Without this extra rotation it was not possible for the model to meet the exact demands for each of the agricultural products due to the interdependency of crops in rotations. The new rotation (WOWF), comprises as much field bean as possible (25 %, De Koning *et al.*, 1992) and can be grown on the area suitable for mow crops (contrary to CWOFF, since corn can not be grown in the North-Western part of the EC). The rotation WOWF allows the model to grow much faba bean, and thus much digestible crude protein, which can close the feed balances of the cattle. The other crops in the rotation, especially oilseed rape, are also relatively rich in protein. Most technical coefficients (i.e. those in the files CR_INPUT.DAT and in CR_OUTP.DAT, see Appendix V) of the new rotations were calculated with the computer model ROTAT (De Koning *et al.*, 1992). For the coefficients which were not calculated with ROTAT (i.e. use of buildings, energy and machinery), those of the rotation COWF were used.

The input-output tables for the crop rotations were quantified for each of the regions (Fig. 2), with the same production orientations (yield-oriented, environmental-oriented and land use-oriented agriculture) and production levels (with and without irrigation) as in the GOAL model.

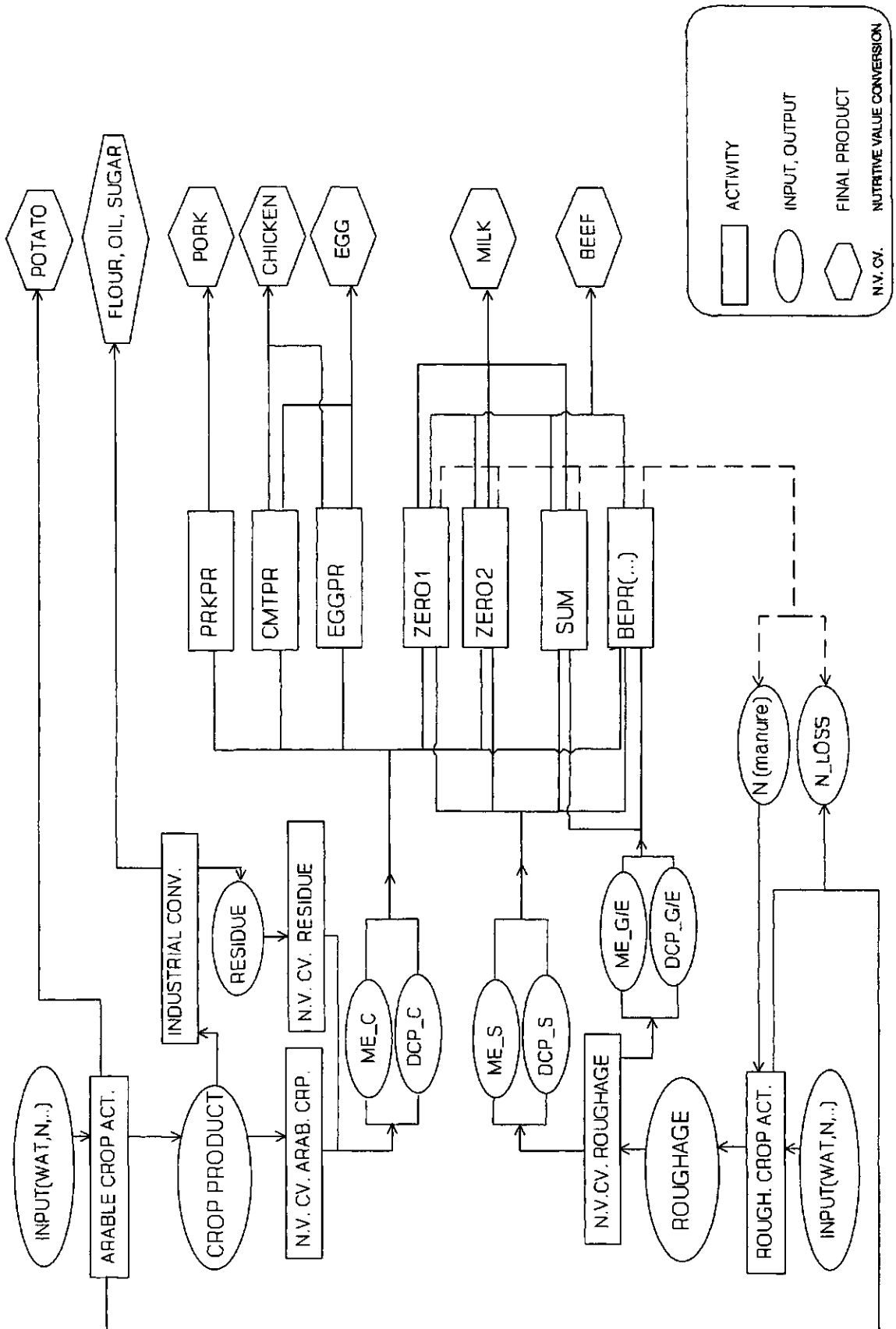


Figure 3. Diagram showing the structure of GOAL-QUASI. The left part of the diagram concerns the plant production and conversion activities, the middle part the animal husbandry activities, and the right part of the diagram shows the final products for human consumption.

Table 2. Rotations used in GOAL, those selected for GOAL-QUASI (**bold**), and those added in GOAL-QUASI (underlined), grouped by the number of years (crops) in a rotation and by the production orientation (YOA - Yield Oriented Agriculture, EOA - Environment Oriented Agriculture, EXT - EXTensive agriculture or land use oriented agriculture).

	YOA or EOA	YOA	EXT
one year	M G S	C W	G W
two years	WO CO CW	WP WB	
three years	WWO COW	WOP PWB CBP COP OBW	
four years	<u>WOWF</u> <u>CWOF</u> PWBW PWOW PFBW CPWO CBWP COPB	CBWB PBPW	
five years	CWFWO WOWFB CBFPW FPWOB WOWWP		
six years	WPWOFS CWOWFB WBWFWP WOWOPF WOWFBP WOWFWP WWWWWF COBFWP	CWBWFB WBWFBP	

W - wheat, C - corn (grain maize), P - potato, B - sugar beet, O - oilseed rape, F - field bean, S - silage maize, M - mown grass (for silage), G - grass (grazed)

3.1.2 Industrial conversion

Both in GOAL and in GOAL-QUASI, wheat, sugar beet and oilseed can be processed into their respective products and residues. In GOAL-QUASI, milk is not processed; the demand for all milk products, like cheese and butter, was aggregated to one demand for milk.

3.1.3 Conversion of (animal) feed to nutritive value

Cattle, pig and poultry activities consume outputs from land use activities or industrial conversion activities and produce outputs like milk, meat and eggs. To model this, the output of land use or industrial conversion activities is mathematically converted into feed components. GOAL comprises a rather complicated system of nutritive value conversions and calculations. In GOAL-QUASI, feed is expressed in two major nutritive value components: energy (ME, Metabolizable Energy, expressed in kJ; 1 KJ = 0.145 VEM; VEM = Voeder Eenheden Melk = Feeding unities milk) and protein (DCP = Digestible Crude Protein, g).

A distinction was made between nutritive value originating from concentrate, silage or fresh grass. This was necessary to enable pigs and chickens to be fed with concentrates only and cattle with roughage only (partly as silage and partly fresh) or with a combination of roughage and concentrate. Concentrate can be 'produced' from some arable products (wheat, field bean, oilseed, corn) and residues from industrial conversion processes (husk, beet pulp, oilseed cake), comprising a certain amount of energy (ME_C) and protein (DCP_C). The nutritive value of grazed grass is denoted with ME_G and DCP_G; the nutritive value of silage products (maize and grass) with ME_S and DCP_S, and that of extensive pastures with ME_E and DCP_E.

To ensure a good digestion, the diet of cattle should comprise a minimum amount of fibrous feed like grass or silage. This requirement is met implicitly in GOAL-QUASI, since for cattle a maximum of half of the nutritive requirements is met with concentrates whereas the other part is met with roughage, ensuring an average structure coefficient of over 0.3.

In GOAL 'wheat' stands for all kinds of cereals. Most of the 'wheat' is processed into flour. Some of the 'wheat' is used to produce malt (and in fact stands for barley). The nutritive value of the by-products of 'wheat', i.e. 'husk', differs between GOAL and GOAL-QUASI. In GOAL, the nutritive value of real husk (in Dutch: tarweafval van de maalmachines) was used. However, the residue of malt which remains after the production of beer (in Dutch: bierbostel), has a quite different nutritive value than real husk (the nutritive value of real husk is about 4.5 times that of malt residue). Therefore, a weighted average of the nutritive value of real husk (i.e. tarweafval van maalmachine) and that of malt residue was taken as the nutritive value for 'husk' in the GOAL-QUASI model. The weighting factor approximates the ratio between the current production of flour and malt in the EC. No correction was made for the difference in the amount of residue after flour and beer production.

In the GOAL model, there were more possible sources of feed than in GOAL-QUASI. In the latter, oil has been excluded because its use was not considered to be very realistic or important. Because milk is not processed in GOAL-QUASI, no powder milk can be fed either (skim powder milk is a relatively protein rich substance, useful in closing the feed balances).

3.1.4 Animal husbandry activities

In GOAL there were nine cattle activities: four for milk production, four for beef production and one for sheepmeat production. In GOAL-QUASI this number has been reduced to six: three dairy activities that produce milk and beef, and three beef production activities. Sheep production is not included in the GOAL-QUASI model.

The three dairy activities comprise summer grazing (SUM) and two systems of zero grazing (ZERO1 and ZERO2). Fattening of the calves from dairy cows not necessary for replacement (0.63 calf per cow per year) has been incorporated in the dairy cattle activities. This implies that the output of these activities is not only milk but also beef. In the summer grazing activity, cows are outside half the year, eating grass up to their energy requirements (which implies more protein than they actually need), and in winter they consume a balanced mix of grass and maize silage. In the zero-grazing activities cattle is in the stable year round, consuming a mixture of both silage and concentrates. In GOAL-QUASI, the two zero-grazing systems have the same production level. The only difference is the silage ZERO1 consumes, a mixture of maize and grass, while ZERO2 only consumes grass silage.

Apart from the meat produced in the dairy systems (fattening of calves and old dairy cows), bovine meat can be produced in three activities: BEPRINT, BEPR and BEPREX. BEPRINT

is fed with ME and DCP from concentrates and silage products. BEPR is fed with ME and DCP from silage products and from grazing, and BEPREX is fed with ME and DCP from silage products and with grazing extensive pastures.

The pig and poultry activities (CMTPR, EGGPR, PRKPR) are similar to those in the original model; they consume concentrates only.

3.2 Constraints or balances

GOAL and GOAL-QUASI comprise four types of constraints or balances:

1. Product balances
2. Area constraints
3. Water use constraints
4. Manure balances

3.2.1 Product balances

Demand for agricultural products

In GOAL and GOAL-QUASI there is a clearly defined demand for agricultural products based on four situations:

1. autarky in the EC and a current diet;
2. autarky in the EC and a diet with more animal products;
3. free trade and a current diet;
4. free trade and a diet with more animal products.

In GOAL-QUASI, for each of the four situations the total required production in the EC was quantified for: flour, potatoes, sugar, oil, beef, pork, chicken meat, egg and milk. One aggregated demand for milk, not for milk products like butter, cheese and milk powder, was quantified. There is no demand for fruit, since fruit crops are not included in GOAL-QUASI. Since there are no sheep activities, there is also no demand for mutton in GOAL-QUASI. Therefore, the demand for mutton was added to the demand for beef. The demand for wood in the EC is not taken into consideration in GOAL-QUASI.

Other product balances

The other product balance equations, balance the inputs and outputs of processes, like sugar extraction from sugar beet, and mathematical conversions, like the calculation of the energy and protein contents of roughage.

3.2.2 Area constraints

General

As in the original GOAL-model, the requirements that soils must satisfy decline from root crops to cereals and finally grass. The suitability of soils for the type of crops is given as fractions from the total area in a region. In each region the area suitable for root crops is the smallest, followed by a larger area suitable for cereals; grass (used for grazing and mowing) is possible on a very large scale, with the exception of Greece and Portugal. Land not suitable for grass (pasture management), can partly be used for extensive pastures (only used for grazing), which are far less productive. Permanent crop activities, like fruit tree growing, are not included in GOAL-QUASI. To compensate for the exclusion of fruit crops, an extra constraint has been added to GOAL-QUASI: the area that can be used for arable crops and roughage crops can not exceed the sum of the area currently used for arable cropping and grassland.

Maize growing constraints

In the crop growth model a discrimination is made between a green maize (silage maize) variety for the northern part of the EC and a grain maize (corn) variety (that can also be harvested as green maize) for the southern part of the EC, by means of two crop parameter sets differing mainly in development rate. For the northern climatological zones the fast-developing early variety was used and for the southern zones the late variety. This is in agreement with current practices in the EC, where varietal distribution is related to the temperature sum accumulated during the growing season. Thus, in the northern part of the EC (UK, Ireland, Denmark) no corn maize can be grown, since temperatures are too low for maturation of the corn variety. In some countries (Germany-South, France, Italy, Belgium) part of the region is suitable for corn growing, and in the southern regions all area suitable for cereals is suitable for corn growing.

3.2.3 Water use constraints

In GOAL, the maximum amount of water that can be used for irrigation is limited by the regional distribution of precipitation, run off, ground water reserves and the difference between the in and out flow of river water. In GOAL-QUASI, only a limited exploitation of ground water is allowed: this is set at 7 percent of the annual precipitation per region.

3.2.4 Manure balances and regionally bound production

In both models cattle activities are regional bound, which means that the consumption of roughage is restricted to its regional production. The cattle slurry produced in a region is used for roughage production in that same region. In GOAL, some transportation of calves was allowed. In GOAL-QUASI, fattening of the calves from dairy cows has been incorporated in the dairy activities. Hence, transport of calves from one region to another is not allowed.

3.3 Objective functions

In GOAL-QUASI the same objective functions are included as in the GOAL model:

1. Maximization of land productivity
2. Minimization of use of pesticides per unit product
3. Minimization of use of pesticides per hectare
4. Minimization of nitrogen loss per unit product
5. Minimization of nitrogen loss per hectare
6. Minimization of costs of agricultural production
7. Maximization of total employment in land-based agriculture
8. Maximization of regional employment in land-based agriculture

Objective functions 1-7 are defined for the entire EC. Maximizing the regional employment in land-based agriculture (as a percentage of the current employment in land-based agriculture) is a *maximin* problem. The region with the lowest agricultural employment (relative to the current agricultural employment) should have as much employment as possible; in other words, maximizing the region with the minimum employment.

In GOAL-QUASI one extra objective function was added (objective function 9), which is also defined as a *maximin* function: maximization of the agricultural area in the region with the minimum agricultural area (relative to the area suitable for agriculture in that region).

4 Description of GOAL-QUASI

4.1 Introduction

As described in Chapter 3, the model comprises 4 groups of balances or constraints. These balances, balance inputs and outputs of processes. The 'heart' of the model is formed by the product balances. The other balances are the area balances, the water balances and the manure balances. Finally the model comprises a number of goal equations which are used in optimizing the objective functions, or giving the objectives upper or lower bounds. Appendix I gives a complete listing of the model, Appendix II explains how the model is written in OMP, and Appendix III how the IMGLP procedure works.

4.2 Product balances

The product balances force the model to supply the exact amount of products required for (direct and indirect) human consumption taking import and export into account in the free trade option; no shortages or surpluses are allowed. The consumed products can either be primary products, which are consumed directly (potato - product balance 1), industrial products which need some processing first (sugar extracted from sugar beets, flour from wheat, oil from oilseed - product balances 3) or products from animals (beef, pork, chicken meat, egg and milk - product balances 6,7).

The animals are fed with arable or roughage crop products or with residues from industrial processes (e.g. pulp). Before these products are fed, they are classified as roughage or concentrates and they are (mathematically) converted to their nutritive value components (energy and protein, product balances 2,4,5). Unlike concentrate, roughage can not be transported across regional boundaries, it should be consumed in the region of production.

product balances 1 - for each of the arable products (wheat, corn, potato, sugar beet, oil seed, field bean)

```

production of arable crop products
- industrial conversion (into food and residue)
- conversion into feed
+ nett imports of primary products
= demand for primary products

```

product balances 2 - for each of the roughage products and each region (mown grass, silage maize, grazed grass, extensive grass)

```

production of roughage per region
= (mathematical) conversion to feed per region

```

```

the roughage produced in a region must be converted and fed to cattle in that same region (see
product balances 5 and 7)

```

product balances 3 - for each of the industrial products (flour, sugar, oil)

```

production via industrial conversions
- (mathematical) conversions into feed
+ nett imports of industrial products
= demand for industrial products

```

```

production must meet the demand and all the residues must be converted and fed to the animals
(see product balances 4 and 6)

```

product balances 4 - nutritive value conversion of arable crop products and industrial residues to concentrate (per nutritive component: ME_C and DCP_C)

(mathematical) conversion of arable crop products to energy and protein in concentrate
= consumption of energy and protein in concentrate by animals

product balances 5 - feeding value conversion of roughage (per region and per nutritive component: ME_S, DCP_S, ME_G, ME_E)

(mathematical) conversion of roughage to energy and protein
= consumption of energy and protein in roughage in that region

product balances 6 - production of pig and poultry products (meat and eggs)

production of pig and poultry products
= demand for pig and poultry products

product balances 7 - production of cattle products (milk and beef)

production of cattle products
- nett imports of cattle products
= demand for cattle products + export of cattle products

4.3 Area constraints

The area constraints (or balances) force agriculture to remain within certain spatial boundaries. Farming may not use more land than presently used for agriculture (area balances 1). Crop rotations can only be applied on the area suitable for the most demanding crop of a crop rotation (e.g. a rotation with potato and wheat is possible only on area suitable for tuber/root crops; area balances 2-4).

Note that the suitable area of land for the three classes of crops (grass, mow and root crops) can be regarded as concentric circles since all the land suitable for root crops is also suitable for mow crops and all the land suitable for mow crops is also suitable for grass. Corn can be grown in areas suitable for cereals with temperatures high enough for maturation of corn (area balances 5). Part of the land not suitable for grass can be used for extensive pastures (area balances 6).

area balances 1 - total area (per region)

total area used by agriculture
≤ area currently used (per region)

area balances 2 - grass area (per region)

area with crops
≤ area suitable for grass (per region)

area balances 3 - mow crops area (per region)

area with mow crops and tuber/root crops
≤ area suitable for mow crops (per region)

area balances 4 - tuber/root crops area (per region)

area with tuber/root crops
≤ area suitable for tuber/root crops (per region)

area balances 5 - corn area (per region)

area with corn
≤ area suitable for corn (dependent on temperature sum in each region)

area balances 6 - extensive pastures area (per region)

area with extensive pastures
 \leq area 'suitable' for extensive pastures (per region)

4.4 Water use constraints

Seven percent of the annual precipitation per region can be used for irrigating crops in that region.

water balances - irrigation (per region)

water used in irrigation
 $\leq 0.07 * \text{precipitation}$ (per region)

4.5 Manure balances

The manure produced in a particular region should be used for roughage production in that same region.

manure balances - slurry usage (per region)

production of slurry (N)
 \leq use of nitrogen in roughage production (per region)

4.6 Goal equations

The goal equations are the mathematical formulations of the objective functions. They are written as equations to perform the IMGLP smoothly. With these equations, the objective to be optimized can be selected, while the other 'objective functions' can be given upper or lower bounds. Objectives are in CAPITAL letters.

goal equation 1 - total agricultural area

AREA_G = total use of land for agriculture
 MIN [AREA_G] or LB \leq AREA_G \leq UB

goal equation 2 - total use of pesticides

PST_G = total use of pesticides for agriculture in EC
 MIN [PST_G] or LB \leq PST_G \leq UB

goal equation 3 - use of pesticides per ha

PSTHA_G = use of pesticides per ha
 MIN [PSTHA_G] or LB \leq PSTHA_G \leq UB

goal equation 4 - total loss of nitrogen

NLS_G = total loss of nitrogen for agriculture in EC
 MIN [NLS_G] or LB \leq NLS_G \leq UB

goal equation 5 - N loss per ha

NLSHA_G = loss of nitrogen per ha
 MIN [NLSHA_G] or LB \leq NLSHA_G \leq UB

goal equation 6 - total costs for agricultural production

COST_G = total costs for agriculture in EC
 MIN [COST_G] or LB \leq COST_G \leq UB

including costs of: machines, buildings, energy, general management, irrigation, labour, fertilizer, pesticides, animal husbandry, industrial conversion

18

goal equation 7 - total employment

LAB_G = total agricultural employment in EC
MAX [LAB_G] or $LB \leq LAB_G \leq UB$

goal equation 8 - agricultural employment per region

REGLAB_G = maximum of region with minimum regional agricultural employment
MAX [REGLAB_G] or $LB \leq REGLAB_G \leq UB$

goal equation 9 - agricultural area per region

REGAREA_G = maximum of region with minimum regional agricultural area
MAX [REGAREA_G] or $LB \leq REGAREA_G \leq UB$

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Appendix I: Listing of GOAL-QUASI

```

*****
* Model - GOAL-QUASI
* Version 2.2 - May 1995
* For educational purposes only
*
* Aim: optimal allocation of land use in the EC
* Implementation: OMP
* Author: Netherlands Scientific Council for government policy (WRR)
* Aggregation and simplification for QUASI:
* R.J. Hijmans and M.K. van Ittersum (WAU-TPE)
*
* References:
* WRR, 1992. Ground for choices. Reports to the Government 42,
* Sdu uitgeverij, The Hague, the Netherlands, 144 pp.
* Ittersum, M.K. van & R.J. Hijmans, 1995. Description and user guide of
* GOAL-QUASI. Quantitative Approaches in Systems Analysis No. 2.
* Department of Theoretical Production Ecology, Wageningen Agricultural
* University, the Netherlands.
*
*****
Scenario = GOAL-Q
MINIMIZE
*****
* Declaration of indices
*****
SET = REG ,F=AREA.DAT ,L=1
SET = ROT ,F=ROTATION.DAT ,L=1
SET = PLT : YOP,YOW,EOP,EOW,EXT
SET = CLS : C1,C2,C3
SET = CRP : WHT,CRN,POT,SBT,OSD,FBN,MWG,SLM,GRS,EXG
*
SET=CVA ,F=CONVERS.DAT ,C=1
SET=CVO : FLR,HSK,SUG,PLP,OIL,OSC
SET=NVIR ,F=NVIR.DAT ,C=1
SET=NVAC ,F=NVAC.DAT ,C=1
SET=NVRC ,F=NVRC.DAT ,C=1
SET=NVO : ME_C,DCP_C,ME_S,DCP_S,ME_G,ME_E
*
SET=PPA ,F=PIGPLTRY.DAT ,C=1
SET=PPO : PRK, CMT, EGG
SET=CTA : ZERO1,ZERO2,SUM,BEPR,BEPREX
SET=CTO : MLK, BEEF
*
SET=CNS ,F= CONSUMPT.DAT ,C=1
SET=GOALS ,F = GOAL.DAT ,L=1
SET=RGALS: AR,LR,EC
*****
* Relations
*****
* selected combinations of rotation and prod. level and technique
REL = REL1 ,S=ROT(&).PLT(&) ,DATA=REL1
* relates regions and clusters
REL = REL2 ,S=REG(&).CLS(&) ,DATA=REL2
* maize rotations are excluded from North EC
REL = REL3 ,S=ROT(&).REG(&) ,DATA=REL3
*****
* Declaration of variables
*****
* EC goal 'activities'
X=GOAL.EC.GOALS(&)=C $ /GOAL/ > /MIN/ < /MAX/
* regional goal 'activities'
X=GOAL.LR.REG(&)=C $ /RGOAL/ > /RMIN/ < /RMAX/
X=GOAL.AR.REG(&)=C $ /ARGOAL/ > /ARMIN/ < /ARMAX/
* crop activities
X=CA.ROT(&).PLT(&).REG(&).CLS(&)=C
* industrial conversions
X=CVACT.CVA(&)=C
* nutritive value conversions
X=NVIRACT.NVIR(&)=C
X=NVACACT.NVAC(&)=C

```

```

X=NVRCACT.NVRC(&).REG(&)=C
* pig and poultry activities
X=PPACT.PPA(&)=C
X=CTACT.CTA(&).REG(&)=C
*
X=LABUSE.REG(&)=C
X=AREAUSE.REG(&)=C
* variables for max(min) problems of regional employment and area
X=MAXMINLR=C
X=MAXMINAR=C
*
*****
*                               Constraints
*****
*                               *** product balances ***
* prodbal1 - arable products
* arable production - conversions = demand - import
*
FOR I = 1 TO 6
C = CROPPR.CRP(I) =
  + /CROP_ARA/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
  + /CONV_IN/ * CVACT.CVA(S&)
  + /NVAC_IN/ * NVCACT.NVAC(S&) = /DEMPRPR/ - /IMPPRPR/
ENDFOR I
*
*
* prodbal2 - roughage
* per region
* roughage production - nutritive value conversion = 0
*
FOR J = 7 TO 10
C = ROUGHPR.CRP(J).REG(&) =
  + /CROP_RGH/ * CA.ROT(S&).PLT(S&).REG(&).CLS(S&)
  + /NVRCACT.NVRC(S&).REG(&) = 0
ENDFOR J
*
*
* prodbal3 - industrial products
* industrial conversions - nutritive value conversions (of the residues)
* = demand for secondary products - import
*
C = INDUSTPR.CVO(&) =
  + /CONV_OUT/ * CVACT.CVA(S&)
  + /NVIR_IN/ * NVIRACT.NVIR(S&) = /DEMINPR/ - /IMPINPR/
*
*
* prodbal4 - nutritive value conversion of arable crop products
* and industrial residues (to concentrate)
* per nutritive component (energy and protein):
* nutritive value conversion of arable crop products - consumption
* by pigs and poultry - concentrate consumption by cattle = 0
*
C = FEEDPR.DCP_C =
  + /NVAC_OUT/ * NVCACT.NVAC(S&)
  + /NVIR_OUT/ * NVIRACT.NVIR(S&)
  + /PP_INP/ * PPACT.PPA(S&)
  + /CT_INP/ * CTACT.CTA(S&).REG(S&) = 0
*
C = FEEDPR.ME_C = /NVAC_OUT/ * NVCACT.NVAC(S&)
  + /NVIR_OUT/ * NVIRACT.NVIR(S&)
  + /PP_INP/ * PPACT.PPA(S&)
  + /CT_INP/ * CTACT.CTA(S&).REG(S&) = 0
*
*
* prodbal5 - nutritive value conversion of roughage
* per region and nutritive component
* nutritive value conversion of roughage -
*                               roughage consumption by cattle = 0
*
FOR I = ME_S TO ME_E
C = R_FEEDPR.REG(&).NVO(I) = /NVRCACT.NVRC(S&).REG(&)
  + /CT_INP/ * CTACT.CTA(S&).REG(&) = 0
ENDFOR I
*

```

```

*
* prodbal6 - production of pig and poultry products
* production of pig and poultry products = demand for pig/poultry products
*
C = PPPR.PPO(&) = /PP_OUT/ * PPACT.PPA(S&) = /DEMPPPR/
*
*
* prodbal7 - production of cattle products
* production of cattle products = demand for cattle products + export
*
C = CTPR.CTO(&) = /CT_OUT/ * CTACT.CTA(S&).REG(S&) = /DEMCTPR+/EXPCTPR/
*
*
* *** area balances ***
*
*
* areabal1 - total area used by agriculture is smaller than
*               area currently used
* per region
C= ARCULT.REG(&) = CA.ROT(S&).PLT(S&).REG(&).CLS(S&) < /CULTAR/
*
*
* areabal2 - area with crops is smaller than area suitable for grass
* per region
C= ARGRS.REG(&) = CA.ROT(S&).PLT(S&).REG(&).CLS(S&) < /GRSAR/
*
*
* areabal3 - area with tuber/root crops and mow crops is smaller than area
*               suitable for mow crops
* per region
C= ARMOW.REG(&) = /MOW_ROT/ * CA.ROT(S&).PLT(S&).REG(&).CLS(S&) < /MOWAR/
*
*
* areabal4 - area with tuber and root crops is smaller than area suitable
*               for tuber/root crops
* per region
C= ARTUB.REG(&) = /TUB_ROT/ * CA.ROT(S&).PLT(S&).REG(&).CLS(S&) < /TUBAR/
*
*
* areabal5 - area with corn is smaller than area suitable for corn
* per region
C= ARMAI.REG(&) = /MAI_ROT/ * CA.ROT(S&).PLT(S&).REG(&).CLS(S&) < /MAIAR/
*
*
* areabal6 - area with extensive pastures is smaller than area 'suitable
*               for extensive pastures
* per region
C= AREXGRS.REG(&) = CA.G.EXT.REG(&).CLS(S&) < /EXGRAR/
*
*
* *** water balance ***
*
*
* waterbal - water used for irrigation is less than water available
*               for irrigation
* per region
C=IRRI.REG(&) = /WAT_USE/ * CA.ROT(S&).PLT(S&).REG(&).CLS(S&) < /WATER/
*
*
* *** manure balance ***
*
*
* manurebal - production of slurry (N) is smaller than the use of
*               (in)organic fertilizer N in roughage production
* per region:
C = MANURE.REG(&) = /N_AP_CT/ * CTACT.CTA(S&).REG(&)
  - /N_AP_RGH/ * CA.ROT(S&).PLT(S&).REG(&).CLS(S&) < 0
*

```



```

*****
*
*           Goals
*****
*
*
* constraints facilitating selection of and putting bounds on objectives
*
* goaleq1 - total agricultural area in EC
*
C = AREA = GOAL.EC.AREA_G
      - CA.ROT(S&).PLT(S&).REG(S&).CLS(S&) = 0
*
* agricultural area per region
*
C = AREA.REG(&) = AREAUSE.REG(&)
      - CA.ROT(S&).PLT(S&).REG(&).CLS(S&) = 0
*
* percentage of available area used
*
C = AREA.REG(&) = /CULTAR/ * GOAL.AR.REG(&) = 100 * AREAUSE.REG(&)
*
* goaleq9 ~ maximize the agric. area in the region with minimum agric. area (rel.)
*
C = AREREG.REG(&) = GOAL.AR.REG(&) > MAXMINAR
C = REGAREA = GOAL.EC.REGAREA_G
      - MAXMINAR = 0
*
* goaleq2 - total use of pesticides
*
C = PESTUSE = GOAL.EC.PST_G
      - /PST_USE/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&) = 0
*
* goaleq3 - use of pesticides per ha
*
C = PESTHA = GOAL.EC.PSTHA_G - 1 =
      + /PSTREF/ * GOAL.EC.PST_G
      - /AREAREF/ * GOAL.EC.AREA_G
*
* goaleq4 - total nitrogen loss
*
C = NLOSS = GOAL.EC.NLS_G
      - /N_LOSS/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
      - /NLS_CT/ * CTACT.CTA(S&).REG(S&) = 0
*
* goaleq5 - nitrogen loss per ha
*
C = NLSHA = GOAL.EC.NLSHA_G =
      + /NLSREF/ * GOAL.EC.NLS_G
      - /AREAREF/ * GOAL.EC.AREA_G + 1
*
* goaleq7 - total agricultural employment
*
C = LABOUR = /MPU/ * GOAL.EC.LAB_G =
      + /LAB_USE/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
      SUM I = YOP TO EOW
      + /GEN_ARA/ * CA.ROT(S&).PLT(I).REG(S&).CLS(S&)
      ENDSUM I
      + /GEN_EXT/ * CA.ROT(S&).EXT.REG(S&).CLS(S&)
      + /LAB_CT/ * CTACT.CTA(S&).REG(S&)
*
* agricultural employment per region
*
C = LAB.REG(&) = LABUSE.REG(&) =
      + /LAB_USE/ * CA.ROT(S&).PLT(S&).REG(&).CLS(S&)
      SUM I = YOP TO EOW
      + /GEN_ARA/ * CA.ROT(S&).PLT(I).REG(&).CLS(S&)
      ENDSUM I
      + /GEN_EXT/ * CA.ROT(S&).EXT.REG(&).CLS(S&)
      + /LAB_CT/ * CTACT.CTA(S&).REG(&)
*
* agricultural employment as a percentage of current agric. employment
* per region
*

```

```

C = LABREL.REG(&) = /CURLAB/ * GOAL.LR.REG(&)
                    = 100 * LABUSE.REG(&)
*
* goaleq8 - maximize the employment in the region with minimum agric. employment
(rel.)
*
C = LABREG.REG(&) = GOAL.LR.REG(&) > MAXMINLR
C = REGLAB = GOAL.EC.REGLAB_G
            - MAXMINLR = 0
*
* goaleq6 - total costs for agriculture
*
C = COSTS = GOAL.EC.COST_G
* labour
    - /LABPRI_Y/ * GOAL.EC.LAB_G
* crop activities
    - /BUILD CST/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
    - /ENERG CST/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
    - /MACHCOST/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
    - /STORECST/
    - /PSTPRI/ * GOAL.EC.PST_G
    - /NCOST/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
    SUM I = YOP TO EOW
    - /GNINTCST/ * CA.ROT(S&).PLT(I).REG(S&).CLS(S&)
    ENDSUM I
    - /GNEXWCST/ * CA.W.EXT.REG(S&).CLS(S&)
    - /GNEXGCST/ * CA.G.EXT.REG(S&).CLS(S&)
* irrigation
    - /WATMCST/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
    - /WATHACST/ * CA.ROT(S&).YOP.REG(S&).CLS(S&)
    - /WATHACST/ * CA.ROT(S&).EOP.REG(S&).CLS(S&)
* animals
    + /CT_NCOST/ * CTA.CT(S&).REG(S&)
    - /CT_GNCST/ * CTA.CT(S&).REG(S&)
    - /PP_COST/ * PFACT.PPA(S&)
* ind. conversion
    - /CVA_COST/ * CVA.CVA(S&) = 0
*
*
*****
*                               Data definitions
*****
*
* goals, min. and max.
DATA = GOAL      ,F =GOAL.DAT      ,L = GOALS(&)      ,C = VALUE
DATA = MIN      ,F =GOAL.DAT      ,L = GOALS(&)      ,C = MIN
DATA = MAX      ,F =GOAL.DAT      ,L = GOALS(&)      ,C = MAX
*
* regional goals, min. and max.
DATA = RGOAL    ,F =REGGOAL.DAT    ,L = LR.REG(&)    ,C = VALUE
DATA = RMIN     ,F =REGGOAL.DAT    ,L = LR.REG(&)    ,C = MIN
DATA = RMAX     ,F =REGGOAL.DAT    ,L = LR.REG(&)    ,C = MAX
*
DATA = ARGOAL   ,F =REGGOAL.DAT    ,L = AR.REG(&)    ,C = VALUE
DATA = ARMIN    ,F =REGGOAL.DAT    ,L = AR.REG(&)    ,C = MIN
DATA = ARMAX    ,F =REGGOAL.DAT    ,L = AR.REG(&)    ,C = MAX
*
* demand
DATA = CONSLEV  ,F = DEMAND.DAT     ,L = CNS(&)      ,C = VALUE
DATA = CONSPRPR ,F = CONSUMPT.DAT    ,L = CRP(&)      ,C = CNS(&)
DATA = PRPR     ,TP = CONSPRPR*CONSLEV
DATA = DEMPRPR  ,S = CRP(&).CNS(M&) ,TP= PRPR
DATA = CONSINPR ,F = CONSUMPT.DAT    ,L = CVO(&)      ,C = CNS(&)
DATA = INPR     ,TP = CONSINPR*CONSLEV
DATA = DEMINPR  ,S = CVO(&).CNS(M&) ,TP = INPR
DATA = CONSPPPR ,F = CONSUMPT.DAT    ,L = PPO(&)      ,C = CNS(&)
DATA = PPPR     ,TP = CONSPPPR*CONSLEV
DATA = DEMPPPR  ,S = PPO(&).CNS(M&) ,TP= PPPR
DATA = CONCTPR  ,F = CONSUMPT.DAT    ,L = CTO(&)      ,C = CNS(&)
DATA = CTPR     ,TP = CONCTPR*CONSLEV
DATA = DEMCTPR  ,S = CTO(&).CNS(M&) ,TP= CTPR
*

```

```

* import and export
DATA = IMPPR      ,F = IMPEXP.DAT      ,L = CRP(&)      ,C = CNS(&)
DATA = MPP        ,TP = IMPPR * CONSLEV
DATA = IMPPRPR    ,S = CRP(&).CNS(M&)      ,TP = MPP
DATA = IMPIN      ,F = IMPEXP.DAT      ,L = CVO(&)      ,C = CNS(&)
DATA = MPI        ,TP = IMPIN * CONSLEV
DATA = IMPINPR    ,S = CVO(&).CNS(M&)      ,TP = MPI
DATA = EXPCT      ,F = IMPEXP.DAT      ,L = CTO(&)      ,C = CNS(&)
DATA = XCT        ,TP = EXPCT * CONSLEV
DATA = EXPCTPR    ,S = CTO(&).CNS(M&)      ,TP = XCT
*
DEL=CONSLEV
DEL=CONSPRPR
DEL=PRPR
DEL=CONSINPR
DEL=INPR
DEL=CONSPPPR
DEL=PPPR
DEL=CONSCTPR
DEL=CTPR
DEL=IMPPR
DEL=MPP
DEL=IMPIN
DEL=MPI
DEL=EXPCT
DEL=XCT
*
* relations
DATA = R1        ,F = ROTATION.DAT      ,L=ROT(&)      ,C=PLT(&)
DATA = PROLETE   ,F = PROLETE.DAT      ,L=PLT(&)      ,C=VALUE
DATA = SELECT    ,F = ROTATION.DAT      ,L=ROT(&)      ,C=SEL
DATA = RE1       ,S = ROT(&).PLT(&)      ,TP=R1*PROLETE
DATA = REL1      ,S = ROT(&).PLT(&)      ,TP=REL1*SELECT
DATA = REL2      ,F = REGCLUS.DAT      ,L=REG(&)      ,C=CLS(&)
DATA = R3        ,F = AREA.DAT         ,L=REG(&)      ,C=MAI
DATA = RE3       ,F = ROTATION.DAT      ,L=ROT(&)      ,C=NOCORN
DATA = REL3      ,S = ROT(&).REG(&)      ,TP=R3+RE3
DEL=R1
DEL=PROLETE
DEL=SELECT
DEL=RE1
DEL=R3
DEL=RE3
*
* area
DATA = REGIOAR   ,F = AREA.DAT         ,L=REG(&)      ,C=AR
DATA = ARABAR    ,F = AREA.DAT         ,L=REG(&)      ,C=AA
DATA = GRASSAR   ,F = AREA.DAT         ,L=REG(&)      ,C=AG
DATA = TUBFR     ,F = AREA.DAT         ,L=REG(&)      ,C=TUB
DATA = MOWFR     ,F = AREA.DAT         ,L=REG(&)      ,C=MOW
DATA = GRSFR     ,F = AREA.DAT         ,L=REG(&)      ,C=GRS
DATA = MAIFR     ,F = AREA.DAT         ,L=REG(&)      ,C=MAI
DATA = EXGRFR    ,F = AREA.DAT         ,L=REG(&)      ,C=EXGRS
DATA = CULTAR    ,TP = ARABAR + GRASSAR
DATA = GRSAR     ,TP = GRSFR * REGIOAR
DATA = MOWAR     ,TP = MOWFR * REGIOAR
DATA = TUBAR     ,TP = TUBFR * REGIOAR
DATA = MAIAR     ,TP = MAIFR * REGIOAR
DATA = EXGRAR    ,TP = EXGRFR * REGIOAR
DEL=ARABAR
DEL=GRASSAR
DEL=TUBFR
DEL=MOWFR
DEL=GRSFR
DEL=MAIFR
DEL=EXGRFR
*
* labour
DATA = MPU       ,F = LAB.DAT         ,L = MPU      ,C = HRS
DATA = CURLAB    ,F = LABOUR.DAT      ,L = REG(&)    ,C=LABOUR
*
* crop output
DATA = CR_OP     ,F = CR_OUTP.DAT     ,L = ROT(&).PLT(&).REG(&) ,C= CRP(&)
DATA = ARA_ROT   ,F = ROTATION.DAT    ,L = ROT(&)    ,C= ARA

```

```

DATA = RGH_ROT ,F = ROTATION.DAT ,L = ROT(&) ,C= RGH
DATA = MOW_ROT ,F = ROTATION.DAT ,L = ROT(&) ,C= MOW
DATA = TUB_ROT ,F = ROTATION.DAT ,L = ROT(&) ,C= TUB
DATA = MAI_ROT ,F = ROTATION.DAT ,L = ROT(&) ,C= CORN
DATA = CROP_ARA ,S = ROT(&).PLT(&).REG(&).CRP(&) ,TP = CR_OP * ARA_ROT
DATA = CROP_RGH ,S = ROT(&).PLT(&).REG(&).CRP(&) ,TP = CR_OP * RGH_ROT
DEL=ARA_ROT
DEL=CR_OP
*
* and ind. conv. output/input
DATA = CONV_IN ,F = CONVERS.DAT ,L = CRP(&) ,C= CVA(&)
DATA = CONV_OUT ,F = CONVERS.DAT ,L = CVO(&) ,C= CVA(&)
*
* nutritive value of feed
DATA = NVAC_IN ,F = NVAC.DAT ,L = CRP(&) ,C =NVAC(&)
DATA = NVAC_OUT ,F = NVAC.DAT ,L = NVO(&) ,C =NVAC(&)
DATA = NVRC_IN ,F = NVRC.DAT ,L = CRP(&) ,C =NVRC(&)
DATA = NVRC_OUT ,F = NVRC.DAT ,L = NVO(&) ,C =NVRC(&)
DATA = NVIR_IN ,F = NVIR.DAT ,L = CVO(&) ,C =NVIR(&)
DATA = NVIR_OUT ,F = NVIR.DAT ,L = NVO(&) ,C =NVIR(&)
*
* cattle
DATA = PP_INP ,F = PIGPLTRY.DAT ,L = NVO(&) ,C =PPA(&)
DATA = PP_OUT ,F = PIGPLTRY.DAT ,L = PPO(&) ,C =PPA(&)
DATA = CT_INP ,F = CATTLE.DAT ,L = NVO(&) ,C =CTA(&)
DATA = CT_OUT ,F = CATTLE.DAT ,L = CTO(&) ,C =CTA(&)
*
* crop inputs
DATA = PST_USE ,F = CR_INPUT.DAT ,L = ROT(&).PLT(&).REG(&) ,C= PST
DATA = N_AP ,F = CR_INPUT.DAT ,L = ROT(&).PLT(&).REG(&) ,C= NAP
DATA = N_AP_RGH ,S = ROT(&).PLT(&).REG(&) ,TP = N_AP * RGH_ROT
DATA = N_LOSS ,F = CR_INPUT.DAT ,L = ROT(&).PLT(&).REG(&) ,C= NLS
DATA = WAT_USE ,F = CR_INPUT.DAT ,L = ROT(&).PLT(&).REG(&) ,C= WAT
DATA = LAB_USE ,F = CR_INPUT.DAT ,L = ROT(&).PLT(&).REG(&) ,C= LAB
DATA = GEN_ARA ,F = LAB.DAT ,L = G_ARA ,C=HRS
DATA = GEN_EXT ,F = LAB.DAT ,L = G_EXT ,C=HRS
DATA = N_AP_CT ,F = CATTLE.DAT ,L = NOP_CT ,C= CTA(&)
DATA = NLS_CT ,F = CATTLE.DAT ,L = NLS_CT ,C= CTA(&)
DATA = LAB_CT ,F = CATTLE.DAT ,L = LAB_CT ,C= CTA(&)
DATA = PERCIP ,F = WATER.DAT ,L = REG(&) ,C= PCIP
DATA = WATER ,TP = 0.7 * PERCIP * REGIOAR
DEL=PERCIP
DEL=REGIOAR
*
* references
DATA = ARREF_F ,F = REF.DAT ,L=AREAREF ,C=VALUE
DATA = AREAREF ,TP = 1/ARREF_F
DATA = PSTREF_F ,F = REF.DAT ,L=PSTREF ,C=VALUE
DATA = PSTREF ,TP = 1/PSTREF_F
DATA = NLSREF_F ,F = REF.DAT ,L=NLSREF ,C=VALUE
DATA = NLSREF ,TP = 1/NLSREF_F
DEL=ARREF_F
DEL=PSTREF_F
DEL=NLSREF_F
*
* costs
DATA = LABPRI ,F = PRICE.DAT ,C = PRICE ,L = LABPR
DATA = LABPRI_Y ,TP = LABPRI * MPU
DATA = BUILDUSE ,F = BUILDING.DAT ,C = CLS(&) ,L = ROT(&).PLT(&)
DATA = BUILDPRI ,F = PRICE.DAT ,C = PRICE ,L = BUILDPR
DATA = BUILDGST ,S = ROT(&).PLT(&).CLS(&) ,TP = BUILDUSE * BUILDPRI
DATA = ENER_USE ,F = ENERGY.DAT ,L = ROT(&) ,C = PLT(&)
DATA = ENERPRI ,F = PRICE.DAT ,C = PRICE ,L = ENERPRI
DATA = ENERGST ,S = ROT(&).PLT(&) ,TP = ENER_USE * ENERPRI
DATA = MACHCOST ,F = MACHCOST.DAT ,C = CLS(&) ,L = ROT(&).PLT(&)
DATA = STOREPRI ,F = STORECST.DAT ,L=CRP(&) ,C=PRICE
DATA = STORECST ,S = CRP(S&) ,TP = DEMPRPR * STOREPRI
DATA = GNINTCST ,F = PRICE.DAT ,L = GENINTPR ,C = PRICE
DATA = GNEXWCST ,F = PRICE.DAT ,L = G_WHTXPR ,C = PRICE
DATA = GNEXGCST ,F = PRICE.DAT ,L = G_GRSXPR ,C = PRICE
DEL=LABPRI
DEL=BUILDUSE
DEL=BUILDPRI

```

```

DEL=ENER_USE
DEL=ENERGPRI
DEL=STOREPRI
*
DATA = NITROPRI ,F = PRICE.DAT ,C = PRICE ,L = NITROPR
DATA = NCOST ,S = ROT(&).PLT(&).REG(&).CLS(&),TP = N_AP * NITROPRI
DATA = PSTPRI ,F = PRICE.DAT ,C = PRICE ,L = PSTPR
*
DATA = WATMPRI ,F = PRICE.DAT ,L = WATMPR ,C = PRICE
DATA = WATMCST ,S = ROT(&).PLT(&).REG(&),TP = WATMPRI * WAT_USE
DATA = WATHACST ,F = PRICE.DAT ,L = WATHAPR ,C = PRICE
*
DATA = CT_NCOST ,S = CTA(&),TP = N_AP_CT * NITROPRI
DATA = CT_GNCST ,F = PRICE.DAT ,C = PRICE ,L = CTA(&)
DATA = PP_COST ,F = PRICE.DAT ,C = PRICE ,L = PPA(&)
DATA = CVA_COST ,F = PRICE.DAT ,C = PRICE ,L = CVA(&)
DEL=NITROPRI
*
*
*OUT=REL1 ,F=OUTREL.DAT ,C=PLT(&),L=ROT(&)
*
*REP=GOAL.REP
*

```

Appendix II: OMP and GOAL-QUASI

In this appendix, the use of the OMP language is explained for the GOAL-QUASI model. Consult the listing of the model as you proceed.

<name> means any name

* at the beginning of a line means comment for the user, OMP skips the line; otherwise it means multiplication

Any model should begin with the following statement:

Scenario = <name>

Any model either MINimizes or MAXimizes, this model minimizes:

MINimize

* Declaration of indices

SET = <name>

In the declaration of indices, sets are defined. A SET has a name and a number of elements. The elements are either written down explicitly, or they can be found in a specified file. Keep in mind that the declaration of indices is only used to connect a set with its elements. One can create any set with any name with the elements one wishes. Later on the sets will be used.

SET = REG , F = AREA.DAT , L=1

means that the SET called REG consists of the elements which are in file AREA.DAT, on the first position, in the first cell of the lines in the (spreadsheet) file. (C=1, means that the sets are on the first position of the first cell in the columns). For example:

File:xxx.DAT:

	SBT	WHT	FBN	OSD	.....
WP.YOP.GN	40	5	0	0	...
WOWF.EOW.NL	0	5	2	3	...
.....

C=1 : SBT, WHT, FBN, ...

L=1 : WB, WOWF, ...

L=2 : YOP, EOW, ...

L=3 : GN, NL, ...

SET = CLS : C1,C2,C3 means that the SET called CLS consists of the elements C1 to C3

* Relations

REL = <name> , S = <names> , DATA= <name>

In the activities (declaration of variables), elements of different sets are combined. Relations are used to exclude infeasible combinations of these elements of different sets.

REL = REL1 , S = ROT(&).PLT(&) , DATA=REL1

Of all possible combinations of the elements of the sets ROT and PLT, only those are considered which are non-zero in data set REL1. In this case the relation is used to get rid of the infeasible combinations of rotations with production levels and techniques. ROT(&) means all elements of set

ROT. The definition of data sets is treated later on, data set REL1 refers to a part of the file ROTATION.DAT.

ROTATION.DAT:

	YOP	YOW	EOP	EOW	EXT
WVO	1	1	1	1	0
WOWOPF	1	1	1	1	0
WOWFWP	1	1	1	1	0
WP	1	1	0	0	0
WB	1	1	0	0	0
WOP	1	1	0	0	0
W	1	1	0	0	1
...

* Declaration of variables

X = <name> = C

In this section all variables are declared. Note that the terms variable and activity are used as synonyms here. However, some variables, e.g. the 'goal variables' are only activities in the mathematical sense of the word and not an action in the physical sense of the word.

The declarations always begins with x= followed by a name consisting of a new acronym and one or more sets or elements of sets, separated by a period, and finally an equal sign usually followed by a c, indicating that the variables are Continuous.

X=CA.ROT(&).PLT(&).REG(&).CLS(&)=C

This statement declares those activities (CA - Crop Activities) which are combinations of the elements of the sets in the name (ROT, PLT, REG, CLS), e.g.:

X=CA.WP.YOP.NL.C1=C

stands for the variable

CopAivity.WheatPotato.YieldOrientedPotential.NetherLands.Cluster1 = Continuous).

Note that some combinations are excluded by REL1, REL2 and REL3.

If a variable is followed by \$<value>, the value gives the contribution of the activity to the objective function to be minimized or maximized, any time the activity is selected. This value can be placed in a data-set /<name>/. If a variable is not followed by \$<value>, the variable only indirectly contributes to the objective, if at all.

The upper or lower bounds of variables can be declared by ><value> or <<value>; the values can be placed in a data-set /<name>/.

X=GOAL.EC.GOALS(&)=C \$ /GOAL/ > /MIN/ < /MAX/

means that the activities, having a name which is a combination of the name GOAL.EC and all elements of the set GOALS, contribute to the objective function with the amount specified in /GOAL/. This contribution has to be higher than /MIN/ and lower than /MAX/.

* Constraints

In the constraints, the variables may be constrained, i.e. it is formulated to what extent the activities can or must be selected in the optimization. The activities are multiplied with their coefficients (stored in data-sets), specifying the input or output of that activity. An activity can produce more than one output. A cattle activity for example may produce milk and beef, but also slurry.

C=<name>=<.....>

A constraint starts with c= followed by a name. The name starts with a new acronym, usually followed by a set name or a set element.

C=CROPPR.CRP(&)=<.....>

means that there are in fact a number of constraints, i.e. the same number as there are elements in the set CRP. The names of these constraints are CROPPR.WHT, CROPPR.CRN etc.

In GOAL-QUASI, a FOR-loop is used in the first constraint:

```
FOR I = 1 TO 6
```

```
  C = CROPPR.CRP(I) = <.....>
```

This means that this constraint is defined only for elements 1-6 of set CRP (WHT, CRN, ...).

After the second =, activities are multiplied with coefficients. The LP algorithm has to select the activities in such a way, that the left hand side (LHS) of the constraint equals the right hand side (RHS).

If we now consider the complete first constraint, prodba1:

```
FOR I = 1 TO 6
```

```
  C = CROPPR.CRP(I) =
    + /CROP_ARA/ * CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
    + /CONV_IN/ * CVACT.CVA(S&)
    + /NVAC_IN/ * NVACACT.NVAC(S&)
    = /DEMPRPR/ - /IMPFRPR/
```

```
ENDFOR I
```

The constraint named CROPPR.CRP(I) forces the products of crop activities /CROP_ARA/ * CA..... plus (in fact minus because of negative coefficients in /CONV_IN/ and /NVAC_IN/) the amount used for conversion /CONV_IN/ * CVACT.CVA(S&) and for feed /NVAC/ * NVACACT.NVAC(S&) (=LHS), to be equal to the demand for crop products minus import of these products /DEMPRPR/ - /IMPFRPR/ (=RHS).

(S&) means a Summation over all elements of the set. In this example, the production is added over all ROT, PLT, REG and CLS producing this product, resulting in a total for the European Community.

```
areaba1: C=ARCULT.REG(&)=CA.ROT(S&).PLT(S&).REG(&).CLS(S&)/CULTAR/
```

Similarly, areaba1 states that in each region, the total area with crop activities (=LHS) does not exceed the current agricultural area with arable crops and grassland (the crop activities are specified per ha) (=RHS).

* Goals

The constraints under the heading * Goals * have been added to facilitate the IMGLP procedure, i.e. without having to mess around in the model all the time.

Consider the first one :

```
C = AREA = GOAL.EC.AREA_G
      - CA.ROT(S&).PLT(S&).REG(S&).CLS(S&) = 0}
```

which can be rewritten as :

```
C = AREA = GOAL.EC.AREA_G = CA.ROT(S&).PLT(S&).REG(S&).CLS(S&)
```

GOAL.EC.AREA_G stands for the total area with crop activities. As long as GOAL.EC.AREA_G is not restricted by an upper or a lower bound, it is a dummy variable, i.e. it does not restrict the optimal solution in any sense. Its only function is to count the number of hectares with land use activities. In the IMGLP procedure, the model is optimized for one objective, whereas the other objectives can get upper or lower bounds, and thus do influence the result of the optimization. If, e.g., the upper bound for AREA_G is 60, not more than 60 million ha can be used.

* Data definitions

In the data definitions section, data sets are declared which are used in the constraints. A coefficient in a data set multiplied with an activity, gives the contribution of that activity (to e.g. an objective function).

`DATA = GOAL , F=GOAL.DAT , L=GOALS (&) , C=VALUE`

means that data set GOAL consists of data in the file GOAL.DAT. The file comprises a matrix with elements of the set GOALS on the lines. The column is headed by the word VALUE.

Calculations can be performed using a ThroughPage.

`DATA = CULTAR , TP = ARABAR + GRASSAR`

means that the data set CULTAR equals the sum of the values in data sets ARABAR and GRASSAR (i.e. the area presently used by agriculture is defined as the area used for arable cropping plus the area used for grassland).

`OUT=REL1 , F=OUTREL.DAT , C=PLT (&) , L=ROT (&)`

OMP stores the data defined in the data definitions internally. However, these data can be stored in files as well, using the {OUT} statement. This can be usefull to check a data definition (e.g. the outcome of a ThroughPage) or to store data in a different way than in the original data file. The OUT statement refers to a data-set (REL1), a (new) filename, and the way the new file looks like (columns and lines).

`REP=GOAL.REP`

Within OMP, reports can be defined. This definition can be saved in a (.REP) file and automatically activated by the statement REP.

Appendix III: IMGLP with GOAL-QUASI

For GOAL-QUASI an OMP "pilot" has been developed. The pilot has its own menus and helps the user with editing and running the model. The pilot is executed automatically when the program is started. "ALT-Q" can be used to leave the pilot and go to the normal OMP menu. In this appendix, the pilot and the steps in the IMGLP procedure of GOAL-QUASI are explained.

Getting started

The program can be started with the command: "GOAL".

The menu bar of the pilot appears on the screen with the options "Exit", "Edit", "Optimize" and "Results".

Under "Exit" there are several options, one of which is leaving the model.

By selecting "Edit", three boxes appear, two concern the model: "Look at model" and "Edit model" and one the data: "Data". After selecting "Edit model" you can edit (=change) the model. By selecting "Data" a new menu appears on the screen with the options: "Goals", "Resources", "Activities", "Prices" and "Miscellaneous". Each of these 'boxes' comprises data files, which can be read or edited. When selecting "Goals" 6 boxes will appear. Under one of these 6 boxes, i.e. "Goals" you can find the file **GOAL.DAT** with the acronyms of the 9 EC-goals followed by three columns. In the column "Value" you can indicate which objective should be optimized, by putting a "1" for minimization or a "-1" for maximization of that objective (this is the value after the \$ sign in the variable definition). The other cells of that column should contain the value 0. In the second and third column the minimum or maximum values for the objectives can be indicated. Data files and other files can be saved by typing "Alt S" or left by typing "Alt X". You can return to the main menu by pushing the box "Back to main menu" under "Goals".

Running the model

By selecting "Optimize", the programme is read, translated (into mathematical formulations) and executed. Two boxes appear on the screen: "Execute" and "Restart". The first time the model is run after editing the model or data files, you will notice that the second box can not be selected; "Restart" is only possible if the model and the data files have already been read and the model has already been optimized by the programme in a former optimization procedure. After selecting "Execute" a screen appears indicating that the programme is reading and decoding the model and the data files. If the model syntax is not correct, decoding stops and an error message appears on the screen. This can be useful as a check whether OMP interprets the model the way you want it to. After reading the model, the programme immediately starts the optimization of the selected objective.

If there is a feasible solution, this results in an optimal value, and the main menu bar returns on the screen. The optimum and the values for the other objectives, the activities and the constraints can be found under "Reports". Under this box there are two options: "Goal reports" and "Standard". The latter contains the standard reports of OMP. The first contains specific reports, made for the QUASI-course.

If you want to change the objective to be optimized, you can do this by changing the data file **GOAL.DAT** and then let OMP read the model again. However, this takes much time. A much faster method is to change the value in the mathematical formulation of the model. To do so use "Restart" and "Modify variables" (in the file named VARRESTA.DAT) and "Execute". The right hand side in a constraint can be modified analogously in CONRESTA.DAT.

"Employment per region" can be maximized (and "Area per region" can be minimized) by putting a 0 in all cells in the column VALUE in **GOAL.DAT** and by putting -1 (1 for minimization) in all cells of column VALUE in **REGGOAL.DAT** ("Edit", "Data", "Goals", "Regional goals"). This can also be done with "Restart". Don't forget to change the values in **REGGOAL.DAT** to zero again when you want to optimize other objective functions afterwards.

When you want to change the level of consumption, the file **DEMAND.DAT** should be changed. Also in this file, a 1 means selected, a 0 means not selected. You could also follow the "Restart" (and "Modify constraints") procedure but this requires, in some cases, a lot of typing

(=> mistakes). In the file **PROLETE.DAT**, the production level and techniques you want to include can be selected (1=selected, 0=not selected).

When optimizing the loss of nitrogen (and *mutatis mutandis* pesticides) per ha, it should be realized that this objective is included in the model in a transformed way¹. What we would like to calculate is (in simplified notation) $NLOSS / AREA$. However, this is impossible in a linear model (because a function of the form $y = x_1/x_2$ is not linear in the variables). Therefore, the following approximation is used: $NLSHA = 1 + (NLOSS/nls_ref) - (AREA/area_ref)$, in which nls_ref and $area_ref$ are reference values which are close to respectively $NLOSS$ and $AREA$. The reference values can be changed during the **IMGLP** procedure, in the file **REF.DAT**. $NLSHA$ can be used for optimization purposes. However, its value should not be used as model output. To obtain the optimal value, the total nitrogen loss should be divided by the area used. Note that when the optimal value of $NLSHA$ or $PESTHA$ becomes 0, the minimization process stops because a negative value for the objective function is, in this case, assumed to be impossible. If this happens it is certainly necessary to change the reference values in the file **REF.DAT** and run the model again.

After you have chosen the objective to be minimized (maximized), you can perform the "zero round" of the **IMGLP**. In the "zero-round" the extreme values can be found, i.e. the optimal value for an objective when there are no restrictions for the other objectives. Thereafter, step by step you can set bounds to the other objectives, reducing the feasible space, and approaching an acceptable solution for a certain policy view.

Changing GOAL-QUASI

The simplest operation is changing data. The data (technical coefficients), stored in files, can be changed with the data editor or with Lotus123. Thereafter the model can be run again.

Another option is adding (or deleting) activities. They should be added to the appropriate data files. For example, adding an animal husbandry activity implies changing the data file **CATTLE.DAT**. Also the new activity should be added to the SET 'CTA', because the SET is defined explicitly.

Finally, changing the model itself is possible. This should, of course, be done with caution, especially when the functioning of the model is not yet very clear for the user. A relatively easy change would be the deletion of a constraint. Adding constraints usually involves the definition of data sets as well. Adding a new group of activities is the most complicated step, it involves changes in sets, constraints, data sets and data files.

1

1. $NLOSS_0$ and $AREA_0$ are reference values so that the ratios $\frac{NLOSS}{NLOSS_0}$ and $\frac{AREA}{AREA_0}$ approximate 1
2. $\min\left(\frac{NLOSS}{AREA}\right) = \min\left(\frac{AREA_0}{NLOSS_0} \cdot \frac{NLOSS}{AREA}\right) = \min\left(\frac{NLOSS}{NLOSS_0} \cdot \frac{AREA}{AREA_0}\right) = \min\left\{\ln\left(\frac{NLOSS}{NLOSS_0} \cdot \frac{AREA}{AREA_0}\right)\right\}$
3. $f(x) = \ln x \approx g(x) = x - 1$ for $x \approx 1$
4. $\ln\left(\frac{NLOSS}{NLOSS_0} \cdot \frac{AREA}{AREA_0}\right) = \ln\left(\frac{NLOSS}{NLOSS_0}\right) + \ln\left(\frac{AREA}{AREA_0}\right)$
 $= \left(\frac{NLOSS}{NLOSS_0} - 1\right) + \left(\frac{AREA}{AREA_0} - 1\right) = \frac{NLOSS}{NLOSS_0} + \frac{AREA}{AREA_0} - 2$
5. $\min\left\{\ln\left(\frac{NLOSS}{NLOSS_0} \cdot \frac{AREA}{AREA_0}\right)\right\} = \min\left(\frac{NLOSS}{NLOSS_0} + \frac{AREA}{AREA_0} - 2\right) = \min\left(1 + \frac{NLOSS}{NLOSS_0} - \frac{AREA}{AREA_0}\right)$

Appendix IV: Acronyms

CLS (clusters)

- C1 - cluster 1
- C2 - cluster 2
- C3 - cluster 3

CNS (consumption and trade)

- AUTOTH - autarky and other diet
- AUTCUR - autarky and current diet
- FRTROTH - free trade and other diet
- FRTRCUR - free trade and current diet

CRP (physical output of crop activities)

- WHT - wheat
- CRN - corn (grain maize)
- POT - potato
- SBT - sugar beet
- OSD - oilseed
- FBN - field bean
- MWG - mown grass
- SLM - silage maize
- GRS - grazed grass
- EXG - grazed 'extensive' grass

CTA (cattle activities, names: CTA.CTACT.CTACT(&))

- SUM - summer grazing dairy-cattle*
 - BEPR - cattle for beef production, (grass and maize silage and grass)
 - BEPRINT - cattle for beef production, (concentrates and silage)
 - BEPREX - cattle for beef production, (extensive grass)
 - ZERO1 - zero grazing dairy-cattle (grass and maize silage and concentrates)*
 - ZERO2 - zero grazing dairy-cattle (grass silage and concentrates)*
- * including (intensive) fattening of calves

CTO (physical outputs of cattle activities)

- MLK - milk
- BEEF - beef

CTO2 (physical in/outputs of cattle activities)

- NOP_CT - nitrogen (in slurry) output
- NLS_CT - nitrogen loss
- LAB_CT - labour required
- COST_CT - costs

CVA (used in activities for industrial conversion, names: CVA.CTACT.CVA(&))

- CVWHT - conversion of wheat
- CVSBT - conversion of sugar beet
- CVOSD - conversion of oilseed

CVO (physical output of industrial conversions)

FLR - flour
 HSK - husk (residues from flour and malt production)
 SUG - sugar
 PLP - beet pulp
 OIL - oil
 OSC - oilseed cake

GOALS (used in goal activities, names: GOAL.EC.GOALS(&))

AREA_G - total agricultural used area
 NLS_G - total N loss
 NLSHA_G - approximation of the N loss per ha
 PST_G - total amount of pesticides used
 PSTHA_G - approximation of the pesticides used per ha
 COST_G - total costs
 LAB_G - agricultural employment in the EC
 REGLAB_G - agric. employment in region with minimum agric. employment (relative to current)
 REGAREA_G - agric. area in region with minimum agric. area (relative to total suitable)

INC (physical inputs for crop activities)

PST - use of pesticides
 LAB - labour
 WAT - use of irrigation water
 NAP - nitrogen applied
 NLS - nitrogen loss through leaching and denitrification

NVIR (used in activities for nutritive value conversion of industrial residue, names: NVIRACT.NVIR(&))

NVHSK - nutritive value of husk
 NVPLP - nutritive value of beet pulp
 NVOSC - nutritive value of oilseed cake

NVAC (used in activities for nutritive value conversion of arable crop products, names: NVACT.NVAC(&))

NVWHT - nutritive value of wheat
 NVCRN - nutritive value of corn
 NVFBN - nutritive value of field bean
 NVOSD - nutritive value of oilseed
 NVPOT - nutritive value of potato
 NVSBT - nutritive value of sugar beet

NVRC (used in activities for nutritive value conversion of roughage crop products, names: NVRCACT.NVRC(&))

NVGRS - nutritive value of grass
 NVGRSEX - nutritive value of 'extensive' grass
 NVMWG - nutritive value of silage grass
 NVSLM - nutritive value of silage maize

NVO (nutritive value)

DCP_C - digestible crude protein in concentrate
 ME_C - metabolic energy in concentrate
 DCP_S - digestible crude protein in silage
 ME_S - metabolic energy in silage
 ME_G - metabolic energy in grass
 ME_E - metabolic energy in 'extensive grass'

PLT (production level and technique, used in crop activities, names: CA.ROT(&).PLT(&))

YOP - yield oriented agriculture, potential production
 YOW - yield oriented agriculture, water-limited production
 EOP - environment oriented agriculture, potential production
 EOW - environment oriented agriculture, water-limited production
 EXT - land use oriented agriculture (extensive agriculture)

PPA (used in pig-poultry activities, names: PPACT.PPA(&))

PRKPR - production of pork
 CMTPR - production of chicken meat
 EGGPR - production of eggs

PPO (physical outputs of pig-poultry activities)

PRK - pork
 CMT - chicken meat
 EGG - egg

REG (regions)

GN - Germany North
 GS - Germany South
 FN - France North
 FS - France South
 IN - Italy North
 IS - Italy South
 NL - Netherlands
 BE - Belgium
 UKS - United Kingdom South
 UKN - United Kingdom North
 IR - Ireland
 DE - Denmark
 GR - Greece
 SNW - Spain North-West
 SSE - Spain South-East
 PO - Portugal

RGOALS (used in regional objectives, names: GOAL.RGOALS(&).REG(&))

LR - relative employment per region
 AR - agricultural area per region (relative to total suitable)

ROT (used in crop rotation activities, names: CA.ROT(&).PLT(&))

W	- wheat
C	- corn (grain maize)
P	- potato
B	- sugar beet
O	- oilseed rape
F	- field bean
S	- silage maize
M	- mown grass (for silage)
G	- grass (grazed)

Thus, PWB is a rotation of Potato, Wheat and sugar Beet

OTHER ACRONYMS USED (NOT IN SETS)

REF

AREAREF	- area reference
PSTREF	- pest reference
NLSREF	- nitrogen reference

LABOUR2

G_ARA	- fixed labour per ha for YOP, YOW, EOP and EOW techniques
G_EXT	- fixed labour per ha for EXT techniques
MPU	- man power unit [h/MPU]

Appendix V: Data files

The data files are presented in alphabetical order (except CR_INPUT.DAT and CR_OUTPUT.DAT which are listed at the end of this appendix). First the filename is given, with in parentheses the first letter of the item in the OMP-Pilot menu (under **Edit, Data**) where the file can be found:

- G** - Goals
- R** - Resources
- A** - Activities
- P** - Prices
- M** - Miscellaneous

		page V-
AREA.DAT	....	2
BUILDING.DAT		
CATTLE.DAT	....	3
CONSUMPT.DAT		
CONVERS.DAT		
DEMAND.DAT		
ENERGY.DAT		
GOAL.DAT	....	4
IMPEXP.DAT		
LABOUR1.DAT		
LABOUR2.DAT	....	5
MACHCOST.DAT		
NVAC.DAT	....	6
NVIR.DAT		
NVRC.DAT		
PIGPLTRY.DAT		
PRICE.DAT		
PROLETE.DAT	....	7
REF.DAT		
REGCLUS.DAT		
REGGOAL.DAT		
ROTATION.DAT	....	8
STORECST.DAT	....	9
WATER.DAT		
CR_INPUT.DAT	....	10
CR_OUTP.DAT	....	21

AREA.DAT (R)

	AR	AC	AA	AG	TUB	MOW	GRS	MAI	EXGRS
GN	9.74	5.45	3.14	2.06	0.64	0.71	0.74	0.00	0.23
GS	15.02	6.55	3.52	2.46	0.30	0.38	0.40	0.14	0.54
FN	30.78	20.04	10.08	6.32	0.42	0.67	0.67	0.57	0.29
FS	24.86	11.52	3.05	5.84	0.35	0.43	0.44	0.41	0.40
IN	16.31	8.15	3.29	2.12	0.13	0.33	0.36	0.33	0.38
IS	14.68	9.64	2.33	2.60	0.09	0.19	0.19	0.19	0.51
NL	3.47	2.02	0.68	1.11	0.65	0.83	0.86	0.00	0.14
BE	3.04	1.39	0.62	0.63	0.59	0.64	0.64	0.10	0.35
UKS	15.25	10.72	3.86	5.14	0.33	0.41	0.76	0.00	0.17
UKN	9.30	6.90	0.63	5.48	0.20	0.20	0.36	0.00	0.58
IR	6.97	5.71	0.41	4.61	0.46	0.47	0.73	0.00	0.25
DE	4.33	2.83	1.93	0.21	0.89	0.90	0.98	0.00	0.01
GR	13.86	9.20	1.33	3.02	0.08	0.12	0.12	0.12	0.27
SNW	35.31	18.80	6.89	5.29	0.11	0.41	0.41	0.41	0.40
SSE	16.55	8.16	2.45	1.10	0.13	0.45	0.45	0.45	0.43
PO	9.33	4.53	1.18	0.76	0.16	0.33	0.33	0.33	0.38

AR - total area of a region [10⁶ ha]
AC - total area currently used for agriculture [10⁶ ha]
AA - current area with arable crops [10⁶ ha]
AG - current area with grass [10⁶ ha]
TUB - fraction of AR suitable for tuber and root crops
MOW - fraction of AR suitable for mow crops
GRS - fraction of AR suitable for grass
MAI - fraction of AR suitable for corn (grain maize)
EXGRS - fraction of AR available for extensive grass
GN... PO - see Appendix IV, SET REG, page IV-3

BUILDING.DAT (A)

	CL1	CL2	CL3	[m ²]
WOWF .YOP	1.28	1.21	1.18	
WOWF .EOP	1.25	1.18	1.15	
WOWF .YOW	1.28	1.21	1.18	
WOWF .EOW	1.25	1.18	1.15	
PWBW .YOP	1.68	1.63	1.61	
PWBW .EOP	1.76	1.72	1.69	
PFBW .YOP	1.84	1.77	1.74	
PFBW .EOP	1.87	1.80	1.77	
CWOF .YOP	1.28	1.21	1.18	
CWOF .EOP	1.25	1.18	1.15	
C .YOP	1.75	1.69	1.66	
S .YOP	1.54	1.54	1.54	
S .EOP	1.46	1.46	1.46	
WP .YOP	2.02	1.97	1.95	
WB .YOP	1.50	1.45	1.43	
W .YOP	1.24	1.15	1.10	
WOWFB .YOP	1.34	1.27	1.23	
WOWFB .EOP	1.34	1.27	1.23	
WWO .YOP	1.32	1.20	1.15	
WWO .EOP	1.55	1.43	1.38	
WOWFBP .YOP	1.43	1.37	1.34	
WOWFBP .EOP	1.44	1.38	1.35	
WOWFWP .YOP	1.39	1.31	1.28	
WOWFWP .EOP	1.51	1.44	1.40	
PWBW .YOW	1.68	1.63	1.61	
PWBW .EOW	1.76	1.72	1.69	
PFBW .YOW	1.84	1.77	1.74	
PFBW .EOW	1.87	1.80	1.77	
CWOF .YOW	1.28	1.21	1.18	
CWOF .EOW	1.25	1.18	1.15	
C .YOW	1.75	1.69	1.66	
S .YOW	1.54	1.54	1.54	
S .EOW	1.46	1.46	1.46	
WP .YOW	2.02	1.97	1.95	
WB .YOW	1.50	1.45	1.43	
W .YOW	1.24	1.15	1.10	
WOWFB .YOW	1.34	1.27	1.23	
WOWFB .EOW	1.34	1.27	1.23	
WWO .YOW	1.32	1.20	1.15	
WWO .EOW	1.55	1.43	1.38	
WOWFBP .YOW	1.43	1.37	1.34	
WOWFBP .EOW	1.44	1.38	1.35	
WOWFWP .YOW	1.39	1.31	1.28	
WOWFWP .EOW	1.51	1.44	1.40	

CL1..CL3 - see Appendix IV, SET CLS, page IV-1
WOWF.YOP - crop rotation Wheat-Oilseed-Wheat-Fieldbean, Yield Oriented Potential production

CATTLE.DAT (A)

per cow per year

	SUM	BEPR	BEPRINT	BEPREX	ZERO1	ZERO2	
ME_C	0.00	0.00	-17.92	0.00	-28.32	-36.75	[10 ³ MJ]
DCP_C	0.00	0.00	-0.24	0.00	-0.43	-0.43	[10 ³ kg]
ME_S	-23.29	-32.55	-17.92	-32.55	-28.32	-19.90	[10 ³ MJ]
DCP_S	-0.33	-0.44	-0.24	-0.44	-0.43	-0.43	[10 ³ kg]
ME_G	-23.29	-15.32	0.00	0.00	0.00	0.00	[10 ³ MJ]
ME_E	0.00	0.00	0.00	-15.32	0.00	0.00	[10 ³ MJ]
MLK	5.00	0.00	0.00	0.00	8.00	8.00	[10 ³ kg]
BEEF	0.22	0.26	0.22	0.26	0.22	0.22	[10 ³ kg]
NOF_CT	33.23	47.30	52.73	47.30	52.73	52.73	[kg]
NLS_CT	21.04	26.70	17.54	26.70	17.54	17.54	[kg]
LAB_CT	45.10	25.00	28.30	25.00	44.30	44.30	[hr]

SUM...ZERO2 - see Appendix IV, SET CTA, page IV-1
 ME_C...ME_E - see Appendix IV, SET NVO, page IV-3
 MLK, BEEF - see Appendix IV, SET CTO, page IV-1
 NOF_CT...LAB_CT - see Appendix IV, SET CTO2, page IV-1

CONSUMPT.DAT (M)

	AUTOTH	AUTCUR	FRTROTH	FRTRCUR	
FLR	37.5	46.9	37.5	46.9	[10 ⁹ kg]
POT	37.9	31.3	37.9	31.3	[10 ⁹ kg]
SUG	14	10.3	14	10.3	[10 ⁹ kg]
OIL	5.3	5.6	5.3	5.6	[10 ⁹ kg]
BEEF	13.5	8.8	13.5	8.8	[10 ⁹ kg]
PRK	12.5	12.5	12.5	12.5	[10 ⁹ kg]
CMT	7.9	5.4	7.9	5.4	[10 ⁹ kg]
EGG	7.3	4.6	7.3	4.6	[10 ⁹ kg]
MLK	142.4	99.7	142.4	99.7	[10 ⁹ kg]

AUTOTH...FRTRCUR - see Appendix IV, SET CNS, page IV-1
 FLR, POT, SUG, OIL, BEEF, PRK, CMT, EGG, MLK - flour, potatoes, sugar, oil, beef, pork, chicken meat, eggs, milk

CONVERS.DAT (A)

	CVWHT	CVSBT	CVOSD	
WHT	-1	0	0	[kg]
SBT	0	-1	0	[kg]
OSD	0	0	-1	[kg]
FLR	0.75	0	0	[kg]
HSK	0.25	0	0	[kg]
SUG	0	0.13	0	[kg]
PLP	0	0.08	0	[kg]
OIL	0	0	0.3	[kg]
OSC	0	0	0.7	[kg]

CVWHT...CVOSD - see Appendix IV, SET CVA, page IV-1
 WHT...OSD - see Appendix IV, SET CRP, page IV-1
 FLR...OSC - see Appendix IV, SET CVO, page IV-2

DEMAND.DAT (G)

	VALUE
AUTOTH	0
AUTCUR	1
FRTROTH	0
FRTRCUR	0

file to select a certain demand (consumption level): 1 = selected
 AUTOTH...FRTRCUR - see Appendix IV, SET CNS, page IV-1

ENERGY.DAT (A)

	YOW	EOW	YOP	EOP	EXT	
WOWF	159.533	171.539	159.533	171.539	0	[liter dieseloil]
G	111	111	111	111	11.75	
M	369	369	369	369	0	
PBPW	244.38	266.045	244.38	266.045	0	
PWBW	203.319	216.199	203.319	216.199	0	
PWB	218.421	234.985	218.421	234.985	0	
PWOW	197.537	208.23	197.537	208.23	0	
PFBW	205.475	223.203	205.475	223.203	0	
CPWO	198.437	214.381	198.437	214.381	0	
CBP	219.609	243.104	219.609	243.104	0	
CBWP	204.219	222.35	204.219	222.35	0	

V-4

CBWB	174.023	186.137	174.023	186.137	0
CBW	165.409	177.307	165.409	177.307	0
CBFPW	195.379	214.027	195.379	214.027	0
COPB	209.301	228.014	209.301	228.014	0
COP	211.977	232.586	211.977	232.586	0
COBFWP	183.779	199.282	183.779	199.282	0
COW	157.777	166.789	157.777	166.789	0
CO	163.359	176.351	163.359	176.351	0
CWOF	159.533	171.539	159.533	171.539	0
CWFWO	157.905	167.775	157.905	167.775	0
CW	153.195	165.022	153.195	165.022	0
C	154.996	177.324	154.996	177.324	0
OBW	170.929	176.665	170.929	176.665	0
S	124.532	146.86	124.532	146.86	0
WPWOFB	184.717	196.872	184.717	196.872	0
WP	233.516	252.412	233.516	252.412	0
WB	173.122	179.985	173.122	179.985	0
WOP	210.788	224.466	210.788	224.466	0
WOWWP	188.308	197.128	188.308	197.128	0
WO	161.558	164.049	161.558	164.049	0
W	151.394	152.72	151.394	152.72	65.647
WOWFB	165.876	173.761	165.876	173.761	0
WVO	156.588	158.67	156.588	158.67	0
FPWOB	198.724	213.637	198.724	213.637	0
CWOWFB	164.663	176.08	164.663	176.08	0
CWOWFB	159.014	168.908	159.014	168.908	0
WBWFBP	190.366	204.045	190.366	204.045	0
WOWOPF	182.733	193.526	182.733	193.526	0
WOWFBP	184.717	196.872	184.717	196.872	0
WOWFWP	179.278	189.675	179.278	189.675	0
WWWWWF	152.774	157.203	152.774	157.203	0
WBWFWP	182.978	194.775	182.978	194.775	0

YOW...EXT - see Appendix IV, SET PLT, page IV-3
 WOWF - crop rotation Wheat-Oilseed-Wheat-Fieldbean

GOAL.DAT (G)

	VALUE	MIN	MAX
AREA_G	1	0	0 [10 ⁶ ha]
NLS_G	0	0	0 [10 ⁶ kg]
NLSHA_G	0	0	0
PST_G	0	0	0 [10 ⁶ kg]
PSTHA_G	0	0	0
COST_G	0	0	0 [10 ⁶ ECU]
LAB_G	0	0	0 [10 ⁶ MPU]
REGLAB_G	0	0	0 [%]
REGAREA_G	0	0	0 [%]

the goal with VALUE 1 is minimized
 for maximization, -1 should be used
 MIN and MAX are minimum and maximum bounds in a scenario
 MAX 0 means no maximum bound
 AREA_G...REGAREA_G - see Appendix IV, set GOALS, page IV-2

IMPEXP.DAT (M)

	FRTROTH	FRTRCUR
WHT	1.9	2.3 [10 ⁹ kg]
OSD	15	15 [10 ⁹ kg]
OSC	10	10 [10 ⁹ kg]
SUG	1.4	1 [10 ⁹ kg]
BEEF	1.6	1.1 [10 ⁹ kg]
MLK	-20.1	-20.1 [10 ⁹ kg]

amounts imported (+) or exported (-)
 FRTROTH, FRTRCUR - see Appendix IV, SET CNS, page IV-1
 WHT...MLK - see Appendix IV, SETS CRP/CVO, pages IV-1/2

LABOUR1.DAT (R)

	LABOUR
GN	621.134 [10 ³ hours]
GS	1242.104
FN	1884.333
FS	1379.785
IN	2164.694
IS	2292.441
NL	351.206

BE	191.085
UKS	814.578
UKN	252.219
IR	599.557
DE	233.948
GR	1970.54
SNW	1933.254
SSE	898.409
PO	2418.812

GN...PO - see Appendix IV, SET REG, page IV-3

LABOUR2.DAT (R)

	HRS
G_ARA	5
G_EXT	2
MPU	1600

fixed labour [h/ha]:

G_ARA: arable and roughage crops, see Appendix IV, SET LABOUR2, page IV-4

G_EXT: extensive techniques, see Appendix IV, SET LABOUR2, page IV-4

MPU: man power unit [h/MPU], see Appendix IV, SET LABOUR2, page IV-4

MACHCOST.DAT (A)

		CL1	CL2	CL3	[ecu/ha]
WOWF	.YOP	374.841	362.936	355.23	
WOWF	.EOP	370.696	358.791	351.085	
WOWF	.YOW	374.841	362.936	355.23	
WOWF	.EOW	370.696	358.791	351.085	
PWBW	.YOP	489.178	481.241	476.104	
PWBW	.EOP	493.442	485.505	480.368	
PFBW	.YOP	522.998	511.093	503.386	
PFBW	.EOP	518.663	506.758	499.052	
CWOF	.YOP	374.841	362.936	355.23	
CWOF	.EOP	370.696	358.791	351.085	
C	.YOP	481.789	471.249	464.426	
S	.YOP	461.761	461.761	461.761	
S	.EOP	448.191	448.191	448.191	
WP	.YOP	513.993	506.056	500.918	
WB	.YOP	480.164	472.227	467.089	
W	.YOP	380.616	364.742	354.467	
WOWFB	.YOP	415.906	403.208	394.987	
WOWFB	.EOP	415.782	403.083	394.862	
WWO	.YOP	378.004	358.433	345.765	
WWO	.EOP	431.464	411.894	399.225	
WOWFBP	.YOP	408.118	397.8	391.121	
WOWFBP	.EOP	403.367	393.049	386.37	
WOWFWP	.YOP	384.909	371.892	363.467	
WOWFWP	.EOP	408.603	395.586	387.16	
PWBW	.YOW	489.178	481.241	476.104	
PWBW	.EOW	493.442	485.505	480.368	
PFBW	.YOW	522.998	511.093	503.386	
PFBW	.EOW	518.663	506.758	499.052	
CWOF	.YOW	374.841	362.936	355.23	
CWOF	.EOW	370.696	358.791	351.085	
C	.YOW	481.789	471.249	464.426	
S	.YOW	461.761	461.761	461.761	
S	.EOW	448.191	448.191	448.191	
WP	.YOW	513.993	506.056	500.918	
WB	.YOW	480.164	472.227	467.089	
W	.YOW	380.616	364.742	354.467	
WOWFB	.YOW	415.906	403.208	394.987	
WOWFB	.EOW	415.782	403.083	394.862	
WWO	.YOW	378.004	358.433	345.765	
WWO	.EOW	431.464	411.894	399.225	
WOWFBP	.YOW	408.118	397.8	391.121	
WOWFBP	.EOW	403.367	393.049	386.37	
WOWFWP	.YOW	384.909	371.892	363.467	
WOWFWP	.EOW	408.603	395.586	387.16	
G	.YOW	77	77	77	
G	.EOW	77	77	77	
G	.YOP	77	77	77	
G	.EOP	77	77	77	
G	.EXT	19.34	19.34	19.34	
M	.YOW	207	207	207	

V-6

M	.EOW	207	207	207
M	.YOP	207	207	207
M	.EOP	207	207	207
W	.EXT	214.567	198.694	188.418

CL1...CLS - see Appendix IV, SET CLS, page IV-1
WOWF.YOP - crop rotation Wheat-Oilseed-Wheat-Fieldbean, Yield Oriented Potential production

NVAC.DAT (A)

	NVWHT	NVCRN	NVFBN	NVOSD	NVPOT	NVSBT	
WHT	-1.00	0.00	0.00	0.00	0.00	0.00	[kg]
CRN	0.00	-1.00	0.00	0.00	0.00	0.00	[kg]
FBN	0.00	0.00	-1.00	0.00	0.00	0.00	[kg]
OSD	0.00	0.00	0.00	-1.00	0.00	0.00	[kg]
POT	0.00	0.00	0.00	0.00	-1.00	0.00	[kg]
SBT	0.00	0.00	0.00	0.00	0.00	-1.00	[kg]
DCP_C	0.08	0.05	0.20	0.16	0.01	0.01	[kg]
ME_C	7.38	7.27	6.56	12.22	1.60	1.06	[MJ]

NVWHT...NVSBT - see Appendix IV, SET NVAC, page IV-2
WHT...SBT - see Appendix IV, SET CRP, page IV-1
DCP_C, ME_C - see Appendix IV, SET NVO, page IV-3

NVIR.DAT (A)

	NVHSK	NVPLP	NVOSC	
HSK	-1	0	0	[kg]
PLP	0	-1	0	[kg]
OSC	0	0	-1	[kg]
DCP_C	0.084	0.064	0.299	[kg]
ME_C	4.185	6.438	5.609	[MJ]

NVHSK...NVOSC - see Appendix IV, SET NVIR, page IV-2
HSK...OSC - see Appendix IV, SET CVO, page IV-2
DCP_C, ME_C - see Appendix IV, SET NVO, page IV-3

NVRC.DAT (A)

	NVGRS	NVGRSEX	NVMWG	NVSLM	
GRS	-1	0	0	0	[kg]
MWG	0	0	-1	0	[kg]
EXG	0	-1	0	0	[kg]
SLM	0	0	0	-1	[kg]
DCP_S	0	0	0.058	0.015	[kg]
ME_S	0	0	2.68	1.823	[MJ]
ME_G	1.043	0	0	0	[MJ]
ME_E	0	1.043	0	0	[MJ]

NVGRS...NVSLM - see Appendix IV, SET NVRC, page IV-2
GRS...ME_E - see Appendix IV, SETS CRP/NVO, pages IV-1/3

PIGPLTRY.DAT (A)

	PRKPR ¹	CMTPR ²	EGGPR ³	
ME_C	-42.899	-4.07572	-3.59216	[10 ³ MJ]
DCP_C	-0.83	-0.113	-0.087	[10 ³ kg]
PRK	1.5	0	0	[10 ³ kg]
CMT	0	0.16	0.01	[10 ³ kg]
EGG	0	0.02	0.15	[10 ³ kg]

¹- one swine and offspring
²- one broiler and offspring
³- one layer and offspring

PRKPR...EGGPR - see Appendix IV, SET PPO, page IV-3
ME_C...DCP_C - see Appendix IV, SET NVO, page IV-3
PRK...EGG - see Appendix IV, SET PPO, page IV-3

PRICE.DAT (P)

	PRICE	
GENINTPR	85 [ecu/ha]	(gen. costs arab/roughage farming)
G_WHTXPR	35 [ecu/ha]	(general costs ext. wheat prod.)
G_GRSXPR	5 [ecu/ha]	(general costs ext. grass prod.)
WATMPR	100 [ecu/10 ³ m ³]	(variable costs for irrigation)
WATHAPR	150 [ecu/ha]	(fixed costs for irrigation)
NITROPR	0.35 [ecu/kg]	(nitrogen)
PSTPR	12.5 [ecu/kg a.i.]	(pesticides)
LABPR	12 [ecu/hr]	(labour)
BUILDPR	10 [ecu/m ²]	(buildings)

ENERGPR	0.3 [ecu/liter]	(diesel oil)
CVWHT	175 [ecu/10 ³ kg]	(conversion of wheat)
CVSET	100 [ecu/10 ³ kg]	(conversion of sugar beet)
CVOSD	200 [ecu/10 ³ kg]	(conversion of oilseed)
PRKPR	1010 [ecu/act. unit]	(pork production)
CMTPR	140 [ecu/act. unit]	(chicken meat production)
EGGPR	195 [ecu/act. unit]	(egg production)
SUM	559.7 [ecu/cow]	(summer grazing)
BEPR	400 [ecu/cow]	(beef production)
BEPREX	400 [ecu/cow]	(extensive beef production)
BEPRINT	534.7 [ecu/cow]	(intensive beef production)
ZERO1	664.7 [ecu/cow]	(zero 1 grazing)
ZERO2	664.7 [ecu/cow]	(zero 2 grazing)

PROLETE.DAT (G)

	VALUE
YOP	1
YOW	1
EOP	1
EOW	1
EXT	1

to select Production Level and Techniques: 1=selected; 0=not selected
 YOP...EXT - see Appendix IV, SET PLT, page IV-3

REF.DAT (G)

	VALUE
AREAREF	55
PSTREF	30
NLSREF	2500

reference values for the linearization of the objective functions NLSHA en PSTHA, see SET REF, page IV-4

REGCLUS.DAT (M)

	C1	C2	C3
GN	1	0	0
GS	1	0	0
FN	1	0	0
FS	0	1	0
IN	0	1	0
IS	0	0	1
NL	1	0	0
BE	1	0	0
UKS	1	0	0
UKN	1	0	0
IR	1	0	0
DE	1	0	0
GR	0	0	1
SNW	0	0	1
SSE	0	0	1
PO	0	0	1

combinations of regions and cluster
 C1...C3 - see Appendix IV, SET CLS, page IV-1
 GN...PO - see Appendix IV, SET REG, page IV-3

REGGOAL.DAT (G)

	VALUE	MIN	MAX
LB.GN	0	0	0
LB.GS	0	0	0
LB.FN	0	0	0
LB.FS	0	0	0
LB.IN	0	0	0
LB.IS	0	0	0
LB.NL	0	0	0
LB.BE	0	0	0
LB.UKS	0	0	0
LB.UKN	0	0	0
LB.IR	0	0	0
LB.DE	0	0	0
LB.GR	0	0	0
LB.SNW	0	0	0
LB.SSE	0	0	0

LB.PO	0	0	0
AR.GN	0	0	0
AR.GS	0	0	0
AR.FN	0	0	0
AR.FS	0	0	0
AR.IN	0	0	0
AR.IS	0	0	0
AR.NL	0	0	0
AR.BE	0	0	0
AR.US	0	0	0
AR.UN	0	0	0
AR.IR	0	0	0
AR.DE	0	0	0
AR.GR	0	0	0
AR.SN	0	0	0
AR.SS	0	0	0
AR.PO	0	0	0

the goal with VALUE 1 is minimized
 for maximization, -1 should be used
 MIN and MAX are minimum and maximum bounds in a scenario
 MAX 0 means no maximum bound
 AR.GN...AR.PO - see Appendix IV, SETS RGOALS/REG, page IV-3

ROTATION.DAT (A)

	SEL ¹	TUB ²	MOW ²	ARA ³	RGH ³	NOCORN ⁴	CORN ⁴	YOP ⁵	YOW ⁵	EOP ⁵	EOW ⁵	EXT ⁵
C	1	0	1	1	0	0	1	1	1	0	0	0
M	1	0	0	0	1	1	0	1	1	1	1	0
S	1	0	1	0	1	1	0	1	1	1	1	0
W	1	0	1	1	0	1	0	1	1	0	0	1
G	1	0	0	0	1	1	0	1	1	1	1	1
CO	0	0	1	1	0	0	1	1	1	1	1	0
CW	0	0	1	1	0	0	1	1	1	1	1	0
WP	1	1	1	1	0	1	0	1	1	0	0	0
WB	1	1	1	1	0	1	0	1	1	0	0	0
WO	0	0	1	1	0	1	0	1	1	1	1	0
PWB	0	1	1	1	0	1	0	1	1	0	0	0
CBP	0	1	1	1	0	0	1	1	1	0	0	0
CBW	0	1	1	1	0	0	1	1	1	0	0	0
COP	0	1	1	1	0	0	1	1	1	0	0	0
COW	0	0	1	1	0	0	1	1	1	1	1	0
OBW	0	1	1	1	0	1	0	1	1	0	0	0
WOP	0	1	1	1	0	1	0	1	1	0	0	0
WWO	1	0	1	1	0	1	0	1	1	1	1	0
PBPW	0	1	1	1	0	1	0	1	1	0	0	0
PWBW	1	1	1	1	0	1	0	1	1	1	1	0
PWOW	0	1	1	1	0	1	0	1	1	1	1	0
PFBW	1	1	1	1	0	1	0	1	1	1	1	0
CPWO	0	1	1	1	0	0	1	1	1	1	1	0
CBWP	0	1	1	1	0	0	1	1	1	1	1	0
CBWB	0	1	1	1	0	0	1	1	1	0	0	0
COPB	0	1	1	1	0	0	1	1	1	1	1	0
CWOF	1	0	1	1	0	0	1	1	1	1	1	0
CBFPW	0	1	1	1	0	0	1	1	1	1	1	0
CWFWO	0	0	1	1	0	0	1	1	1	1	1	0
WOWWP	0	1	1	1	0	1	0	1	1	1	1	0
WOWFB	1	1	1	1	0	1	0	1	1	1	1	0
FPWOB	0	1	1	1	0	1	0	1	1	1	1	0
COBFWP	0	1	1	1	0	0	1	1	1	1	1	0
CWBWFB	0	1	1	1	0	0	1	1	1	0	0	0
CWOWFB	0	1	1	1	0	0	1	1	1	1	1	0
WPWOFB	0	1	1	1	0	1	0	1	1	1	1	0
WBWFBP	0	1	1	1	0	1	0	1	1	0	0	0
WBWFWP	0	1	1	1	0	1	0	1	1	1	1	0
WOWOPF	0	1	1	1	0	1	0	1	1	1	1	0
WOWFBP	0	1	1	1	0	1	0	1	1	1	1	0
WOWFWP	1	1	1	1	0	1	0	1	1	1	1	0
WWWWWF	0	0	1	1	0	1	0	1	1	1	1	0
WOWF	0	1	1	0	1	0	1	1	1	1	0	0

¹ - to indicate which rotations are selected (1=selected)
² - to determine whether the rotation comprises a grass crop only (i), at least one mow crop (ii), or at least one tuber/root crop (iii)

	TUB	MOW
i -	0	0
ii -	0	1
iii -	1	1

³ - to determine whether a rotation comprises arable crops or roughage crops
⁴ - to specify the regions where (rotations with) corn can be grown
⁵ - to select the feasible combinations of production level, technology and rotation
 C...WOWF - crop rotation with Corn...Wheat-Oilseed-Wheat-Fieldbean

STORECST.DAT (P)

	PRICE
WHT	0
CRN	0
POT	50
SBT	50
OSD	0
FBN	0
MWG	0
SLM	0
GRS	0

costs of cleaning and storage [ecu/10³ kg]

WHT...GRS - see Appendix IV, SET CRP, page IV-1

WATER.DAT (R)

	PCIP
GN	0.751720
GS	0.803944
FN	0.697053
FS	0.685703
IN	0.822080
IS	0.650576
NL	0.749694
BE	0.978854
UKS	0.796592
UKN	1.141906
IR	1.126
DE	0.757
GR	0.468953
SNW	0.403866
SSE	0.423009
PO	0.689250

PCIP - annual precipitation in a region [m]

GN...PO - see Appendix IV, SET REG, page IV-3

CR_INPUT.DAT (A)

PST...NLS - see Appendix IV, SET INC, page IV-2
 WOWFB.YOP.GN - crop rotation Wheat-Oilseed-Wheat-Fieldbean-Sugarbeet, Yield Oriented Potential production in Germany North

	PST [kg]	LAB [h]	WAT [10 ⁶ l]	NAP [kg]	NLS [kg]	[ha ⁻¹ .yr ⁻¹]
WOWFB.YOP.GN	3.8	34.5	0.56	209.1	37.2	
WOWFB.YOW.GN	3.5	26.2	0.00	185.3	41.7	
WOWFB.EOP.GN	1.1	32.7	0.37	161.4	30.0	
WOWFB.EOW.GN	1.1	27.6	0.00	148.5	35.2	
WOWFB.YOP.GS	3.9	30.7	0.20	199.3	27.3	
WOWFB.YOW.GS	3.7	27.3	0.00	190.8	30.4	
WOWFB.EOP.GS	1.1	30.7	0.13	152.4	21.9	
WOWFB.EOW.GS	1.1	28.6	0.00	149.3	24.9	
WOWFB.YOP.FN	3.9	40.1	0.59	227.1	34.8	
WOWFB.YOW.FN	3.7	29.9	0.00	202.9	39.1	
WOWFB.EOP.FN	1.1	38.4	0.42	170.8	27.4	
WOWFB.EOW.FN	1.1	31.2	0.00	155.4	31.5	
WOWFB.YOP.FS	3.8	46.4	0.96	228.3	35.6	
WOWFB.YOW.FS	3.5	29.8	0.00	189.5	39.5	
WOWFB.EOP.FS	1.1	43.7	0.72	175.4	28.6	
WOWFB.EOW.FS	1.1	31.5	0.00	149.9	32.8	
WOWFB.YOP.IN	3.6	34.6	0.71	197.1	33.3	
WOWFB.YOW.IN	3.3	24.1	0.00	170.4	39.7	
WOWFB.EOP.IN	1.1	33.9	0.56	159.3	27.9	
WOWFB.EOW.IN	1.1	25.7	0.00	139.7	34.0	
WOWFB.YOP.IS	3.4	50.1	1.50	212.9	31.4	
WOWFB.YOW.IS	3.0	26.3	0.00	171.2	43.7	
WOWFB.EOP.IS	1.1	47.3	1.22	171.5	26.2	
WOWFB.EOW.IS	1.1	28.5	0.00	145.1	38.5	
WOWFB.YOP.NL	3.8	31.4	0.48	209.0	40.8	
WOWFB.YOW.NL	3.4	24.0	0.00	192.3	49.2	
WOWFB.EOP.NL	1.1	29.6	0.30	161.7	32.9	
WOWFB.EOW.NL	1.1	25.2	0.00	155.7	41.7	
WOWFB.YOP.BE	3.8	35.7	0.45	208.5	36.4	
WOWFB.YOW.BE	3.7	28.5	0.00	189.1	40.1	
WOWFB.EOP.BE	1.1	34.5	0.29	159.7	29.3	
WOWFB.EOW.BE	1.1	30.0	0.00	149.9	33.5	
WOWFB.YOP.UKS	3.9	40.5	0.62	235.1	40.0	
WOWFB.YOW.UKS	3.5	29.4	0.00	202.0	42.7	
WOWFB.EOP.UKS	1.1	38.0	0.42	175.8	31.3	
WOWFB.EOW.UKS	1.1	30.8	0.00	157.3	35.0	
WOWFB.YOP.UKN	3.9	37.9	0.37	222.5	40.4	
WOWFB.YOW.UKN	3.7	31.3	0.00	209.6	45.5	
WOWFB.EOP.UKN	1.1	36.3	0.22	166.1	31.6	
WOWFB.EOW.UKN	1.1	32.4	0.00	161.9	37.1	
WOWFB.YOP.IR	4.0	37.0	0.26	231.9	41.1	
WOWFB.YOW.IR	3.8	32.1	0.00	223.5	47.0	
WOWFB.EOP.IR	1.1	36.1	0.17	172.4	32.1	
WOWFB.EOW.IR	1.1	33.0	0.00	170.0	37.7	
WOWFB.YOP.DE	3.7	44.1	1.14	214.9	37.1	
WOWFB.YOW.DE	3.1	27.1	0.00	162.3	38.7	
WOWFB.EOP.DE	1.1	39.8	0.77	165.3	29.8	
WOWFB.EOW.DE	1.1	28.9	0.00	133.4	33.4	
WOWFB.YOP.GR	3.0	41.8	1.11	167.3	22.6	
WOWFB.YOW.GR	2.7	24.9	0.00	158.4	39.1	
WOWFB.EOP.GR	1.1	41.5	0.94	141.4	19.7	
WOWFB.EOW.GR	1.1	27.3	0.00	136.2	34.6	
WOWFB.YOP.SNW	3.3	69.0	2.76	224.4	26.0	
WOWFB.YOW.SNW	2.6	25.2	0.00	145.0	32.4	
WOWFB.EOP.SNW	1.1	62.4	2.24	178.8	21.4	
WOWFB.EOW.SNW	1.1	27.8	0.00	123.8	28.6	
WOWFB.YOP.SSE	3.2	60.3	2.11	201.8	23.4	
WOWFB.YOW.SSE	2.7	26.1	0.00	163.0	36.3	
WOWFB.EOP.SSE	1.1	56.1	1.74	164.3	19.8	
WOWFB.EOW.SSE	1.1	28.5	0.00	138.8	32.1	
WOWFB.YOP.PO	3.2	89.6	3.57	231.8	38.3	
WOWFB.YOW.PO	2.4	28.0	0.00	141.0	46.7	
WOWFB.EOP.PO	1.1	82.6	2.97	188.8	32.1	
WOWFB.EOW.PO	1.1	32.2	0.00	122.1	42.2	
WOW.YOP.GN	4.5	27.7	0.42	222.1	39.8	
WOW.YOW.GN	4.1	21.2	0.00	199.8	45.9	

WWO.EOP.GN	1.2	26.8	0.28	167.4	31.2
WWO.EOW.GN	1.2	22.9	0.00	156.7	37.6
WWO.YOP.GS	4.7	24.8	0.10	203.3	29.6
WWO.YOW.GS	4.6	23.1	0.00	199.0	35.1
WWO.EOP.GS	1.2	25.6	0.06	150.2	22.8
WWO.EOW.GS	1.2	24.8	0.00	150.1	27.4
WWO.YOP.FN	4.9	31.6	0.34	229.5	36.7
WWO.YOW.FN	4.5	25.1	0.00	214.3	46.2
WWO.EOP.FN	1.2	30.9	0.22	165.9	27.7
WWO.EOW.FN	1.2	27.0	0.00	160.1	35.9
WWO.YOP.FS	4.8	33.0	0.47	232.6	37.4
WWO.YOW.FS	4.3	24.4	0.00	212.8	48.0
WWO.EOP.FS	1.2	31.7	0.32	173.2	28.9
WWO.EOW.FS	1.2	26.4	0.00	165.3	38.8
WWO.YOP.IN	4.5	27.0	0.24	201.6	36.7
WWO.YOW.IN	4.1	22.7	0.00	199.4	52.0
WWO.EOP.IN	1.2	28.1	0.17	156.6	29.5
WWO.EOW.IN	1.2	25.2	0.00	157.9	42.5
WWO.YOP.IS	4.3	32.2	0.50	225.3	36.3
WWO.YOW.IS	3.7	23.1	0.00	220.7	66.6
WWO.EOP.IS	1.2	31.7	0.34	176.7	29.3
WWO.EOW.IS	1.2	25.9	0.00	183.4	56.5
WWO.YOP.NL	4.5	25.8	0.36	225.0	44.1
WWO.YOW.NL	4.1	20.0	0.00	209.9	55.2
WWO.EOP.NL	1.2	24.9	0.23	169.0	34.4
WWO.EOW.NL	1.2	21.5	0.00	164.6	44.9
WWO.YOP.BE	4.6	28.6	0.34	220.7	39.1
WWO.YOW.BE	4.2	23.0	0.00	202.6	44.2
WWO.EOP.BE	1.2	28.2	0.22	165.8	30.6
WWO.EOW.BE	1.2	24.9	0.00	158.1	36.1
WWO.YOP.UKS	4.9	32.0	0.41	261.1	45.7
WWO.YOW.UKS	4.4	24.4	0.00	236.5	54.0
WWO.EOP.UKS	1.2	30.5	0.26	188.0	34.2
WWO.EOW.UKS	1.2	25.9	0.00	177.4	42.2
WWO.YOP.UKN	4.7	31.9	0.34	260.4	46.7
WWO.YOW.UKN	4.4	25.5	0.00	241.3	51.9
WWO.EOP.UKN	1.2	30.7	0.21	193.3	36.0
WWO.EOW.UKN	1.2	26.9	0.00	185.7	41.7
WWO.YOP.IR	4.9	30.1	0.19	262.8	46.3
WWO.YOW.IR	4.6	26.3	0.00	252.8	52.9
WWO.EOP.IR	1.2	29.6	0.12	193.1	35.4
WWO.EOW.IR	1.2	27.4	0.00	190.6	41.8
WWO.YOP.DE	4.4	36.6	0.98	230.3	39.8
WWO.YOW.DE	3.5	21.6	0.00	172.0	41.0
WWO.EOP.DE	1.2	33.3	0.68	175.2	31.4
WWO.EOW.DE	1.2	23.7	0.00	140.9	35.2
WWO.YOP.GR	3.6	26.2	0.34	182.4	27.3
WWO.YOW.GR	3.2	20.2	0.00	189.6	56.9
WWO.EOP.GR	1.2	27.7	0.28	152.5	23.3
WWO.EOW.GR	1.2	23.2	0.00	162.1	49.5
WWO.YOP.SNW	4.3	54.8	1.95	230.2	30.4
WWO.YOW.SNW	2.8	21.6	0.00	146.9	40.8
WWO.EOP.SNW	1.2	49.4	1.50	180.1	24.5
WWO.EOW.SNW	1.2	25.2	0.00	126.1	36.0
WWO.YOP.SSE	4.0	44.8	1.28	216.8	28.4
WWO.YOW.SSE	3.0	22.3	0.00	174.1	50.4
WWO.EOP.SSE	1.2	42.0	0.98	173.9	23.4
WWO.EOW.SSE	1.2	25.9	0.00	151.4	44.8
WWO.YOP.PO	4.1	54.5	1.74	240.3	41.0
WWO.YOW.PO	2.9	23.4	0.00	183.0	63.8
WWO.EOP.PO	1.2	53.6	1.34	192.5	33.7
WWO.EOW.PO	1.2	30.8	0.00	159.6	57.0
G.YOP.GN	0.7	13.6	0.35	420.1	40.4
G.YOW.GN	0.7	12.6	0.00	375.5	54.7
G.EOP.GN	0.0	14.3	0.30	354.8	34.6
G.EOW.GN	0.0	13.4	0.00	316.7	46.8
G.YOP.GS	0.7	14.0	0.32	420.0	31.8
G.YOW.GS	0.7	13.1	0.00	371.5	38.3
G.EOP.GS	0.0	14.7	0.27	354.8	27.2
G.EOW.GS	0.0	13.8	0.00	313.3	32.8
G.YOP.FN	0.7	17.4	0.97	491.4	41.8
G.YOW.FN	0.7	14.2	0.00	370.5	49.7
G.EOP.FN	0.0	17.9	0.83	415.8	35.7
G.EOW.FN	0.0	15.1	0.00	312.4	42.5

G.YOP.FS	0.7	19.6	1.64	546.0	46.4
G.YOW.FS	0.7	14.2	0.00	372.7	53.2
G.EOP.FS	0.0	19.7	1.40	462.5	39.6
G.EOW.FS	0.0	15.1	0.00	314.3	45.5
G.YOP.IN	0.7	17.6	1.41	530.5	50.5
G.YOW.IN	0.7	13.2	0.00	348.7	56.5
G.EOP.IN	0.0	17.8	1.21	449.2	43.2
G.EOW.IN	0.0	14.1	0.00	293.8	48.3
G.YOP.IS	0.7	27.6	4.21	611.2	51.6
G.YOW.IS	0.7	13.8	0.00	225.8	49.4
G.EOP.IS	0.0	26.4	3.60	518.2	44.1
G.EOW.IS	0.0	14.7	0.00	188.7	42.3
G.YOP.NL	0.7	12.5	0.22	432.7	46.0
G.YOW.NL	0.7	11.9	0.00	418.6	71.3
G.EOP.NL	0.0	13.1	0.19	365.6	39.3
G.EOW.NL	0.0	12.6	0.00	353.5	60.9
G.YOP.BE	0.7	15.0	0.44	449.4	42.6
G.YOW.BE	0.7	13.5	0.00	394.1	53.6
G.EOP.BE	0.0	15.5	0.38	379.9	36.4
G.EOW.BE	0.0	14.3	0.00	332.6	45.8
G.YOP.UKS	0.7	15.4	0.40	460.7	43.4
G.YOW.UKS	0.7	14.1	0.00	406.5	57.9
G.EOP.UKS	0.0	16.1	0.34	389.6	37.2
G.EOW.UKS	0.0	14.9	0.00	343.2	49.5
G.YOP.UKN	0.7	15.5	0.18	422.9	42.6
G.YOW.UKN	0.7	14.8	0.00	407.1	59.3
G.EOP.UKN	0.0	16.3	0.16	357.2	36.4
G.EOW.UKN	0.0	15.7	0.00	343.7	50.8
G.YOP.IR	0.7	15.7	0.27	463.4	47.0
G.YOW.IR	0.7	14.8	0.00	437.7	65.4
G.EOP.IR	0.0	16.5	0.23	391.9	40.2
G.EOW.IR	0.0	15.7	0.00	369.9	56.0
G.YOP.DE	0.7	15.5	0.68	396.0	37.3
G.YOW.DE	0.7	13.4	0.00	292.3	46.6
G.EOP.DE	0.0	16.0	0.58	334.3	31.8
G.EOW.DE	0.0	14.2	0.00	245.6	39.9
G.YOP.GR	0.7	26.5	4.60	549.5	41.7
G.YOW.GR	0.7	12.6	0.00	221.8	46.9
G.EOP.GR	0.0	25.3	3.94	465.4	35.7
G.EOW.GR	0.0	13.4	0.00	185.3	40.0
G.YOP.SNW	0.7	30.2	5.04	562.6	38.6
G.YOW.SNW	0.7	13.8	0.00	194.3	36.6
G.EOP.SNW	0.0	28.7	4.31	476.7	33.0
G.EOW.SNW	0.0	14.7	0.00	161.7	31.3
G.YOP.SSE	0.7	33.4	5.89	588.8	39.8
G.YOW.SSE	0.7	14.0	0.00	215.3	43.4
G.EOP.SSE	0.0	31.5	5.03	499.1	34.0
G.EOW.SSE	0.0	14.9	0.00	179.7	37.1
G.YOP.PO	0.7	35.9	6.12	633.2	57.2
G.YOW.PO	0.7	14.8	0.00	210.4	54.5
G.EOP.PO	0.0	33.8	5.23	537.1	48.9
G.EOW.PO	0.0	15.8	0.00	175.6	46.6
PWBW.YOP.GN	6.2	42.5	0.62	293.8	66.6
PWBW.YOW.GN	5.6	32.7	0.00	256.1	70.7
PWBW.EOP.GN	1.6	39.0	0.40	222.4	51.4
PWBW.EOW.GN	1.6	33.0	0.00	200.5	56.7
PWBW.YOP.GS	6.2	39.6	0.31	280.9	49.9
PWBW.YOW.GS	5.8	33.9	0.00	257.4	51.9
PWBW.EOP.GS	1.6	37.8	0.20	212.7	38.7
PWBW.EOW.GS	1.6	34.4	0.00	200.0	41.4
PWBW.YOP.FN	6.0	52.1	0.82	304.2	59.6
PWBW.YOW.FN	5.5	36.8	0.00	252.3	60.1
PWBW.EOP.FN	1.6	48.0	0.58	229.9	46.4
PWBW.EOW.FN	1.6	37.5	0.00	195.4	48.3
PWBW.YOP.FS	5.9	60.5	1.30	305.4	60.7
PWBW.YOW.FS	5.2	36.7	0.00	234.7	60.3
PWBW.EOP.FS	1.6	54.8	0.95	233.1	47.5
PWBW.EOW.FS	1.6	37.8	0.00	184.9	49.1
PWBW.YOP.IN	5.6	44.9	1.01	269.8	58.0
PWBW.YOW.IN	5.0	29.2	0.00	212.1	60.0
PWBW.EOP.IN	1.6	42.0	0.77	213.2	46.7
PWBW.EOW.IN	1.6	30.3	0.00	171.2	50.0
PWBW.YOP.IS	5.0	65.6	2.06	278.0	52.7
PWBW.YOW.IS	4.2	31.7	0.00	189.0	59.6

PWBW.EOP.IS	1.6	59.9	1.62	223.3	43.5
PWBW.EOW.IS	1.6	33.8	0.00	158.8	51.9
PWBW.YOP.NL	6.2	37.7	0.47	295.7	72.6
PWBW.YOW.NL	5.6	29.9	0.00	273.4	84.5
PWBW.EOP.NL	1.6	34.5	0.30	222.7	55.9
PWBW.EOW.NL	1.6	29.8	0.00	213.5	67.4
PWBW.YOP.BE	6.2	45.1	0.54	290.0	64.6
PWBW.YOW.BE	5.7	35.5	0.00	256.0	67.2
PWBW.EOP.BE	1.6	41.9	0.35	218.8	49.9
PWBW.EOW.BE	1.6	35.9	0.00	199.7	53.8
PWBW.YOP.UKS	6.2	51.1	0.77	308.9	66.9
PWBW.YOW.UKS	5.5	36.4	0.00	250.3	64.9
PWBW.EOP.UKS	1.6	46.3	0.52	230.2	51.2
PWBW.EOW.UKS	1.6	36.8	0.00	194.0	52.1
PWBW.YOP.UKN	6.3	46.5	0.37	289.9	67.0
PWBW.YOW.UKN	5.9	39.3	0.00	270.6	72.6
PWBW.EOP.UKN	1.6	43.2	0.22	214.6	51.0
PWBW.EOW.UKN	1.6	39.0	0.00	205.6	56.9
PWBW.YOP.IR	6.3	47.8	0.38	303.3	68.3
PWBW.YOW.IR	5.9	40.1	0.00	278.8	71.7
PWBW.EOP.IR	1.6	44.4	0.24	223.6	51.8
PWBW.EOW.IR	1.6	39.7	0.00	210.8	56.2
PWBW.YOP.DE	6.0	53.9	1.25	300.5	66.6
PWBW.YOW.DE	5.0	33.5	0.00	217.8	62.9
PWBW.EOP.DE	1.6	47.2	0.83	227.9	51.5
PWBW.EOW.DE	1.6	34.2	0.00	175.1	52.0
PWBW.YOP.GR	4.2	52.9	1.42	221.6	39.0
PWBW.YOW.GR	3.8	30.1	0.00	188.7	59.3
PWBW.EOP.GR	1.6	50.9	1.16	186.9	33.6
PWBW.EOW.GR	1.6	32.6	0.00	162.3	52.3
PWBW.YOP.SNW	4.8	85.4	3.37	287.8	43.4
PWBW.YOW.SNW	3.6	30.3	0.00	167.1	48.0
PWBW.EOP.SNW	1.6	75.7	2.66	233.1	36.1
PWBW.EOW.SNW	1.6	33.1	0.00	144.3	42.8
PWBW.YOP.SSE	4.6	74.1	2.51	259.3	39.5
PWBW.YOW.SSE	3.9	31.8	0.00	187.2	53.7
PWBW.EOP.SSE	1.6	67.5	2.01	212.0	33.4
PWBW.EOW.SSE	1.6	34.2	0.00	158.4	47.1
PWBW.YOP.PO	4.6	114.0	4.49	308.0	64.6
PWBW.YOW.PO	3.4	33.6	0.00	154.1	62.3
PWBW.EOP.PO	1.6	99.2	3.60	251.2	54.1
PWBW.EOW.PO	1.6	35.8	0.00	133.3	56.0
PFBW.YOP.GN	5.3	40.9	0.63	241.1	55.5
PFBW.YOW.GN	5.0	31.2	0.00	211.2	58.5
PFBW.EOP.GN	1.7	37.9	0.40	181.9	43.0
PFBW.EOW.GN	1.7	31.8	0.00	163.5	46.8
PFBW.YOP.GS	5.3	38.3	0.35	240.0	41.8
PFBW.YOW.GS	5.0	32.1	0.00	218.3	43.0
PFBW.EOP.GS	1.7	36.9	0.22	182.8	32.8
PFBW.EOW.GS	1.7	33.1	0.00	169.9	34.5
PFBW.YOP.FN	5.1	51.1	0.90	252.8	49.5
PFBW.YOW.FN	4.7	34.8	0.00	204.5	48.5
PFBW.EOP.FN	1.7	47.3	0.63	193.9	39.1
PFBW.EOW.FN	1.7	36.1	0.00	160.4	39.6
PFBW.YOP.FS	5.0	59.3	1.36	254.3	50.5
PFBW.YOW.FS	4.5	34.8	0.00	190.3	48.5
PFBW.EOP.FS	1.7	54.0	1.00	196.5	40.0
PFBW.EOW.FS	1.7	36.4	0.00	150.9	39.9
PFBW.YOP.IN	4.9	44.4	1.09	225.0	48.7
PFBW.YOW.IN	4.4	27.8	0.00	170.2	48.1
PFBW.EOP.IN	1.7	41.5	0.81	177.2	39.3
PFBW.EOW.IN	1.7	29.3	0.00	136.4	40.2
PFBW.YOP.IS	4.3	65.9	2.22	232.7	43.9
PFBW.YOW.IS	3.6	30.1	0.00	150.7	46.2
PFBW.EOP.IS	1.7	60.4	1.75	188.9	36.6
PFBW.EOW.IS	1.7	32.6	0.00	127.1	40.4
PFBW.YOP.NL	5.4	36.1	0.49	238.7	60.5
PFBW.YOW.NL	5.0	28.5	0.00	224.8	70.3
PFBW.EOP.NL	1.7	33.4	0.30	178.9	46.6
PFBW.EOW.NL	1.7	28.8	0.00	172.9	55.7
PFBW.YOP.BE	5.3	43.6	0.56	238.1	53.8
PFBW.YOW.BE	5.0	33.8	0.00	209.4	55.5
PFBW.EOP.BE	1.7	40.8	0.37	180.1	41.8
PFBW.EOW.BE	1.7	34.7	0.00	162.3	44.4

PFBW.YOP.UKS	5.3	49.3	0.79	249.2	55.0
PFBW.YOW.UKS	4.8	34.6	0.00	200.8	52.7
PFBW.EOP.UKS	1.7	45.0	0.52	187.2	42.5
PFBW.EOW.UKS	1.7	35.5	0.00	155.8	42.5
PFBW.YOP.UKN	5.4	44.5	0.38	228.5	54.5
PFBW.YOW.UKN	5.2	37.3	0.00	215.0	59.0
PFBW.EOP.UKN	1.7	41.8	0.23	169.3	41.8
PFBW.EOW.UKN	1.7	37.5	0.00	162.7	46.3
PFBW.YOP.IR	5.4	45.8	0.40	240.8	55.7
PFBW.YOW.IR	5.1	37.8	0.00	219.7	57.8
PFBW.EOP.IR	1.7	43.1	0.25	178.8	42.8
PFBW.EOW.IR	1.7	38.2	0.00	166.9	45.6
PFBW.YOP.DE	5.2	52.2	1.27	247.7	55.5
PFBW.YOW.DE	4.5	32.1	0.00	179.1	51.7
PFBW.EOP.DE	1.7	45.9	0.83	187.2	43.1
PFBW.EOW.DE	1.7	33.1	0.00	141.7	42.5
PFBW.YOP.GR	3.7	54.8	1.67	188.5	32.5
PFBW.YOW.GR	3.4	28.7	0.00	165.5	47.6
PFBW.EOP.GR	1.7	52.2	1.35	158.8	28.2
PFBW.EOW.GR	1.7	31.4	0.00	142.6	42.1
PFBW.YOP.SNW	4.0	84.7	3.48	245.9	36.1
PFBW.YOW.SNW	3.2	29.1	0.00	153.3	39.3
PFBW.EOP.SNW	1.7	75.9	2.78	202.4	30.5
PFBW.EOW.SNW	1.7	32.1	0.00	132.6	35.0
PFBW.YOP.SSE	3.9	75.7	2.77	221.1	32.7
PFBW.YOW.SSE	3.3	30.2	0.00	166.1	42.7
PFBW.EOP.SSE	1.7	69.4	2.25	183.2	27.9
PFBW.EOW.SSE	1.7	32.9	0.00	141.5	37.7
PFBW.YOP.PO	3.9	114.6	4.67	255.2	53.9
PFBW.YOW.PO	3.0	32.1	0.00	119.7	47.7
PFBW.EOP.PO	1.7	100.9	3.78	211.1	45.7
PFBW.EOW.PO	1.7	35.0	0.00	104.6	43.3
CWOF.YOP.GN	3.2	27.7	0.32	193.0	33.7
CWOF.YOW.GN	3.1	22.0	0.00	181.4	38.8
CWOF.EOP.GN	1.1	28.5	0.24	159.9	29.7
CWOF.EOW.GN	1.1	24.2	0.00	150.9	34.3
CWOF.YOP.GS	3.4	26.6	0.20	194.1	34.2
CWOF.YOW.GS	3.3	23.1	0.00	188.7	39.1
CWOF.EOP.GS	1.1	27.7	0.14	157.3	29.7
CWOF.EOW.GS	1.1	25.1	0.00	153.8	33.9
CWOF.YOP.FN	3.4	37.0	0.67	213.5	44.6
CWOF.YOW.FN	3.2	24.8	0.00	189.3	49.8
CWOF.EOP.FN	1.1	36.4	0.51	170.5	38.3
CWOF.EOW.FN	1.1	27.2	0.00	152.2	42.7
CWOF.YOP.FS	3.3	40.0	0.91	223.5	47.7
CWOF.YOW.FS	3.1	24.0	0.00	188.4	50.1
CWOF.EOP.FS	1.1	39.1	0.74	182.1	41.4
CWOF.EOW.FS	1.1	26.3	0.00	154.3	43.5
CWOF.YOP.IN	3.2	33.2	0.61	198.4	47.7
CWOF.YOW.IN	3.0	22.5	0.00	176.1	53.6
CWOF.EOP.IN	1.1	33.9	0.51	166.2	42.1
CWOF.EOW.IN	1.1	25.1	0.00	146.2	46.7
CWOF.YOP.IS	3.0	49.1	1.61	213.6	44.8
CWOF.YOW.IS	2.7	21.6	0.00	160.9	50.3
CWOF.EOP.IS	1.1	48.3	1.42	180.2	39.9
CWOF.EOW.IS	1.1	24.5	0.00	135.2	44.0
CWOF.YOP.NL	0.0	0.0	0.00	0.0	0.0
CWOF.YOW.NL	0.0	0.0	0.00	0.0	0.0
CWOF.EOP.NL	0.0	0.0	0.00	0.0	0.0
CWOF.EOW.NL	0.0	0.0	0.00	0.0	0.0
CWOF.YOP.BE	3.3	40.1	0.85	213.7	40.2
CWOF.YOW.BE	3.1	24.5	0.00	177.0	40.6
CWOF.EOP.BE	1.1	38.4	0.63	171.4	34.7
CWOF.EOW.BE	1.1	26.9	0.00	144.6	35.5
CWOF.YOP.UKS	0.0	0.0	0.00	0.0	0.0
CWOF.YOW.UKS	0.0	0.0	0.00	0.0	0.0
CWOF.EOP.UKS	0.0	0.0	0.00	0.0	0.0
CWOF.EOW.UKS	0.0	0.0	0.00	0.0	0.0
CWOF.YOP.UKN	0.0	0.0	0.00	0.0	0.0
CWOF.YOW.UKN	0.0	0.0	0.00	0.0	0.0
CWOF.EOP.UKN	0.0	0.0	0.00	0.0	0.0
CWOF.EOW.UKN	0.0	0.0	0.00	0.0	0.0
CWOF.YOP.IR	0.0	0.0	0.00	0.0	0.0
CWOF.YOW.IR	0.0	0.0	0.00	0.0	0.0

CWOF.EOP.IR	0.0	0.0	0.00	0.0	0.0
CWOF.EOW.IR	0.0	0.0	0.00	0.0	0.0
CWOF.YOP.DE	0.0	0.0	0.00	0.0	0.0
CWOF.YOW.DE	0.0	0.0	0.00	0.0	0.0
CWOF.EOP.DE	0.0	0.0	0.00	0.0	0.0
CWOF.EOW.DE	0.0	0.0	0.00	0.0	0.0
CWOF.YOP.GR	2.7	39.4	1.25	176.2	34.5
CWOF.YOW.GR	2.5	19.5	0.00	159.5	50.0
CWOF.EOP.GR	1.1	40.4	1.14	155.5	31.7
CWOF.EOW.GR	1.1	22.4	0.00	139.3	45.2
CWOF.YOP.SNW	2.9	72.4	3.12	219.1	38.0
CWOF.YOW.SNW	2.3	21.1	0.00	124.3	34.8
CWOF.EOP.SNW	1.1	68.4	2.71	185.1	34.1
CWOF.EOW.SNW	1.1	24.6	0.00	108.3	31.7
CWOF.YOP.SSE	2.9	65.6	2.66	202.8	34.6
CWOF.YOW.SSE	2.3	21.3	0.00	136.7	38.9
CWOF.EOP.SSE	1.1	63.4	2.35	174.0	31.3
CWOF.EOW.SSE	1.1	24.8	0.00	120.3	35.5
CWOF.YOP.PO	2.7	82.2	3.49	236.7	53.2
CWOF.YOW.PO	2.3	22.1	0.00	132.3	47.1
CWOF.EOP.PO	1.1	81.9	3.13	206.7	48.7
CWOF.EOW.PO	1.1	28.7	0.00	116.5	43.0
M.YOP.GN	0.7	57.1	0.44	540.2	51.3
M.YOW.GN	0.7	49.9	0.00	483.6	69.3
M.EOP.GN	0.0	51.7	0.38	457.5	43.8
M.EOW.GN	0.0	45.5	0.00	409.2	59.3
M.YOP.GS	0.7	59.8	0.41	540.1	40.2
M.YOW.GS	0.7	52.8	0.00	478.5	48.6
M.EOP.GS	0.0	54.2	0.35	457.4	34.4
M.EOW.GS	0.0	48.1	0.00	404.8	41.5
M.YOP.FN	0.7	74.9	1.22	630.5	52.9
M.YOW.FN	0.7	56.1	0.00	477.3	62.9
M.EOP.FN	0.0	67.3	1.05	534.7	45.2
M.EOW.FN	0.0	51.2	0.00	403.8	53.8
M.YOP.FS	0.7	83.1	2.08	699.7	58.8
M.YOW.FS	0.7	55.8	0.00	480.1	67.4
M.EOP.FS	0.0	74.3	1.78	593.9	50.3
M.EOW.FS	0.0	50.9	0.00	406.1	57.6
M.YOP.IN	0.7	74.7	1.79	679.9	64.0
M.YOW.IN	0.7	49.1	0.00	449.7	71.5
M.EOP.IN	0.0	66.9	1.53	577.0	54.7
M.EOW.IN	0.0	45.1	0.00	380.1	61.1
M.YOP.IS	0.7	98.7	5.34	782.2	65.3
M.YOW.IS	0.7	38.9	0.00	294.0	62.6
M.EOP.IS	0.0	87.6	4.56	664.4	55.8
M.EOW.IS	0.0	36.4	0.00	247.0	53.5
M.YOP.NL	0.7	54.0	0.28	556.1	58.2
M.YOW.NL	0.7	49.4	0.00	538.2	90.3
M.EOP.NL	0.0	48.9	0.24	471.1	49.8
M.EOW.NL	0.0	45.0	0.00	455.8	77.2
M.YOP.BE	0.7	64.8	0.56	577.3	54.0
M.YOW.BE	0.7	55.6	0.00	507.2	67.9
M.EOP.BE	0.0	58.5	0.48	489.2	46.2
M.EOW.BE	0.0	50.6	0.00	429.3	58.1
M.YOP.UKS	0.7	68.3	0.51	591.6	55.0
M.YOW.UKS	0.7	58.8	0.00	522.8	73.3
M.EOP.UKS	0.0	61.6	0.44	501.5	47.1
M.EOW.UKS	0.0	53.5	0.00	442.7	62.7
M.YOP.UKN	0.7	66.6	0.23	543.7	54.0
M.YOW.UKN	0.7	62.0	0.00	523.7	75.1
M.EOP.UKN	0.0	60.4	0.20	460.5	46.1
M.EOW.UKN	0.0	56.4	0.00	443.4	64.3
M.YOP.IR	0.7	71.0	0.34	595.0	59.5
M.YOW.IR	0.7	64.6	0.00	562.5	82.9
M.EOP.IR	0.0	64.1	0.29	504.4	50.9
M.EOW.IR	0.0	58.6	0.00	476.6	70.9
M.YOP.DE	0.7	59.8	0.86	509.6	47.2
M.YOW.DE	0.7	45.2	0.00	378.2	59.1
M.EOP.DE	0.0	54.2	0.74	431.4	40.3
M.EOW.DE	0.0	41.7	0.00	319.0	50.5
M.YOP.GR	0.7	86.7	5.83	704.0	52.8
M.YOW.GR	0.7	35.0	0.00	288.9	59.3
M.EOP.GR	0.0	77.0	4.99	597.6	45.2
M.EOW.GR	0.0	32.8	0.00	242.6	50.7

M.YOP.SNW	0.7	98.0	6.39	720.6	48.9
M.YOW.SNW	0.7	36.6	0.00	254.0	46.4
M.EOP.SNW	0.0	87.0	5.46	611.8	41.8
M.EOW.SNW	0.0	34.5	0.00	212.9	39.7
M.YOP.SSE	0.7	105.4	7.46	753.8	50.3
M.YOW.SSE	0.7	38.4	0.00	280.7	55.0
M.EOP.SSE	0.0	93.4	6.38	640.1	43.0
M.EOW.SSE	0.0	36.1	0.00	235.6	47.0
M.YOP.PO	0.7	115.6	7.75	810.1	72.5
M.YOW.PO	0.7	39.1	0.00	274.7	69.0
M.EOP.PO	0.0	102.3	6.62	688.3	61.9
M.EOW.PO	0.0	36.9	0.00	230.5	59.0
S.YOP.GN	1.9	33.8	0.35	254.5	81.0
S.YOW.GN	1.9	27.7	0.00	233.9	87.0
S.EOP.GN	0.6	35.0	0.33	240.2	77.0
S.EOW.GN	0.6	29.2	0.00	220.4	82.7
S.YOP.GS	2.0	36.2	0.24	274.4	70.8
S.YOW.GS	2.0	31.6	0.00	257.0	75.5
S.EOP.GS	0.6	37.6	0.22	256.7	66.6
S.EOW.GS	0.6	33.2	0.00	240.2	71.1
S.YOP.FN	2.0	49.9	0.85	303.1	86.6
S.YOW.FN	2.0	33.0	0.00	242.0	85.6
S.EOP.FN	0.6	51.0	0.81	284.0	81.6
S.EOW.FN	0.6	34.9	0.00	226.1	80.5
S.YOP.FS	1.9	61.2	1.58	326.8	93.2
S.YOW.FS	1.9	31.2	0.00	221.4	81.0
S.EOP.FS	0.6	61.9	1.52	309.0	88.6
S.EOW.FS	0.6	33.1	0.00	208.1	76.7
S.YOP.IN	1.9	51.0	1.19	303.8	96.1
S.YOW.IN	1.9	29.3	0.00	215.0	87.0
S.EOP.IN	0.6	51.9	1.13	285.4	90.7
S.EOW.IN	0.6	31.3	0.00	200.7	81.8
S.YOP.IS	1.7	87.3	3.52	299.9	86.5
S.YOW.IS	1.7	24.5	0.00	87.0	47.3
S.EOP.IS	0.6	87.8	3.40	288.4	83.4
S.EOW.IS	0.6	27.2	0.00	82.8	45.6
S.YOP.NL	1.9	30.0	0.23	253.0	87.5
S.YOW.NL	1.9	25.8	0.00	248.6	101.8
S.EOP.NL	0.6	31.2	0.22	238.7	83.1
S.EOW.NL	0.6	27.2	0.00	234.3	96.6
S.YOP.BE	1.9	38.6	0.44	270.3	84.8
S.YOW.BE	1.9	30.1	0.00	239.0	86.1
S.EOP.BE	0.6	39.8	0.42	254.4	80.4
S.EOW.BE	0.6	31.8	0.00	224.6	81.6
S.YOP.UKS	1.9	33.6	0.22	198.7	65.2
S.YOW.UKS	1.9	29.0	0.00	189.0	73.5
S.EOP.UKS	0.6	35.2	0.21	186.3	61.7
S.EOW.UKS	0.6	30.9	0.00	176.9	69.4
S.YOP.UKN	1.9	24.6	0.02	73.8	29.6
S.YOW.UKN	1.9	24.2	0.00	76.6	34.2
S.EOP.UKN	0.6	26.7	0.02	69.0	28.3
S.EOW.UKN	0.6	26.2	0.00	71.7	32.6
S.YOP.IR	1.9	29.2	0.04	147.8	51.0
S.YOW.IR	1.9	28.4	0.00	152.5	58.5
S.EOP.IR	0.6	31.1	0.04	139.3	48.5
S.EOW.IR	0.6	30.3	0.00	143.7	55.8
S.YOP.DE	1.8	37.9	0.56	236.6	73.8
S.YOW.DE	1.8	27.8	0.00	200.5	76.8
S.EOP.DE	0.6	39.2	0.54	226.1	70.9
S.EOW.DE	0.6	29.5	0.00	191.1	73.8
S.YOP.GR	1.6	64.7	2.46	251.6	67.5
S.YOW.GR	1.6	23.8	0.00	136.1	64.4
S.EOP.GR	0.6	66.1	2.40	244.5	65.7
S.EOW.GR	0.6	26.2	0.00	131.8	62.6
S.YOP.SNW	1.6	110.8	5.01	307.4	74.4
S.YOW.SNW	1.6	24.9	0.00	83.8	40.0
S.EOP.SNW	0.6	111.7	4.92	299.9	72.7
S.EOW.SNW	0.6	27.5	0.00	80.9	39.0
S.YOP.SSE	1.6	108.1	4.83	274.1	66.2
S.YOW.SSE	1.6	24.6	0.00	75.2	38.0
S.EOP.SSE	0.6	109.2	4.73	267.7	64.7
S.EOW.SSE	0.6	27.5	0.00	72.7	37.1
S.YOP.PO	1.5	140.5	6.46	354.5	106.6
S.YOW.PO	1.5	23.9	0.00	60.9	39.5

S.EOP.PO	0.6	141.8	6.38	349.2	105.2
S.EOW.PO	0.6	26.6	0.00	59.3	38.9
WOWFWP.YOP.GN	5.6	33.4	0.60	235.8	51.7
WOWFWP.YOW.GN	5.1	24.1	0.00	206.9	54.8
WOWFWP.EOP.GN	1.6	30.5	0.36	170.6	38.6
WOWFWP.EOW.GN	1.6	25.2	0.00	157.6	43.2
WOWFWP.YOP.GS	5.7	29.5	0.24	218.1	37.5
WOWFWP.YOW.GS	5.4	25.1	0.00	204.5	39.6
WOWFWP.EOP.GS	1.6	28.5	0.14	156.2	28.0
WOWFWP.EOW.GS	1.6	26.2	0.00	151.9	30.5
WOWFWP.YOP.FN	5.7	38.2	0.60	243.7	46.0
WOWFWP.YOW.FN	5.2	27.1	0.00	216.1	48.5
WOWFWP.EOP.FN	1.6	35.3	0.38	172.9	34.2
WOWFWP.EOW.FN	1.6	28.5	0.00	159.6	37.6
WOWFWP.YOP.FS	5.6	42.3	0.83	239.8	46.2
WOWFWP.YOW.FS	4.9	26.9	0.00	203.9	49.2
WOWFWP.EOP.FS	1.6	38.4	0.55	173.4	34.7
WOWFWP.EOW.FS	1.6	28.6	0.00	156.0	39.3
WOWFWP.YOP.IN	5.2	30.7	0.56	212.2	44.2
WOWFWP.YOW.IN	4.6	21.6	0.00	189.8	50.2
WOWFWP.EOP.IN	1.6	29.4	0.39	163.0	34.9
WOWFWP.EOW.IN	1.6	23.4	0.00	151.6	41.6
WOWFWP.YOP.IS	4.7	42.3	1.12	225.3	40.9
WOWFWP.YOW.IS	4.0	23.3	0.00	189.2	53.5
WOWFWP.EOP.IS	1.6	39.4	0.83	176.0	33.1
WOWFWP.EOW.IS	1.6	25.9	0.00	159.2	46.4
WOWFWP.YOP.NL	5.6	30.1	0.50	238.0	56.6
WOWFWP.YOW.NL	5.1	22.1	0.00	219.3	65.5
WOWFWP.EOP.NL	1.6	27.4	0.29	172.2	42.3
WOWFWP.EOW.NL	1.6	23.1	0.00	167.5	51.4
WOWFWP.YOP.BE	5.7	34.2	0.47	232.7	50.1
WOWFWP.YOW.BE	5.3	26.1	0.00	209.6	52.6
WOWFWP.EOP.BE	1.6	31.8	0.28	167.2	37.3
WOWFWP.EOW.BE	1.6	27.3	0.00	158.2	41.2
WOWFWP.YOP.UKS	5.8	39.7	0.69	261.4	53.8
WOWFWP.YOW.UKS	5.1	26.7	0.00	217.2	53.1
WOWFWP.EOP.UKS	1.6	35.7	0.43	184.6	39.6
WOWFWP.EOW.UKS	1.6	27.9	0.00	162.4	41.6
WOWFWP.YOP.UKN	5.7	36.9	0.42	257.5	55.8
WOWFWP.YOW.UKN	5.4	29.0	0.00	238.6	60.1
WOWFWP.EOP.UKN	1.6	34.0	0.24	182.7	41.2
WOWFWP.EOW.UKN	1.6	29.6	0.00	175.7	46.1
WOWFWP.YOP.IR	5.8	36.2	0.33	261.4	55.7
WOWFWP.YOW.IR	5.5	29.6	0.00	243.8	59.2
WOWFWP.EOP.IR	1.6	33.8	0.19	183.5	40.7
WOWFWP.EOW.IR	1.6	30.1	0.00	176.9	45.0
WOWFWP.YOP.DE	5.5	44.2	1.26	244.3	52.0
WOWFWP.YOW.DE	4.5	24.3	0.00	177.4	48.8
WOWFWP.EOP.DE	1.6	38.0	0.80	177.1	39.0
WOWFWP.EOW.DE	1.6	26.0	0.00	140.4	40.0
WOWFWP.YOP.GR	4.0	35.8	0.84	184.1	30.7
WOWFWP.YOW.GR	3.7	21.9	0.00	180.8	50.8
WOWFWP.EOP.GR	1.6	36.0	0.69	154.1	26.3
WOWFWP.EOW.GR	1.6	25.0	0.00	155.4	44.6
WOWFWP.YOP.SNW	4.6	60.5	2.33	230.3	33.2
WOWFWP.YOW.SNW	3.4	21.9	0.00	157.5	40.5
WOWFWP.EOP.SNW	1.6	53.9	1.79	179.1	26.9
WOWFWP.EOW.SNW	1.6	25.1	0.00	134.4	35.6
WOWFWP.YOP.SSE	4.4	51.2	1.65	215.1	31.0
WOWFWP.YOW.SSE	3.6	23.1	0.00	182.8	46.5
WOWFWP.EOP.SSE	1.6	47.4	1.30	172.1	25.8
WOWFWP.EOW.SSE	1.6	26.0	0.00	154.9	40.7
WOWFWP.YOP.PO	4.4	74.5	2.82	242.7	49.3
WOWFWP.YOW.PO	3.2	24.1	0.00	162.1	57.9
WOWFWP.EOP.PO	1.6	67.2	2.23	193.3	40.6
WOWFWP.EOW.PO	1.6	28.4	0.00	140.3	51.9
C.YOP.GN	1.9	34.0	0.45	288.3	68.4
C.YOW.GN	1.9	25.4	0.00	253.6	73.8
C.YOP.GS	2.0	32.1	0.26	291.2	69.6
C.YOW.GS	2.0	27.1	0.00	271.5	75.8
C.YOP.FN	2.0	46.6	0.97	314.3	88.7
C.YOW.FN	2.0	28.0	0.00	245.0	87.1
C.YOP.FS	1.9	55.2	1.57	327.3	94.1
C.YOW.FS	1.9	26.4	0.00	222.3	81.7

C.YOP.IN	1.9	46.2	1.19	303.8	96.1
C.YOW.IN	1.9	24.8	0.00	215.0	87.0
C.YOP.IS	1.7	81.6	3.52	299.9	86.5
C.YOW.IS	1.7	21.1	0.00	87.0	47.3
C.YOP.NL	0.0	0.0	0.00	0.0	0.0
C.YOW.NL	0.0	0.0	0.00	0.0	0.0
C.YOP.BE	1.9	49.1	1.13	300.0	78.2
C.YOW.BE	1.9	27.1	0.00	214.3	69.8
C.YOP.UKS	0.0	0.0	0.00	0.0	0.0
C.YOW.UKS	0.0	0.0	0.00	0.0	0.0
C.YOP.UKN	0.0	0.0	0.00	0.0	0.0
C.YOW.UKN	0.0	0.0	0.00	0.0	0.0
C.YOP.IR	0.0	0.0	0.00	0.0	0.0
C.YOW.IR	0.0	0.0	0.00	0.0	0.0
C.YOP.DE	0.0	0.0	0.00	0.0	0.0
C.YOW.DE	0.0	0.0	0.00	0.0	0.0
C.YOP.GR	1.6	60.6	2.46	251.6	67.5
C.YOW.GR	1.6	20.3	0.00	136.1	64.3
C.YOP.SNW	1.6	105.0	5.01	307.4	74.4
C.YOW.SNW	1.6	21.9	0.00	83.8	40.0
C.YOP.SSE	1.6	102.4	4.82	274.1	66.2
C.YOW.SSE	1.6	21.7	0.00	75.2	38.0
C.YOP.PO	1.5	134.5	6.51	356.1	106.9
C.YOW.PO	1.5	21.7	0.00	60.8	39.6
WP.YOP.GN	58.3	42.4	0.67	320.9	84.4
WP.YOW.GN	57.6	31.4	0.00	278.3	86.8
WP.YOP.GS	58.3	39.8	0.38	298.4	62.6
WP.YOW.GS	57.8	32.5	0.00	268.6	63.0
WP.YOP.FN	58.1	52.3	0.89	318.7	73.5
WP.YOW.FN	57.3	34.8	0.00	261.9	71.3
WP.YOP.FS	57.9	58.4	1.24	314.3	73.8
WP.YOW.FS	56.9	34.6	0.00	246.7	71.6
WP.YOP.IN	57.5	42.5	0.91	285.1	71.8
WP.YOW.IN	56.6	27.4	0.00	231.1	72.6
WP.YOP.IS	56.5	60.3	1.78	289.5	64.8
WP.YOW.IS	55.3	29.2	0.00	205.8	70.5
WP.YOP.NL	58.3	37.0	0.48	325.1	92.2
WP.YOW.NL	57.7	28.8	0.00	302.9	104.7
WP.YOP.BE	58.4	44.9	0.58	314.2	81.5
WP.YOW.BE	57.7	34.0	0.00	276.4	82.5
WP.YOP.UKS	58.3	52.0	0.87	334.0	83.9
WP.YOW.UKS	57.3	34.5	0.00	264.1	77.5
WP.YOP.UKN	58.4	46.7	0.43	325.1	85.8
WP.YOW.UKN	58.0	38.0	0.00	299.9	90.3
WP.YOP.IR	58.5	48.6	0.48	331.4	85.9
WP.YOW.IR	57.9	38.4	0.00	296.3	86.2
WP.YOP.DE	58.1	55.5	1.40	331.0	85.1
WP.YOW.DE	56.7	31.5	0.00	232.4	75.2
WP.YOP.GR	55.5	49.1	1.25	239.4	49.1
WP.YOW.GR	54.9	27.9	0.00	213.7	73.3
WP.YOP.SNW	56.2	78.6	3.00	290.3	52.4
WP.YOW.SNW	54.5	27.9	0.00	183.4	58.6
WP.YOP.SSE	55.9	67.3	2.15	271.2	49.0
WP.YOW.SSE	54.8	29.4	0.00	208.4	65.8
WP.YOP.PO	55.9	102.4	3.90	317.2	78.5
WP.YOW.PO	54.2	30.3	0.00	175.1	74.8
WB.YOP.GN	54.0	44.8	0.56	262.3	48.0
WB.YOW.GN	53.7	36.4	0.00	230.0	53.7
WB.YOP.GS	54.0	41.9	0.24	262.5	37.1
WB.YOW.GS	53.9	37.8	0.00	245.4	40.7
WB.YOP.FN	54.0	54.7	0.74	288.6	45.6
WB.YOW.FN	53.8	41.5	0.00	241.9	48.9
WB.YOP.FS	53.9	65.1	1.34	294.2	47.1
WB.YOW.FS	53.6	41.6	0.00	221.3	48.5
WB.YOP.IN	53.8	49.3	1.08	251.7	43.6
WB.YOW.IN	53.4	33.2	0.00	191.6	46.9
WB.YOP.IS	53.5	73.1	2.31	264.5	40.4
WB.YOW.IS	53.1	36.8	0.00	171.4	48.4
WB.YOP.NL	54.0	40.2	0.45	260.3	52.0
WB.YOW.NL	53.6	33.1	0.00	238.3	62.9
WB.YOP.BE	54.1	47.7	0.48	262.8	47.1
WB.YOW.BE	53.8	39.6	0.00	233.1	51.3
WB.YOP.UKS	54.1	52.9	0.66	281.2	49.5
WB.YOW.UKS	53.7	41.0	0.00	234.5	51.8

WB.YOP.UKN	54.1	49.1	0.30	252.0	47.6
WB.YOW.UKN	53.9	43.5	0.00	238.5	54.3
WB.YOP.IR	54.2	49.8	0.27	272.6	50.1
WB.YOW.IR	54.0	44.6	0.00	258.9	56.7
WB.YOP.DE	54.0	54.6	1.08	264.7	47.2
WB.YOW.DE	53.3	38.0	0.00	199.4	49.7
WB.YOP.GR	53.0	59.2	1.59	203.7	28.8
WB.YOW.GR	52.7	34.7	0.00	163.6	45.2
WB.YOP.SNW	53.4	94.5	3.73	284.5	34.3
WB.YOW.SNW	52.5	35.2	0.00	150.8	37.6
WB.YOP.SSE	53.3	83.1	2.85	246.6	30.0
WB.YOW.SSE	52.8	36.7	0.00	165.8	41.7
WB.YOP.PO	53.4	126.3	4.96	293.7	49.8
WB.YOW.PO	52.5	39.7	0.00	131.9	49.5
W.YOP.GN	6.0	28.8	0.48	210.8	38.0
W.YOW.GN	4.9	21.3	0.00	186.9	43.3
W.YOP.GS	6.3	25.9	0.13	200.4	29.3
W.YOW.GS	5.3	23.2	0.00	192.8	34.1
W.YOP.FN	6.3	33.4	0.42	218.1	35.1
W.YOW.FN	5.3	25.1	0.00	195.4	42.7
W.YOP.FS	6.1	34.8	0.54	217.9	35.3
W.YOW.FS	5.0	24.5	0.00	190.8	43.5
W.YOP.IN	5.4	28.1	0.30	185.6	34.2
W.YOW.IN	4.8	22.6	0.00	176.3	46.6
W.YOP.IS	5.4	33.8	0.57	202.8	33.1
W.YOW.IS	4.2	23.1	0.00	186.6	57.5
W.YOP.NL	6.2	26.9	0.41	213.2	42.1
W.YOW.NL	5.2	20.2	0.00	195.7	51.8
W.YOP.BE	6.2	29.9	0.38	208.3	37.2
W.YOW.BE	5.1	23.2	0.00	187.7	41.3
W.YOP.UKS	6.4	33.6	0.46	238.2	42.1
W.YOW.UKS	5.3	24.5	0.00	207.1	48.0
W.YOP.UKN	6.3	33.0	0.36	233.1	42.3
W.YOW.UKN	5.4	25.9	0.00	213.6	46.5
W.YOP.IR	6.4	31.6	0.21	239.7	42.6
W.YOW.IR	5.6	26.8	0.00	225.5	47.5
W.YOP.DE	5.9	38.6	1.10	216.1	37.6
W.YOW.DE	4.2	21.4	0.00	159.2	38.4
W.YOP.GR	4.4	27.4	0.43	162.3	24.7
W.YOW.GR	3.6	19.9	0.00	159.4	49.0
W.YOP.SNW	5.3	59.5	2.26	212.7	28.3
W.YOW.SNW	3.2	21.0	0.00	109.2	31.9
W.YOP.SSE	5.1	46.6	1.38	196.9	26.0
W.YOW.SSE	3.5	22.1	0.00	142.4	42.5
W.YOP.PO	5.2	56.6	1.84	221.2	38.1
W.YOW.PO	3.4	23.3	0.00	150.6	53.9
W.EXT.GN	0.0	6.7	0.00	81.2	16.2
W.EXT.GS	0.0	6.7	0.00	84.9	17.0
W.EXT.FN	0.0	6.7	0.00	83.6	16.7
W.EXT.FS	0.0	6.7	0.00	82.3	16.4
W.EXT.IN	0.0	6.7	0.00	77.8	15.6
W.EXT.IS	0.0	6.7	0.00	77.9	15.6
W.EXT.NL	0.0	6.7	0.00	81.7	16.4
W.EXT.BE	0.0	6.7	0.00	82.4	16.5
W.EXT.UKS	0.0	6.7	0.00	84.2	16.8
W.EXT.UKN	0.0	6.7	0.00	86.4	17.3
W.EXT.IR	0.0	6.7	0.00	89.6	17.9
W.EXT.DE	0.0	6.7	0.00	75.7	15.1
W.EXT.GR	0.0	6.7	0.00	73.3	14.6
W.EXT.SNW	0.0	6.7	0.00	62.8	12.5
W.EXT.SSE	0.0	6.7	0.00	69.8	14.0
W.EXT.PO	0.0	6.7	0.00	70.2	14.1
WOWF.YOP.GN	4.2	28.1	0.50	181.9	32.0
WOWF.YOW.GN	3.9	20.5	0.00	165.2	37.0
WOWF.EOP.GN	1.3	26.5	0.30	132.2	24.6
WOWF.EOW.GN	1.3	22.5	0.00	126.6	29.8
WOWF.YOP.GS	4.3	25.0	0.15	169.6	24.1
WOWF.YOW.GS	4.3	22.3	0.00	167.5	28.0
WOWF.EOP.GS	1.3	25.3	0.08	120.6	17.9
WOWF.EOW.GS	1.3	24.3	0.00	123.4	21.9
WOWF.YOP.FN	4.4	32.6	0.47	189.6	29.9
WOWF.YOW.FN	4.1	24.1	0.00	179.0	37.2
WOWF.EOP.FN	1.3	31.1	0.29	131.9	21.8
WOWF.EOW.FN	1.3	26.1	0.00	130.7	28.3

WOWF.YOP.FS	4.3	34.2	0.62	192.1	30.6
WOWF.YOW.FS	3.9	23.2	0.00	177.9	38.3
WOWF.EOP.FS	1.3	32.4	0.39	136.9	22.6
WOWF.EOW.FS	1.3	25.6	0.00	135.3	30.4
WOWF.YOP.IN	4.2	28.0	0.35	164.2	29.6
WOWF.YOW.IN	3.8	21.9	0.00	164.2	41.8
WOWF.EOP.IN	1.3	28.5	0.24	124.4	23.4
WOWF.EOW.IN	1.3	24.3	0.00	127.8	33.9
WOWF.YOP.IS	3.9	35.4	0.74	185.2	28.9
WOWF.YOW.IS	3.5	22.6	0.00	187.7	53.1
WOWF.EOP.IS	1.3	33.6	0.52	140.1	22.9
WOWF.EOW.IS	1.3	25.4	0.00	153.7	44.6
WOWF.YOP.NL	4.3	26.6	0.43	182.9	35.3
WOWF.YOW.NL	3.9	19.2	0.00	172.1	44.3
WOWF.EOP.NL	1.3	24.7	0.25	131.8	27.0
WOWF.EOW.NL	1.3	20.8	0.00	131.9	35.8
WOWF.YOP.BE	4.3	28.9	0.41	180.9	31.4
WOWF.YOW.BE	4.0	22.3	0.00	166.9	35.5
WOWF.EOP.BE	1.3	27.9	0.24	130.7	24.4
WOWF.EOW.BE	1.3	23.9	0.00	127.7	28.8
WOWF.YOP.UKS	4.5	32.4	0.50	213.9	36.9
WOWF.YOW.UKS	4.0	23.7	0.00	194.4	43.2
WOWF.EOP.UKS	1.3	30.5	0.30	148.5	26.7
WOWF.EOW.UKS	1.3	25.0	0.00	142.0	33.1
WOWF.YOP.UKN	4.3	31.6	0.40	212.7	37.4
WOWF.YOW.UKN	4.1	25.0	0.00	197.4	41.4
WOWF.EOP.UKN	1.3	29.8	0.23	151.5	28.4
WOWF.EOW.UKN	1.3	26.2	0.00	147.2	32.6
WOWF.YOP.IR	4.4	30.0	0.24	215.0	37.0
WOWF.YOW.IR	4.2	25.0	0.00	208.0	42.0
WOWF.EOP.IR	1.3	29.0	0.14	152.0	28.0
WOWF.EOW.IR	1.3	27.0	0.00	151.0	33.0
WOWF.YOP.DE	4.1	38.0	1.14	189.0	32.0
WOWF.YOW.DE	3.3	21.0	0.00	142.0	33.0
WOWF.EOP.DE	1.3	33.0	0.72	138.0	25.0
WOWF.EOW.DE	1.3	23.0	0.00	115.0	28.0
WOWF.YOP.GR	3.4	29.8	0.66	149.9	22.0
WOWF.YOW.GR	3.1	19.7	0.00	163.6	45.5
WOWF.EOP.GR	1.3	30.8	0.53	123.2	18.6
WOWF.EOW.GR	1.3	22.7	0.00	138.7	39.5
WOWF.YOP.SNW	3.8	58.7	2.31	192.2	24.3
WOWF.YOW.SNW	2.6	21.3	0.00	125.4	32.5
WOWF.EOP.SNW	1.3	52.4	1.75	145.0	19.1
WOWF.EOW.SNW	1.3	24.5	0.00	106.6	28.5
WOWF.YOP.SSE	3.7	49.0	1.64	180.4	22.7
WOWF.YOW.SSE	2.8	21.7	0.00	152.0	39.9
WOWF.EOP.SSE	1.3	45.3	1.25	140.0	18.3
WOWF.EOW.SSE	1.3	25.0	0.00	130.6	35.9
WOWF.YOP.PO	3.7	59.2	2.12	196.9	32.9
WOWF.YOW.PO	2.8	23.0	0.00	154.5	51.3
WOWF.EOP.PO	1.3	53.1	1.62	152.0	26.5
WOWF.EOW.PO	1.3	26.4	0.00	133.0	45.0
G.EXT.GN	0.0	3.4	0.00	0.0	0.0
G.EXT.GS	0.0	3.4	0.00	0.0	0.0
G.EXT.FN	0.0	3.4	0.00	0.0	0.0
G.EXT.FS	0.0	3.4	0.00	0.0	0.0
G.EXT.IN	0.0	3.4	0.00	0.0	0.0
G.EXT.IS	0.0	3.4	0.00	0.0	0.0
G.EXT.NL	0.0	3.4	0.00	0.0	0.0
G.EXT.BE	0.0	3.4	0.00	0.0	0.0
G.EXT.UKS	0.0	3.4	0.00	0.0	0.0
G.EXT.UKN	0.0	3.4	0.00	0.0	0.0
G.EXT.IR	0.0	3.4	0.00	0.0	0.0
G.EXT.DE	0.0	3.4	0.00	0.0	0.0
G.EXT.GR	0.0	3.4	0.00	0.0	0.0
G.EXT.SNW	0.0	3.4	0.00	0.0	0.0
G.EXT.SSE	0.0	3.4	0.00	0.0	0.0
G.EXT.PO	0.0	3.4	0.00	0.0	0.0

CR_OUTP.DAT (A)

WHT...EXG - see Appendix IV, SET CRP, page IV-1
 WOWFB.YOP.GN - crop rotation Wheat-Oilseed-Wheat-Fieldbean-Sugarbeet, Yield Oriented Potential production in Germany North

	WHT	CRN	POT	SBT	OSD	FBN	MWG	SLM	GRS	EXG
	[ton·ha ⁻¹ ·yr ⁻¹]									
WOWFB.YOP.GN	3.88	0.00	0.00	17.38	0.90	1.62	0.0	0.0	0.0	0.0
WOWFB.YOW.GN	3.22	0.00	0.00	14.48	0.75	1.18	0.0	0.0	0.0	0.0
WOWFB.EOP.GN	3.00	0.00	0.00	15.30	0.69	1.08	0.0	0.0	0.0	0.0
WOWFB.EOW.GN	2.62	0.00	0.00	12.75	0.59	0.82	0.0	0.0	0.0	0.0
WOWFB.YOP.GS	3.88	0.00	0.00	19.56	0.82	1.62	0.0	0.0	0.0	0.0
WOWFB.YOW.GS	3.58	0.00	0.00	17.30	0.80	1.26	0.0	0.0	0.0	0.0
WOWFB.EOP.GS	2.96	0.00	0.00	17.26	0.62	1.09	0.0	0.0	0.0	0.0
WOWFB.EOW.GS	2.84	0.00	0.00	15.26	0.61	0.88	0.0	0.0	0.0	0.0
WOWFB.YOP.FN	4.29	0.00	0.00	20.53	0.86	1.79	0.0	0.0	0.0	0.0
WOWFB.YOW.FN	3.70	0.00	0.00	14.51	0.81	1.19	0.0	0.0	0.0	0.0
WOWFB.EOP.FN	3.18	0.00	0.00	18.13	0.64	1.22	0.0	0.0	0.0	0.0
WOWFB.EOW.FN	2.87	0.00	0.00	12.81	0.61	0.84	0.0	0.0	0.0	0.0
WOWFB.YOP.FS	4.23	0.00	0.00	21.82	0.80	1.76	0.0	0.0	0.0	0.0
WOWFB.YOW.FS	3.38	0.00	0.00	12.51	0.70	1.06	0.0	0.0	0.0	0.0
WOWFB.EOP.FS	3.17	0.00	0.00	19.26	0.62	1.22	0.0	0.0	0.0	0.0
WOWFB.EOW.FS	2.69	0.00	0.00	11.06	0.56	0.76	0.0	0.0	0.0	0.0
WOWFB.YOP.IN	3.54	0.00	0.00	19.37	0.67	1.48	0.0	0.0	0.0	0.0
WOWFB.YOW.IN	2.98	0.00	0.00	10.41	0.62	0.91	0.0	0.0	0.0	0.0
WOWFB.EOP.IN	2.87	0.00	0.00	17.09	0.55	1.05	0.0	0.0	0.0	0.0
WOWFB.EOW.IN	2.49	0.00	0.00	9.20	0.52	0.67	0.0	0.0	0.0	0.0
WOWFB.YOP.IS	3.98	0.00	0.00	19.88	0.65	1.66	0.0	0.0	0.0	0.0
WOWFB.YOW.IS	2.91	0.00	0.00	6.51	0.51	0.54	0.0	0.0	0.0	0.0
WOWFB.EOP.IS	3.17	0.00	0.00	17.61	0.54	1.30	0.0	0.0	0.0	0.0
WOWFB.EOW.IS	2.49	0.00	0.00	5.82	0.44	0.44	0.0	0.0	0.0	0.0
WOWFB.YOP.NL	3.91	0.00	0.00	16.90	0.89	1.63	0.0	0.0	0.0	0.0
WOWFB.YOW.NL	3.22	0.00	0.00	14.60	0.75	1.19	0.0	0.0	0.0	0.0
WOWFB.EOP.NL	3.00	0.00	0.00	14.86	0.70	1.08	0.0	0.0	0.0	0.0
WOWFB.EOW.NL	2.63	0.00	0.00	12.84	0.61	0.83	0.0	0.0	0.0	0.0
WOWFB.YOP.BE	3.93	0.00	0.00	18.00	0.86	1.64	0.0	0.0	0.0	0.0
WOWFB.YOW.BE	3.38	0.00	0.00	14.82	0.77	1.24	0.0	0.0	0.0	0.0
WOWFB.EOP.BE	3.00	0.00	0.00	15.86	0.66	1.10	0.0	0.0	0.0	0.0
WOWFB.EOW.BE	2.73	0.00	0.00	13.06	0.60	0.85	0.0	0.0	0.0	0.0
WOWFB.YOP.UKS	4.43	0.00	0.00	16.87	0.97	1.85	0.0	0.0	0.0	0.0
WOWFB.YOW.UKS	3.41	0.00	0.00	13.27	0.81	1.19	0.0	0.0	0.0	0.0
WOWFB.EOP.UKS	3.29	0.00	0.00	14.87	0.72	1.23	0.0	0.0	0.0	0.0
WOWFB.EOW.UKS	2.67	0.00	0.00	11.70	0.62	0.83	0.0	0.0	0.0	0.0
WOWFB.YOP.UKN	4.26	0.00	0.00	12.29	1.00	1.78	0.0	0.0	0.0	0.0
WOWFB.YOW.UKN	3.73	0.00	0.00	11.51	0.87	1.39	0.0	0.0	0.0	0.0
WOWFB.EOP.UKN	3.19	0.00	0.00	10.81	0.75	1.16	0.0	0.0	0.0	0.0
WOWFB.EOW.UKN	2.90	0.00	0.00	10.12	0.67	0.95	0.0	0.0	0.0	0.0
WOWFB.YOP.IR	4.50	0.00	0.00	15.28	0.97	1.88	0.0	0.0	0.0	0.0
WOWFB.YOW.IR	4.02	0.00	0.00	13.94	0.90	1.48	0.0	0.0	0.0	0.0
WOWFB.EOP.IR	3.31	0.00	0.00	13.45	0.72	1.22	0.0	0.0	0.0	0.0
WOWFB.EOW.IR	3.05	0.00	0.00	12.27	0.69	0.99	0.0	0.0	0.0	0.0
WOWFB.YOP.DE	3.92	0.00	0.00	16.58	0.98	1.64	0.0	0.0	0.0	0.0
WOWFB.YOW.DE	2.75	0.00	0.00	12.31	0.64	0.94	0.0	0.0	0.0	0.0
WOWFB.EOP.DE	3.02	0.00	0.00	14.59	0.75	1.11	0.0	0.0	0.0	0.0
WOWFB.EOW.DE	2.33	0.00	0.00	10.83	0.52	0.68	0.0	0.0	0.0	0.0
WOWFB.YOP.GR	3.20	0.00	0.00	15.62	0.56	1.34	0.0	0.0	0.0	0.0
WOWFB.YOW.GR	2.62	0.00	0.00	8.13	0.52	0.35	0.0	0.0	0.0	0.0
WOWFB.EOP.GR	2.78	0.00	0.00	13.85	0.48	1.10	0.0	0.0	0.0	0.0
WOWFB.EOW.GR	2.33	0.00	0.00	7.25	0.45	0.29	0.0	0.0	0.0	0.0
WOWFB.YOP.SNW	4.19	0.00	0.00	21.42	0.82	1.75	0.0	0.0	0.0	0.0
WOWFB.YOW.SNW	2.00	0.00	0.00	7.07	0.57	0.31	0.0	0.0	0.0	0.0
WOWFB.EOP.SNW	3.32	0.00	0.00	19.00	0.65	1.42	0.0	0.0	0.0	0.0
WOWFB.EOW.SNW	1.77	0.00	0.00	6.31	0.47	0.24	0.0	0.0	0.0	0.0
WOWFB.YOP.SSE	3.97	0.00	0.00	18.98	0.63	1.66	0.0	0.0	0.0	0.0
WOWFB.YOW.SSE	2.77	0.00	0.00	7.99	0.46	0.37	0.0	0.0	0.0	0.0
WOWFB.EOP.SSE	3.22	0.00	0.00	16.83	0.53	1.36	0.0	0.0	0.0	0.0
WOWFB.EOW.SSE	2.37	0.00	0.00	7.14	0.40	0.30	0.0	0.0	0.0	0.0
WOWFB.YOP.PO	4.38	0.00	0.00	23.16	0.70	1.83	0.0	0.0	0.0	0.0
WOWFB.YOW.PO	2.34	0.00	0.00	4.42	0.37	0.28	0.0	0.0	0.0	0.0
WOWFB.EOP.PO	3.47	0.00	0.00	20.56	0.60	1.51	0.0	0.0	0.0	0.0
WOWFB.EOW.PO	2.02	0.00	0.00	3.99	0.33	0.24	0.0	0.0	0.0	0.0
WOW.YOP.GN	5.83	0.00	0.00	0.00	1.50	0.00	0.0	0.0	0.0	0.0

WWO.YOW.GN	4.90	0.00	0.00	0.00	1.28	0.00	0.0	0.0	0.0	0.0
WWO.EOP.GN	4.63	0.00	0.00	0.00	1.14	0.00	0.0	0.0	0.0	0.0
WWO.EOW.GN	4.03	0.00	0.00	0.00	1.00	0.00	0.0	0.0	0.0	0.0
WWO.YOP.GS	5.86	0.00	0.00	0.00	1.38	0.00	0.0	0.0	0.0	0.0
WWO.YOW.GS	5.40	0.00	0.00	0.00	1.35	0.00	0.0	0.0	0.0	0.0
WWO.EOP.GS	4.59	0.00	0.00	0.00	1.03	0.00	0.0	0.0	0.0	0.0
WWO.EOW.GS	4.34	0.00	0.00	0.00	1.02	0.00	0.0	0.0	0.0	0.0
WWO.YOP.FN	6.31	0.00	0.00	0.00	1.42	0.00	0.0	0.0	0.0	0.0
WWO.YOW.FN	5.22	0.00	0.00	0.00	1.32	0.00	0.0	0.0	0.0	0.0
WWO.EOP.FN	4.85	0.00	0.00	0.00	1.04	0.00	0.0	0.0	0.0	0.0
WWO.EOW.FN	4.16	0.00	0.00	0.00	0.98	0.00	0.0	0.0	0.0	0.0
WWO.YOP.FS	6.32	0.00	0.00	0.00	1.33	0.00	0.0	0.0	0.0	0.0
WWO.YOW.FS	5.04	0.00	0.00	0.00	1.18	0.00	0.0	0.0	0.0	0.0
WWO.EOP.FS	4.92	0.00	0.00	0.00	1.01	0.00	0.0	0.0	0.0	0.0
WWO.EOW.FS	4.09	0.00	0.00	0.00	0.91	0.00	0.0	0.0	0.0	0.0
WWO.YOP.IN	5.23	0.00	0.00	0.00	1.13	0.00	0.0	0.0	0.0	0.0
WWO.YOW.IN	4.43	0.00	0.00	0.00	1.06	0.00	0.0	0.0	0.0	0.0
WWO.EOP.IN	4.26	0.00	0.00	0.00	0.89	0.00	0.0	0.0	0.0	0.0
WWO.EOW.IN	3.68	0.00	0.00	0.00	0.84	0.00	0.0	0.0	0.0	0.0
WWO.YOP.IS	5.97	0.00	0.00	0.00	1.08	0.00	0.0	0.0	0.0	0.0
WWO.YOW.IS	4.44	0.00	0.00	0.00	0.87	0.00	0.0	0.0	0.0	0.0
WWO.EOP.IS	4.86	0.00	0.00	0.00	0.87	0.00	0.0	0.0	0.0	0.0
WWO.EOW.IS	3.80	0.00	0.00	0.00	0.72	0.00	0.0	0.0	0.0	0.0
WWO.YOP.NL	5.86	0.00	0.00	0.00	1.48	0.00	0.0	0.0	0.0	0.0
WWO.YOW.NL	4.97	0.00	0.00	0.00	1.28	0.00	0.0	0.0	0.0	0.0
WWO.EOP.NL	4.61	0.00	0.00	0.00	1.13	0.00	0.0	0.0	0.0	0.0
WWO.EOW.NL	4.07	0.00	0.00	0.00	1.01	0.00	0.0	0.0	0.0	0.0
WWO.YOP.BE	5.88	0.00	0.00	0.00	1.43	0.00	0.0	0.0	0.0	0.0
WWO.YOW.BE	5.05	0.00	0.00	0.00	1.27	0.00	0.0	0.0	0.0	0.0
WWO.EOP.BE	4.64	0.00	0.00	0.00	1.09	0.00	0.0	0.0	0.0	0.0
WWO.EOW.BE	4.14	0.00	0.00	0.00	0.99	0.00	0.0	0.0	0.0	0.0
WWO.YOP.UKS	6.63	0.00	0.00	0.00	1.61	0.00	0.0	0.0	0.0	0.0
WWO.YOW.UKS	5.30	0.00	0.00	0.00	1.39	0.00	0.0	0.0	0.0	0.0
WWO.EOP.UKS	5.05	0.00	0.00	0.00	1.17	0.00	0.0	0.0	0.0	0.0
WWO.EOW.UKS	4.21	0.00	0.00	0.00	1.04	0.00	0.0	0.0	0.0	0.0
WWO.YOP.UKN	6.40	0.00	0.00	0.00	1.67	0.00	0.0	0.0	0.0	0.0
WWO.YOW.UKN	5.59	0.00	0.00	0.00	1.45	0.00	0.0	0.0	0.0	0.0
WWO.EOP.UKN	4.99	0.00	0.00	0.00	1.25	0.00	0.0	0.0	0.0	0.0
WWO.EOW.UKN	4.49	0.00	0.00	0.00	1.12	0.00	0.0	0.0	0.0	0.0
WWO.YOP.IR	6.74	0.00	0.00	0.00	1.61	0.00	0.0	0.0	0.0	0.0
WWO.YOW.IR	6.04	0.00	0.00	0.00	1.51	0.00	0.0	0.0	0.0	0.0
WWO.EOP.IR	5.18	0.00	0.00	0.00	1.21	0.00	0.0	0.0	0.0	0.0
WWO.EOW.IR	4.74	0.00	0.00	0.00	1.14	0.00	0.0	0.0	0.0	0.0
WWO.YOP.DE	5.88	0.00	0.00	0.00	1.64	0.00	0.0	0.0	0.0	0.0
WWO.YOW.DE	4.15	0.00	0.00	0.00	1.08	0.00	0.0	0.0	0.0	0.0
WWO.EOP.DE	4.70	0.00	0.00	0.00	1.26	0.00	0.0	0.0	0.0	0.0
WWO.EOW.DE	3.54	0.00	0.00	0.00	0.88	0.00	0.0	0.0	0.0	0.0
WWO.YOP.GR	4.82	0.00	0.00	0.00	0.94	0.00	0.0	0.0	0.0	0.0
WWO.YOW.GR	3.82	0.00	0.00	0.00	0.85	0.00	0.0	0.0	0.0	0.0
WWO.EOP.GR	4.20	0.00	0.00	0.00	0.78	0.00	0.0	0.0	0.0	0.0
WWO.EOW.GR	3.39	0.00	0.00	0.00	0.72	0.00	0.0	0.0	0.0	0.0
WWO.YOP.SNW	6.31	0.00	0.00	0.00	1.36	0.00	0.0	0.0	0.0	0.0
WWO.YOW.SNW	2.39	0.00	0.00	0.00	0.80	0.00	0.0	0.0	0.0	0.0
WWO.EOP.SNW	5.16	0.00	0.00	0.00	1.06	0.00	0.0	0.0	0.0	0.0
WWO.EOW.SNW	2.12	0.00	0.00	0.00	0.68	0.00	0.0	0.0	0.0	0.0
WWO.YOP.SSE	5.98	0.00	0.00	0.00	1.08	0.00	0.0	0.0	0.0	0.0
WWO.YOW.SSE	3.35	0.00	0.00	0.00	0.66	0.00	0.0	0.0	0.0	0.0
WWO.EOP.SSE	4.96	0.00	0.00	0.00	0.88	0.00	0.0	0.0	0.0	0.0
WWO.EOW.SSE	2.97	0.00	0.00	0.00	0.57	0.00	0.0	0.0	0.0	0.0
WWO.YOP.PO	6.53	0.00	0.00	0.00	1.19	0.00	0.0	0.0	0.0	0.0
WWO.YOW.PO	3.39	0.00	0.00	0.00	0.66	0.00	0.0	0.0	0.0	0.0
WWO.EOP.PO	5.32	0.00	0.00	0.00	1.00	0.00	0.0	0.0	0.0	0.0
WWO.EOW.PO	2.98	0.00	0.00	0.00	0.57	0.00	0.0	0.0	0.0	0.0
G.YOP.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	85.3	0.0
G.YOW.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	73.1	0.0
G.EOP.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	73.0	0.0
G.EOW.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	62.5	0.0
G.YOP.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	87.1	0.0
G.YOW.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	75.7	0.0
G.EOP.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	74.5	0.0
G.EOW.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	64.7	0.0
G.YOP.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	99.9	0.0
G.YOW.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	73.1	0.0
G.EOP.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	85.4	0.0

G.EOW.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	62.5	0.0
G.YOP.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	110.3	0.0
G.YOW.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	72.8	0.0
G.EOP.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	94.3	0.0
G.EOW.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	62.2	0.0
G.YOP.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	106.2	0.0
G.YOW.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	67.1	0.0
G.EOP.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	90.8	0.0
G.EOW.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	57.4	0.0
G.YOP.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	122.8	0.0
G.YOW.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	43.0	0.0
G.EOP.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	105.0	0.0
G.EOW.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	36.8	0.0
G.YOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	86.8	0.0
G.YOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	78.6	0.0
G.EOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	74.2	0.0
G.EOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	67.2	0.0
G.YOP.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	91.0	0.0
G.YOW.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	77.2	0.0
G.EOP.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	77.8	0.0
G.EOW.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	66.0	0.0
G.YOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	93.2	0.0
G.YOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	78.9	0.0
G.EOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	79.7	0.0
G.EOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	67.4	0.0
G.YOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	85.5	0.0
G.YOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	78.7	0.0
G.EOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	73.1	0.0
G.EOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	67.3	0.0
G.YOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	93.0	0.0
G.YOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	83.8	0.0
G.EOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	79.5	0.0
G.EOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	71.7	0.0
G.YOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	81.0	0.0
G.YOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	57.4	0.0
G.EOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	69.3	0.0
G.EOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	49.1	0.0
G.YOP.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	112.0	0.0
G.YOW.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	42.7	0.0
G.EOP.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	95.8	0.0
G.EOW.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	36.5	0.0
G.YOP.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	115.4	0.0
G.YOW.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	39.1	0.0
G.EOP.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	98.7	0.0
G.EOW.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	33.4	0.0
G.YOP.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	120.6	0.0
G.YOW.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	42.1	0.0
G.EOP.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	103.1	0.0
G.EOW.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	36.0	0.0
G.YOP.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	126.3	0.0
G.YOW.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	38.8	0.0
G.EOP.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	108.0	0.0
G.EOW.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	33.1	0.0
PWBW.YOP.GN	4.86	0.00	15.90	19.56	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.GN	4.02	0.00	12.46	16.30	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.GN	3.72	0.00	11.62	17.21	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.GN	3.24	0.00	9.36	14.34	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.GS	4.85	0.00	15.82	22.00	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.GS	4.47	0.00	12.62	19.47	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.GS	3.65	0.00	11.84	19.42	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.GS	3.50	0.00	9.66	17.17	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.FN	5.36	0.00	15.95	23.10	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.FN	4.63	0.00	10.26	16.32	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.FN	3.92	0.00	12.21	20.40	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.FN	3.53	0.00	8.14	14.43	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.FS	5.28	0.00	15.83	24.55	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.FS	4.22	0.00	9.38	14.07	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.FS	3.92	0.00	12.15	21.68	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.FS	3.31	0.00	7.46	12.46	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.IN	4.43	0.00	14.49	21.79	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.IN	3.72	0.00	8.66	11.71	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.IN	3.56	0.00	11.19	19.23	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.IN	3.08	0.00	6.94	10.37	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.IS	4.97	0.00	15.13	22.37	0.00	0.00	0.0	0.0	0.0	0.0

PWBW.YOW.IS	3.63	0.00	5.79	7.32	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.IS	3.92	0.00	12.49	19.81	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.IS	3.08	0.00	5.02	6.55	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.NL	4.88	0.00	15.65	19.02	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.NL	4.02	0.00	13.46	16.43	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.NL	3.73	0.00	11.36	16.71	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.NL	3.27	0.00	9.95	14.44	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.BE	4.91	0.00	15.53	20.25	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.BE	4.22	0.00	12.16	16.67	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.BE	3.70	0.00	11.48	17.84	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.BE	3.37	0.00	9.20	14.69	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.UKS	5.54	0.00	16.05	18.98	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.UKS	4.27	0.00	10.72	14.93	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.UKS	4.07	0.00	11.91	16.73	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.UKS	3.31	0.00	8.28	13.16	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.UKN	5.33	0.00	15.02	13.83	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.UKN	4.66	0.00	12.90	12.94	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.UKN	3.96	0.00	11.00	12.15	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.UKN	3.60	0.00	9.59	11.39	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.IR	5.62	0.00	15.49	17.19	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.IR	5.03	0.00	12.12	15.68	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.IR	4.09	0.00	11.38	15.13	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.IR	3.77	0.00	9.14	13.80	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.DE	4.90	0.00	16.57	18.65	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.DE	3.44	0.00	9.81	13.85	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.DE	3.75	0.00	12.21	16.41	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.DE	2.89	0.00	7.60	12.19	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.GR	4.00	0.00	12.93	17.57	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.GR	3.27	0.00	7.63	9.14	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.GR	3.44	0.00	11.08	15.58	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.GR	2.88	0.00	6.69	8.20	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.SNW	5.23	0.00	15.38	24.11	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.SNW	2.50	0.00	6.71	7.95	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.SNW	4.12	0.00	12.99	21.37	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.SNW	2.19	0.00	5.85	7.17	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.SSE	4.96	0.00	14.62	21.36	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.SSE	3.46	0.00	7.46	8.98	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.SSE	3.99	0.00	12.48	18.94	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.SSE	2.94	0.00	6.50	8.03	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOP.PO	5.43	0.00	15.93	26.11	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.YOW.PO	2.91	0.00	4.12	5.01	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOP.PO	4.29	0.00	13.57	23.16	0.00	0.00	0.0	0.0	0.0	0.0
PWBW.EOW.PO	2.50	0.00	3.72	4.60	0.00	0.00	0.0	0.0	0.0	0.0
PFBW.YOP.GN	2.43	0.00	15.90	19.56	0.00	1.92	0.0	0.0	0.0	0.0
PFBW.YOW.GN	2.01	0.00	12.46	16.30	0.00	1.39	0.0	0.0	0.0	0.0
PFBW.EOP.GN	1.88	0.00	11.62	17.21	0.00	1.19	0.0	0.0	0.0	0.0
PFBW.EOW.GN	1.63	0.00	9.36	14.34	0.00	0.90	0.0	0.0	0.0	0.0
PFBW.YOP.GS	2.43	0.00	15.82	22.00	0.00	1.92	0.0	0.0	0.0	0.0
PFBW.YOW.GS	2.23	0.00	12.62	19.47	0.00	1.50	0.0	0.0	0.0	0.0
PFBW.EOP.GS	1.85	0.00	11.84	19.42	0.00	1.19	0.0	0.0	0.0	0.0
PFBW.EOW.GS	1.77	0.00	9.66	17.17	0.00	0.96	0.0	0.0	0.0	0.0
PFBW.YOP.FN	2.68	0.00	15.95	23.10	0.00	2.12	0.0	0.0	0.0	0.0
PFBW.YOW.FN	2.31	0.00	10.26	16.32	0.00	1.41	0.0	0.0	0.0	0.0
PFBW.EOP.FN	1.99	0.00	12.21	20.40	0.00	1.33	0.0	0.0	0.0	0.0
PFBW.EOW.FN	1.79	0.00	8.14	14.43	0.00	0.92	0.0	0.0	0.0	0.0
PFBW.YOP.FS	2.64	0.00	15.83	24.55	0.00	2.09	0.0	0.0	0.0	0.0
PFBW.YOW.FS	2.11	0.00	9.38	14.07	0.00	1.26	0.0	0.0	0.0	0.0
PFBW.EOP.FS	1.98	0.00	12.15	21.68	0.00	1.34	0.0	0.0	0.0	0.0
PFBW.EOW.FS	1.68	0.00	7.46	12.46	0.00	0.83	0.0	0.0	0.0	0.0
PFBW.YOP.IN	2.22	0.00	14.49	21.79	0.00	1.75	0.0	0.0	0.0	0.0
PFBW.YOW.IN	1.86	0.00	8.66	11.71	0.00	1.08	0.0	0.0	0.0	0.0
PFBW.EOP.IN	1.80	0.00	11.19	19.23	0.00	1.14	0.0	0.0	0.0	0.0
PFBW.EOW.IN	1.56	0.00	6.94	10.37	0.00	0.73	0.0	0.0	0.0	0.0
PFBW.YOP.IS	2.49	0.00	15.13	22.37	0.00	1.97	0.0	0.0	0.0	0.0
PFBW.YOW.IS	1.82	0.00	5.79	7.32	0.00	0.64	0.0	0.0	0.0	0.0
PFBW.EOP.IS	1.98	0.00	12.49	19.81	0.00	1.44	0.0	0.0	0.0	0.0
PFBW.EOW.IS	1.56	0.00	5.02	6.55	0.00	0.48	0.0	0.0	0.0	0.0
PFBW.YOP.NL	2.44	0.00	15.65	19.02	0.00	1.93	0.0	0.0	0.0	0.0
PFBW.YOW.NL	2.01	0.00	13.46	16.43	0.00	1.41	0.0	0.0	0.0	0.0
PFBW.EOP.NL	1.87	0.00	11.36	16.71	0.00	1.19	0.0	0.0	0.0	0.0
PFBW.EOW.NL	1.64	0.00	9.95	14.44	0.00	0.91	0.0	0.0	0.0	0.0
PFBW.YOP.BE	2.45	0.00	15.53	20.25	0.00	1.94	0.0	0.0	0.0	0.0
PFBW.YOW.BE	2.11	0.00	12.16	16.67	0.00	1.47	0.0	0.0	0.0	0.0
PFBW.EOP.BE	1.87	0.00	11.48	17.84	0.00	1.21	0.0	0.0	0.0	0.0

PFBW.EOW.BE	1.71	0.00	9.20	14.69	0.00	0.94	0.0	0.0	0.0	0.0
PFBW.YOP.UKS	2.77	0.00	16.05	18.98	0.00	2.19	0.0	0.0	0.0	0.0
PFBW.YOW.UKS	2.13	0.00	10.72	14.93	0.00	1.41	0.0	0.0	0.0	0.0
PFBW.EOP.UKS	2.05	0.00	11.91	16.73	0.00	1.33	0.0	0.0	0.0	0.0
PFBW.EOW.UKS	1.67	0.00	8.28	13.16	0.00	0.90	0.0	0.0	0.0	0.0
PFBW.YOP.UKN	2.66	0.00	15.02	13.83	0.00	2.11	0.0	0.0	0.0	0.0
PFBW.YOW.UKN	2.33	0.00	12.90	12.94	0.00	1.65	0.0	0.0	0.0	0.0
PFBW.EOP.UKN	2.00	0.00	11.00	12.15	0.00	1.28	0.0	0.0	0.0	0.0
PFBW.EOW.UKN	1.81	0.00	9.59	11.39	0.00	1.04	0.0	0.0	0.0	0.0
PFBW.YOP.IR	2.81	0.00	15.49	17.19	0.00	2.22	0.0	0.0	0.0	0.0
PFBW.YOW.IR	2.52	0.00	12.12	15.68	0.00	1.75	0.0	0.0	0.0	0.0
PFBW.EOP.IR	2.07	0.00	11.38	15.13	0.00	1.33	0.0	0.0	0.0	0.0
PFBW.EOW.IR	1.90	0.00	9.14	13.80	0.00	1.09	0.0	0.0	0.0	0.0
PFBW.YOP.DE	2.45	0.00	16.57	18.65	0.00	1.94	0.0	0.0	0.0	0.0
PFBW.YOW.DE	1.72	0.00	9.81	13.85	0.00	1.11	0.0	0.0	0.0	0.0
PFBW.EOP.DE	1.89	0.00	12.21	16.41	0.00	1.20	0.0	0.0	0.0	0.0
PFBW.EOW.DE	1.45	0.00	7.60	12.19	0.00	0.73	0.0	0.0	0.0	0.0
PFBW.YOP.GR	2.00	0.00	12.93	17.57	0.00	1.58	0.0	0.0	0.0	0.0
PFBW.YOW.GR	1.64	0.00	7.63	9.14	0.00	0.42	0.0	0.0	0.0	0.0
PFBW.EOP.GR	1.74	0.00	11.08	15.58	0.00	1.23	0.0	0.0	0.0	0.0
PFBW.EOW.GR	1.46	0.00	6.69	8.20	0.00	0.33	0.0	0.0	0.0	0.0
PFBW.YOP.SNW	2.62	0.00	15.38	24.11	0.00	2.07	0.0	0.0	0.0	0.0
PFBW.YOW.SNW	1.25	0.00	6.71	7.95	0.00	0.37	0.0	0.0	0.0	0.0
PFBW.EOP.SNW	2.08	0.00	12.99	21.37	0.00	1.59	0.0	0.0	0.0	0.0
PFBW.EOW.SNW	1.10	0.00	5.85	7.17	0.00	0.28	0.0	0.0	0.0	0.0
PFBW.YOP.SSE	2.49	0.00	14.62	21.36	0.00	1.97	0.0	0.0	0.0	0.0
PFBW.YOW.SSE	1.73	0.00	7.46	8.98	0.00	0.44	0.0	0.0	0.0	0.0
PFBW.EOP.SSE	2.01	0.00	12.48	18.94	0.00	1.53	0.0	0.0	0.0	0.0
PFBW.EOW.SSE	1.49	0.00	6.50	8.03	0.00	0.34	0.0	0.0	0.0	0.0
PFBW.YOP.PO	2.71	0.00	15.93	26.11	0.00	2.16	0.0	0.0	0.0	0.0
PFBW.YOW.PO	1.45	0.00	4.12	5.01	0.00	0.33	0.0	0.0	0.0	0.0
PFBW.EOP.PO	2.15	0.00	13.57	23.16	0.00	1.69	0.0	0.0	0.0	0.0
PFBW.EOW.PO	1.25	0.00	3.72	4.60	0.00	0.26	0.0	0.0	0.0	0.0
CWOF.YOP.GN	2.37	3.59	0.00	0.00	1.01	1.88	0.0	0.0	0.0	0.0
CWOF.YOW.GN	1.99	2.78	0.00	0.00	0.98	1.20	0.0	0.0	0.0	0.0
CWOF.EOP.GN	1.90	3.41	0.00	0.00	0.77	1.30	0.0	0.0	0.0	0.0
CWOF.EOW.GN	1.64	2.64	0.00	0.00	0.76	0.88	0.0	0.0	0.0	0.0
CWOF.YOP.GS	2.39	3.63	0.00	0.00	1.02	1.89	0.0	0.0	0.0	0.0
CWOF.YOW.GS	2.15	3.10	0.00	0.00	1.00	1.41	0.0	0.0	0.0	0.0
CWOF.EOP.GS	1.86	3.41	0.00	0.00	0.76	1.29	0.0	0.0	0.0	0.0
CWOF.EOW.GS	1.72	2.92	0.00	0.00	0.75	1.00	0.0	0.0	0.0	0.0
CWOF.YOP.FN	2.60	3.70	0.00	0.00	1.05	2.05	0.0	0.0	0.0	0.0
CWOF.YOW.FN	2.09	2.39	0.00	0.00	0.97	1.25	0.0	0.0	0.0	0.0
CWOF.EOP.FN	1.93	3.49	0.00	0.00	0.77	1.42	0.0	0.0	0.0	0.0
CWOF.EOW.FN	1.64	2.25	0.00	0.00	0.72	0.91	0.0	0.0	0.0	0.0
CWOF.YOP.FS	2.63	3.88	0.00	0.00	0.98	2.08	0.0	0.0	0.0	0.0
CWOF.YOW.FS	2.13	2.09	0.00	0.00	0.87	1.26	0.0	0.0	0.0	0.0
CWOF.EOP.FS	1.96	3.68	0.00	0.00	0.75	1.45	0.0	0.0	0.0	0.0
CWOF.EOW.FS	1.69	1.97	0.00	0.00	0.68	0.91	0.0	0.0	0.0	0.0
CWOF.YOP.IN	2.18	3.49	0.00	0.00	0.85	1.73	0.0	0.0	0.0	0.0
CWOF.YOW.IN	1.85	1.83	0.00	0.00	0.80	1.12	0.0	0.0	0.0	0.0
CWOF.EOP.IN	1.74	3.30	0.00	0.00	0.67	1.22	0.0	0.0	0.0	0.0
CWOF.EOW.IN	1.51	1.72	0.00	0.00	0.63	0.82	0.0	0.0	0.0	0.0
CWOF.YOP.IS	2.49	3.42	0.00	0.00	0.81	1.97	0.0	0.0	0.0	0.0
CWOF.YOW.IS	1.85	0.22	0.00	0.00	0.65	0.64	0.0	0.0	0.0	0.0
CWOF.EOP.IS	1.96	3.31	0.00	0.00	0.65	1.55	0.0	0.0	0.0	0.0
CWOF.EOW.IS	1.56	0.21	0.00	0.00	0.54	0.52	0.0	0.0	0.0	0.0
CWOF.YOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOP.BE	2.63	3.61	0.00	0.00	1.09	2.08	0.0	0.0	0.0	0.0
CWOF.YOW.BE	1.97	2.12	0.00	0.00	0.96	1.15	0.0	0.0	0.0	0.0
CWOF.EOP.BE	1.97	3.43	0.00	0.00	0.81	1.45	0.0	0.0	0.0	0.0
CWOF.EOW.BE	1.61	2.01	0.00	0.00	0.73	0.85	0.0	0.0	0.0	0.0
CWOF.YOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0

CWOF.YOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.EOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
CWOF.YOP.GR	2.00	3.09	0.00	0.00	0.70	1.59	0.0	0.0	0.0	0.0
CWOF.YOW.GR	1.59	0.77	0.00	0.00	0.63	0.40	0.0	0.0	0.0	0.0
CWOF.EOP.GR	1.73	3.01	0.00	0.00	0.58	1.31	0.0	0.0	0.0	0.0
CWOF.EOW.GR	1.40	0.75	0.00	0.00	0.54	0.33	0.0	0.0	0.0	0.0
CWOF.YOP.SNW	2.63	3.83	0.00	0.00	1.02	2.08	0.0	0.0	0.0	0.0
CWOF.YOW.SNW	1.00	0.37	0.00	0.00	0.60	0.31	0.0	0.0	0.0	0.0
CWOF.EOP.SNW	2.07	3.74	0.00	0.00	0.80	1.69	0.0	0.0	0.0	0.0
CWOF.EOW.SNW	0.87	0.36	0.00	0.00	0.50	0.25	0.0	0.0	0.0	0.0
CWOF.YOP.SSE	2.49	3.32	0.00	0.00	0.81	1.97	0.0	0.0	0.0	0.0
CWOF.YOW.SSE	1.39	0.26	0.00	0.00	0.49	0.34	0.0	0.0	0.0	0.0
CWOF.EOP.SSE	1.99	3.25	0.00	0.00	0.66	1.63	0.0	0.0	0.0	0.0
CWOF.EOW.SSE	1.22	0.25	0.00	0.00	0.43	0.28	0.0	0.0	0.0	0.0
CWOF.YOP.PO	2.72	4.00	0.00	0.00	0.89	2.15	0.0	0.0	0.0	0.0
CWOF.YOW.PO	1.42	0.12	0.00	0.00	0.49	0.36	0.0	0.0	0.0	0.0
CWOF.EOP.PO	2.14	3.94	0.00	0.00	0.74	1.76	0.0	0.0	0.0	0.0
CWOF.EOW.PO	1.23	0.12	0.00	0.00	0.43	0.30	0.0	0.0	0.0	0.0
M.YOP.GN	0.00	0.00	0.00	0.00	0.00	0.00	29.41	0.0	0.0	0.0
M.YOW.GN	0.00	0.00	0.00	0.00	0.00	0.00	25.18	0.0	0.0	0.0
M.EOP.GN	0.00	0.00	0.00	0.00	0.00	0.00	25.14	0.0	0.0	0.0
M.EOW.GN	0.00	0.00	0.00	0.00	0.00	0.00	21.53	0.0	0.0	0.0
M.YOP.GS	0.00	0.00	0.00	0.00	0.00	0.00	30.02	0.0	0.0	0.0
M.YOW.GS	0.00	0.00	0.00	0.00	0.00	0.00	26.07	0.0	0.0	0.0
M.EOP.GS	0.00	0.00	0.00	0.00	0.00	0.00	25.67	0.0	0.0	0.0
M.EOW.GS	0.00	0.00	0.00	0.00	0.00	0.00	22.29	0.0	0.0	0.0
M.YOP.FN	0.00	0.00	0.00	0.00	0.00	0.00	34.43	0.0	0.0	0.0
M.YOW.FN	0.00	0.00	0.00	0.00	0.00	0.00	25.18	0.0	0.0	0.0
M.EOP.FN	0.00	0.00	0.00	0.00	0.00	0.00	29.44	0.0	0.0	0.0
M.EOW.FN	0.00	0.00	0.00	0.00	0.00	0.00	21.53	0.0	0.0	0.0
M.YOP.FS	0.00	0.00	0.00	0.00	0.00	0.00	38.02	0.0	0.0	0.0
M.YOW.FS	0.00	0.00	0.00	0.00	0.00	0.00	25.09	0.0	0.0	0.0
M.EOP.FS	0.00	0.00	0.00	0.00	0.00	0.00	32.50	0.0	0.0	0.0
M.EOW.FS	0.00	0.00	0.00	0.00	0.00	0.00	21.45	0.0	0.0	0.0
M.YOP.IN	0.00	0.00	0.00	0.00	0.00	0.00	36.60	0.0	0.0	0.0
M.YOW.IN	0.00	0.00	0.00	0.00	0.00	0.00	23.13	0.0	0.0	0.0
M.EOP.IN	0.00	0.00	0.00	0.00	0.00	0.00	31.29	0.0	0.0	0.0
M.EOW.IN	0.00	0.00	0.00	0.00	0.00	0.00	19.77	0.0	0.0	0.0
M.YOP.IS	0.00	0.00	0.00	0.00	0.00	0.00	42.32	0.0	0.0	0.0
M.YOW.IS	0.00	0.00	0.00	0.00	0.00	0.00	14.81	0.0	0.0	0.0
M.EOP.IS	0.00	0.00	0.00	0.00	0.00	0.00	36.19	0.0	0.0	0.0
M.EOW.IS	0.00	0.00	0.00	0.00	0.00	0.00	12.66	0.0	0.0	0.0
M.YOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	29.91	0.0	0.0	0.0
M.YOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	27.08	0.0	0.0	0.0
M.EOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	25.57	0.0	0.0	0.0
M.EOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	23.15	0.0	0.0	0.0
M.YOP.BE	0.00	0.00	0.00	0.00	0.00	0.00	31.35	0.0	0.0	0.0
M.YOW.BE	0.00	0.00	0.00	0.00	0.00	0.00	26.59	0.0	0.0	0.0
M.EOP.BE	0.00	0.00	0.00	0.00	0.00	0.00	26.80	0.0	0.0	0.0
M.EOW.BE	0.00	0.00	0.00	0.00	0.00	0.00	22.74	0.0	0.0	0.0
M.YOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	32.11	0.0	0.0	0.0
M.YOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	27.18	0.0	0.0	0.0
M.EOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	27.45	0.0	0.0	0.0
M.EOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	23.23	0.0	0.0	0.0
M.YOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	29.46	0.0	0.0	0.0
M.YOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	27.11	0.0	0.0	0.0
M.EOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	25.18	0.0	0.0	0.0
M.EOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	23.18	0.0	0.0	0.0
M.YOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	32.04	0.0	0.0	0.0
M.YOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	28.88	0.0	0.0	0.0
M.EOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	27.40	0.0	0.0	0.0
M.EOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	24.69	0.0	0.0	0.0
M.YOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	27.91	0.0	0.0	0.0
M.YOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	19.79	0.0	0.0	0.0
M.EOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	23.86	0.0	0.0	0.0
M.EOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	16.92	0.0	0.0	0.0
M.YOP.GR	0.00	0.00	0.00	0.00	0.00	0.00	38.60	0.0	0.0	0.0
M.YOW.GR	0.00	0.00	0.00	0.00	0.00	0.00	14.71	0.0	0.0	0.0
M.EOP.GR	0.00	0.00	0.00	0.00	0.00	0.00	33.00	0.0	0.0	0.0

M.EOW.GR	0.00	0.00	0.00	0.00	0.00	0.00	12.58	0.0	0.0	0.0
M.YOP.SNW	0.00	0.00	0.00	0.00	0.00	0.00	39.76	0.0	0.0	0.0
M.YOW.SNW	0.00	0.00	0.00	0.00	0.00	0.00	13.47	0.0	0.0	0.0
M.EOP.SNW	0.00	0.00	0.00	0.00	0.00	0.00	34.00	0.0	0.0	0.0
M.EOW.SNW	0.00	0.00	0.00	0.00	0.00	0.00	11.52	0.0	0.0	0.0
M.YOP.SSE	0.00	0.00	0.00	0.00	0.00	0.00	41.56	0.0	0.0	0.0
M.YOW.SSE	0.00	0.00	0.00	0.00	0.00	0.00	14.49	0.0	0.0	0.0
M.EOP.SSE	0.00	0.00	0.00	0.00	0.00	0.00	35.53	0.0	0.0	0.0
M.EOW.SSE	0.00	0.00	0.00	0.00	0.00	0.00	12.39	0.0	0.0	0.0
M.YOP.PO	0.00	0.00	0.00	0.00	0.00	0.00	43.50	0.0	0.0	0.0
M.YOW.PO	0.00	0.00	0.00	0.00	0.00	0.00	13.35	0.0	0.0	0.0
M.EOP.PO	0.00	0.00	0.00	0.00	0.00	0.00	37.20	0.0	0.0	0.0
M.EOW.PO	0.00	0.00	0.00	0.00	0.00	0.00	11.42	0.0	0.0	0.0
S.YOP.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	52.7	0.0	0.0
S.YOW.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	46.2	0.0	0.0
S.EOP.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	50.0	0.0	0.0
S.EOW.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	43.8	0.0	0.0
S.YOP.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	59.4	0.0	0.0
S.YOW.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	54.3	0.0	0.0
S.EOP.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	55.9	0.0	0.0
S.EOW.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	51.2	0.0	0.0
S.YOP.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	61.9	0.0	0.0
S.YOW.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	48.2	0.0	0.0
S.EOP.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	58.3	0.0	0.0
S.EOW.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	45.4	0.0	0.0
S.YOP.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	65.6	0.0	0.0
S.YOW.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	44.4	0.0	0.0
S.EOP.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	62.3	0.0	0.0
S.EOW.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	42.1	0.0	0.0
S.YOP.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	59.3	0.0	0.0
S.YOW.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	41.6	0.0	0.0
S.EOP.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	56.0	0.0	0.0
S.EOW.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	39.3	0.0	0.0
S.YOP.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	61.3	0.0	0.0
S.YOW.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	21.1	0.0	0.0
S.EOP.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	59.2	0.0	0.0
S.EOW.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	20.4	0.0	0.0
S.YOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	50.5	0.0	0.0
S.YOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	46.0	0.0	0.0
S.EOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	47.9	0.0	0.0
S.EOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	43.6	0.0	0.0
S.YOP.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	54.8	0.0	0.0
S.YOW.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	47.2	0.0	0.0
S.EOP.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	51.9	0.0	0.0
S.EOW.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	44.7	0.0	0.0
S.YOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	43.1	0.0	0.0
S.YOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	38.8	0.0	0.0
S.EOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	40.7	0.0	0.0
S.EOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	36.6	0.0	0.0
S.YOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	21.1	0.0	0.0
S.YOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	20.6	0.0	0.0
S.EOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	20.1	0.0	0.0
S.EOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	19.7	0.0	0.0
S.YOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	34.2	0.0	0.0
S.YOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	33.5	0.0	0.0
S.EOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	32.5	0.0	0.0
S.EOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	31.9	0.0	0.0
S.YOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	51.1	0.0	0.0
S.YOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	41.0	0.0	0.0
S.EOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	49.1	0.0	0.0
S.EOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	39.3	0.0	0.0
S.YOP.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	53.6	0.0	0.0
S.YOW.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	28.7	0.0	0.0
S.EOP.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	52.3	0.0	0.0
S.EOW.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	28.0	0.0	0.0
S.YOP.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	65.7	0.0	0.0
S.YOW.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	21.6	0.0	0.0
S.EOP.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	64.3	0.0	0.0
S.EOW.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	21.1	0.0	0.0
S.YOP.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	60.1	0.0	0.0
S.YOW.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	20.0	0.0	0.0
S.EOP.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	58.8	0.0	0.0
S.EOW.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	19.6	0.0	0.0
S.YOP.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	69.7	0.0	0.0

S.YOW.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	15.7	0.0	0.0
S.EOP.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	68.8	0.0	0.0
S.EOW.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	15.4	0.0	0.0
WOWFWP.YOP.GN	4.86	0.00	11.77	0.00	0.75	1.43	0.0	0.0	0.0	0.0
WOWFWP.YOW.GN	4.02	0.00	9.23	0.00	0.63	1.03	0.0	0.0	0.0	0.0
WOWFWP.EOP.GN	3.73	0.00	8.49	0.00	0.58	0.93	0.0	0.0	0.0	0.0
WOWFWP.EOW.GN	3.25	0.00	6.85	0.00	0.50	0.72	0.0	0.0	0.0	0.0
WOWFWP.YOP.GS	4.85	0.00	11.72	0.00	0.68	1.42	0.0	0.0	0.0	0.0
WOWFWP.YOW.GS	4.47	0.00	9.35	0.00	0.67	1.11	0.0	0.0	0.0	0.0
WOWFWP.EOP.GS	3.66	0.00	8.65	0.00	0.52	0.95	0.0	0.0	0.0	0.0
WOWFWP.EOW.GS	3.51	0.00	7.08	0.00	0.51	0.76	0.0	0.0	0.0	0.0
WOWFWP.YOP.FN	5.36	0.00	11.81	0.00	0.72	1.57	0.0	0.0	0.0	0.0
WOWFWP.YOW.FN	4.63	0.00	7.60	0.00	0.67	1.05	0.0	0.0	0.0	0.0
WOWFWP.EOP.FN	3.94	0.00	8.92	0.00	0.54	1.07	0.0	0.0	0.0	0.0
WOWFWP.EOW.FN	3.55	0.00	5.98	0.00	0.50	0.74	0.0	0.0	0.0	0.0
WOWFWP.YOP.FS	5.28	0.00	11.72	0.00	0.67	1.55	0.0	0.0	0.0	0.0
WOWFWP.YOW.FS	4.22	0.00	6.95	0.00	0.59	0.93	0.0	0.0	0.0	0.0
WOWFWP.EOP.FS	3.94	0.00	8.88	0.00	0.51	1.07	0.0	0.0	0.0	0.0
WOWFWP.EOW.FS	3.33	0.00	5.48	0.00	0.46	0.66	0.0	0.0	0.0	0.0
WOWFWP.YOP.IN	4.43	0.00	10.73	0.00	0.56	1.30	0.0	0.0	0.0	0.0
WOWFWP.YOW.IN	3.72	0.00	6.42	0.00	0.51	0.81	0.0	0.0	0.0	0.0
WOWFWP.EOP.IN	3.57	0.00	8.20	0.00	0.46	0.91	0.0	0.0	0.0	0.0
WOWFWP.EOW.IN	3.09	0.00	5.10	0.00	0.43	0.59	0.0	0.0	0.0	0.0
WOWFWP.YOP.IS	4.97	0.00	11.21	0.00	0.54	1.46	0.0	0.0	0.0	0.0
WOWFWP.YOW.IS	3.63	0.00	4.29	0.00	0.42	0.47	0.0	0.0	0.0	0.0
WOWFWP.EOP.IS	3.94	0.00	9.17	0.00	0.45	1.14	0.0	0.0	0.0	0.0
WOWFWP.EOW.IS	3.09	0.00	3.70	0.00	0.36	0.38	0.0	0.0	0.0	0.0
WOWFWP.YOP.NL	4.88	0.00	11.59	0.00	0.74	1.43	0.0	0.0	0.0	0.0
WOWFWP.YOW.NL	4.02	0.00	9.97	0.00	0.62	1.05	0.0	0.0	0.0	0.0
WOWFWP.EOP.NL	3.74	0.00	8.29	0.00	0.58	0.94	0.0	0.0	0.0	0.0
WOWFWP.EOW.NL	3.28	0.00	7.27	0.00	0.51	0.72	0.0	0.0	0.0	0.0
WOWFWP.YOP.BE	4.91	0.00	11.50	0.00	0.71	1.44	0.0	0.0	0.0	0.0
WOWFWP.YOW.BE	4.22	0.00	9.01	0.00	0.64	1.09	0.0	0.0	0.0	0.0
WOWFWP.EOP.BE	3.72	0.00	8.38	0.00	0.55	0.95	0.0	0.0	0.0	0.0
WOWFWP.EOW.BE	3.38	0.00	6.74	0.00	0.50	0.74	0.0	0.0	0.0	0.0
WOWFWP.YOP.UKS	5.54	0.00	11.88	0.00	0.81	1.62	0.0	0.0	0.0	0.0
WOWFWP.YOW.UKS	4.27	0.00	7.94	0.00	0.68	1.05	0.0	0.0	0.0	0.0
WOWFWP.EOP.UKS	4.08	0.00	8.69	0.00	0.60	1.07	0.0	0.0	0.0	0.0
WOWFWP.EOW.UKS	3.32	0.00	6.07	0.00	0.52	0.72	0.0	0.0	0.0	0.0
WOWFWP.YOP.UKN	5.33	0.00	11.13	0.00	0.83	1.56	0.0	0.0	0.0	0.0
WOWFWP.YOW.UKN	4.66	0.00	9.56	0.00	0.72	1.22	0.0	0.0	0.0	0.0
WOWFWP.EOP.UKN	3.97	0.00	8.03	0.00	0.62	1.01	0.0	0.0	0.0	0.0
WOWFWP.EOW.UKN	3.61	0.00	7.02	0.00	0.56	0.82	0.0	0.0	0.0	0.0
WOWFWP.YOP.IR	5.62	0.00	11.47	0.00	0.81	1.65	0.0	0.0	0.0	0.0
WOWFWP.YOW.IR	5.03	0.00	8.98	0.00	0.75	1.29	0.0	0.0	0.0	0.0
WOWFWP.EOP.IR	4.11	0.00	8.31	0.00	0.60	1.06	0.0	0.0	0.0	0.0
WOWFWP.EOW.IR	3.78	0.00	6.70	0.00	0.57	0.86	0.0	0.0	0.0	0.0
WOWFWP.YOP.DE	4.90	0.00	12.28	0.00	0.82	1.44	0.0	0.0	0.0	0.0
WOWFWP.YOW.DE	3.44	0.00	7.27	0.00	0.53	0.82	0.0	0.0	0.0	0.0
WOWFWP.EOP.DE	3.76	0.00	8.91	0.00	0.63	0.97	0.0	0.0	0.0	0.0
WOWFWP.EOW.DE	2.89	0.00	5.58	0.00	0.44	0.59	0.0	0.0	0.0	0.0
WOWFWP.YOP.GR	4.00	0.00	9.57	0.00	0.47	1.17	0.0	0.0	0.0	0.0
WOWFWP.YOW.GR	3.27	0.00	5.65	0.00	0.43	0.31	0.0	0.0	0.0	0.0
WOWFWP.EOP.GR	3.45	0.00	8.15	0.00	0.40	0.97	0.0	0.0	0.0	0.0
WOWFWP.EOW.GR	2.89	0.00	4.93	0.00	0.37	0.25	0.0	0.0	0.0	0.0
WOWFWP.YOP.SNW	5.23	0.00	11.39	0.00	0.68	1.53	0.0	0.0	0.0	0.0
WOWFWP.YOW.SNW	2.50	0.00	4.97	0.00	0.47	0.28	0.0	0.0	0.0	0.0
WOWFWP.EOP.SNW	4.13	0.00	9.55	0.00	0.54	1.24	0.0	0.0	0.0	0.0
WOWFWP.EOW.SNW	2.19	0.00	4.31	0.00	0.39	0.22	0.0	0.0	0.0	0.0
WOWFWP.YOP.SSE	4.96	0.00	10.83	0.00	0.53	1.46	0.0	0.0	0.0	0.0
WOWFWP.YOW.SSE	3.46	0.00	5.52	0.00	0.38	0.33	0.0	0.0	0.0	0.0
WOWFWP.EOP.SSE	4.00	0.00	9.18	0.00	0.45	1.19	0.0	0.0	0.0	0.0
WOWFWP.EOW.SSE	2.95	0.00	4.79	0.00	0.34	0.27	0.0	0.0	0.0	0.0
WOWFWP.YOP.PO	5.45	0.00	11.77	0.00	0.58	1.60	0.0	0.0	0.0	0.0
WOWFWP.YOW.PO	2.92	0.00	3.02	0.00	0.31	0.24	0.0	0.0	0.0	0.0
WOWFWP.EOP.PO	4.31	0.00	9.95	0.00	0.50	1.32	0.0	0.0	0.0	0.0
WOWFWP.EOW.PO	2.52	0.00	2.70	0.00	0.27	0.21	0.0	0.0	0.0	0.0
C.YOP.GN	0.00	12.21	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
C.YOW.GN	0.00	9.45	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
C.YOP.GS	0.00	12.34	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
C.YOW.GS	0.00	10.56	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
C.YOP.FN	0.00	12.58	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
C.YOW.FN	0.00	8.12	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
C.YOP.FS	0.00	13.19	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0

C.YOW.FS	0.00	7.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.IN	0.00	11.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.IN	0.00	6.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.IS	0.00	11.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.IS	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.BE	0.00	12.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.BE	0.00	7.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.GR	0.00	10.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.GR	0.00	2.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.SNW	0.00	13.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.SNW	0.00	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.SSE	0.00	11.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.SSE	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOP.PO	0.00	13.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C.YOW.PO	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.GN	4.86	0.00	31.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.GN	4.02	0.00	24.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.GS	4.85	0.00	31.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.GS	4.47	0.00	25.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.FN	5.36	0.00	31.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.FN	4.63	0.00	20.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.FS	5.28	0.00	31.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.FS	4.22	0.00	18.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.IN	4.43	0.00	28.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.IN	3.72	0.00	17.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.IS	4.97	0.00	30.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.IS	3.63	0.00	11.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.NL	4.88	0.00	31.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.NL	4.02	0.00	26.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.BE	4.91	0.00	31.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.BE	4.22	0.00	24.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.UKS	5.54	0.00	32.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.UKS	4.27	0.00	21.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.UKN	5.33	0.00	30.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.UKN	4.66	0.00	25.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.IR	5.62	0.00	30.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.IR	5.03	0.00	24.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.DE	4.90	0.00	33.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.DE	3.44	0.00	19.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.GR	4.00	0.00	25.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.GR	3.27	0.00	15.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.SNW	5.23	0.00	30.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.SNW	2.50	0.00	13.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.SSE	4.96	0.00	29.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.SSE	3.46	0.00	14.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOP.PO	5.45	0.00	31.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP.YOW.PO	2.92	0.00	8.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.GN	4.86	0.00	0.00	38.12	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOW.GN	4.02	0.00	0.00	31.84	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.GS	4.85	0.00	0.00	43.80	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOW.GS	4.47	0.00	0.00	38.77	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.FN	5.36	0.00	0.00	45.91	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOW.FN	4.63	0.00	0.00	32.51	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.FS	5.28	0.00	0.00	48.57	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOW.FS	4.22	0.00	0.00	27.91	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.IN	4.43	0.00	0.00	42.89	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOW.IN	3.72	0.00	0.00	23.14	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.IS	4.97	0.00	0.00	44.23	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOW.IS	3.63	0.00	0.00	14.56	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.NL	4.88	0.00	0.00	36.71	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOW.NL	4.02	0.00	0.00	31.76	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.BE	4.91	0.00	0.00	39.83	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOW.BE	4.22	0.00	0.00	32.84	0.00	0.00	0.00	0.00	0.00	0.00
WB.YOP.UKS	5.54	0.00	0.00	37.42	0.00	0.00	0.00	0.00	0.00	0.00

WB.YOW.UKS	4.27	0.00	0.00	29.50	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOP.UKN	5.33	0.00	0.00	27.14	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOW.UKN	4.66	0.00	0.00	25.44	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOP.IR	5.62	0.00	0.00	33.87	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOW.IR	5.03	0.00	0.00	30.95	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOP.DE	4.90	0.00	0.00	36.18	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOW.DE	3.44	0.00	0.00	26.98	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOP.GR	4.00	0.00	0.00	35.15	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOW.GR	3.27	0.00	0.00	18.28	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOP.SNW	5.23	0.00	0.00	48.06	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOW.SNW	2.50	0.00	0.00	15.89	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOP.SSE	4.96	0.00	0.00	42.53	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOW.SSE	3.46	0.00	0.00	17.96	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOP.PO	5.46	0.00	0.00	50.81	0.00	0.00	0.0	0.0	0.0	0.0
WB.YOW.PO	2.92	0.00	0.00	9.84	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.GN	8.26	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.GN	6.94	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.GS	8.29	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.GS	7.65	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.FN	8.95	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.FN	7.40	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.FS	8.96	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.FS	7.14	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.IN	7.42	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.IN	6.28	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.IS	8.46	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.IS	6.29	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.NL	8.31	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.NL	7.04	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.BE	8.34	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.BE	7.16	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.UKS	9.39	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.UKS	7.52	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.UKN	9.06	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.UKN	7.93	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.IR	9.55	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.IR	8.55	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.DE	8.33	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.DE	5.88	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.GR	6.82	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.GR	5.41	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.SNW	8.95	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.SNW	3.39	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.SSE	8.47	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.SSE	4.75	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOP.PO	9.25	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.YOW.PO	4.81	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.GN	2.70	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.GS	2.83	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.FN	2.78	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.FS	2.74	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.IN	2.59	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.IS	2.59	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.NL	2.72	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.BE	2.75	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.UKS	2.80	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.UKN	2.88	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.IR	2.98	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.DE	2.52	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.GR	2.44	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.SNW	2.09	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.SSE	2.33	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
W.EXT.PO	2.34	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
WOWF.YOP.GN	4.88	0.00	0.00	0.00	1.12	1.92	0.0	0.0	0.0	0.0
WOWF.YOW.GN	4.09	0.00	0.00	0.00	0.96	1.41	0.0	0.0	0.0	0.0
WOWF.EOP.GN	3.74	0.00	0.00	0.00	0.86	1.29	0.0	0.0	0.0	0.0
WOWF.EOW.GN	3.28	0.00	0.00	0.00	0.75	0.99	0.0	0.0	0.0	0.0
WOWF.YOP.GS	4.89	0.00	0.00	0.00	1.03	1.92	0.0	0.0	0.0	0.0
WOWF.YOW.GS	4.50	0.00	0.00	0.00	1.01	1.52	0.0	0.0	0.0	0.0
WOWF.EOP.GS	3.69	0.00	0.00	0.00	0.77	1.31	0.0	0.0	0.0	0.0
WOWF.EOW.GS	3.55	0.00	0.00	0.00	0.76	1.06	0.0	0.0	0.0	0.0
WOWF.YOP.FN	5.27	0.00	0.00	0.00	1.07	2.09	0.0	0.0	0.0	0.0
WOWF.YOW.FN	4.35	0.00	0.00	0.00	1.00	1.32	0.0	0.0	0.0	0.0
WOWF.EOP.FN	3.90	0.00	0.00	0.00	0.78	1.43	0.0	0.0	0.0	0.0

WOWF.EOW.FN	3.38	0.00	0.00	0.00	0.74	0.96	0.0	0.0	0.0	0.0
WOWF.YOP.FS	5.28	0.00	0.00	0.00	1.00	2.08	0.0	0.0	0.0	0.0
WOWF.YOW.FS	4.22	0.00	0.00	0.00	0.88	1.24	0.0	0.0	0.0	0.0
WOWF.EOP.FS	3.93	0.00	0.00	0.00	0.76	1.46	0.0	0.0	0.0	0.0
WOWF.EOW.FS	3.33	0.00	0.00	0.00	0.68	0.89	0.0	0.0	0.0	0.0
WOWF.YOP.IN	4.35	0.00	0.00	0.00	0.85	1.72	0.0	0.0	0.0	0.0
WOWF.YOW.IN	3.69	0.00	0.00	0.00	0.80	1.12	0.0	0.0	0.0	0.0
WOWF.EOP.IN	3.47	0.00	0.00	0.00	0.67	1.22	0.0	0.0	0.0	0.0
WOWF.EOW.IN	3.03	0.00	0.00	0.00	0.63	0.83	0.0	0.0	0.0	0.0
WOWF.YOP.IS	4.97	0.00	0.00	0.00	0.81	1.97	0.0	0.0	0.0	0.0
WOWF.YOW.IS	3.70	0.00	0.00	0.00	0.66	0.64	0.0	0.0	0.0	0.0
WOWF.EOP.IS	3.92	0.00	0.00	0.00	0.65	1.55	0.0	0.0	0.0	0.0
WOWF.EOW.IS	3.12	0.00	0.00	0.00	0.55	0.52	0.0	0.0	0.0	0.0
WOWF.YOP.NL	4.90	0.00	0.00	0.00	1.10	1.93	0.0	0.0	0.0	0.0
WOWF.YOW.NL	4.14	0.00	0.00	0.00	0.95	1.46	0.0	0.0	0.0	0.0
WOWF.EOP.NL	3.71	0.00	0.00	0.00	0.84	1.29	0.0	0.0	0.0	0.0
WOWF.EOW.NL	3.32	0.00	0.00	0.00	0.76	1.02	0.0	0.0	0.0	0.0
WOWF.YOP.BE	4.90	0.00	0.00	0.00	1.08	1.94	0.0	0.0	0.0	0.0
WOWF.YOW.BE	4.20	0.00	0.00	0.00	0.95	1.47	0.0	0.0	0.0	0.0
WOWF.EOP.BE	3.73	0.00	0.00	0.00	0.81	1.30	0.0	0.0	0.0	0.0
WOWF.EOW.BE	3.42	0.00	0.00	0.00	0.75	1.02	0.0	0.0	0.0	0.0
WOWF.YOP.UKS	5.52	0.00	0.00	0.00	1.21	2.18	0.0	0.0	0.0	0.0
WOWF.YOW.UKS	4.43	0.00	0.00	0.00	1.05	1.46	0.0	0.0	0.0	0.0
WOWF.EOP.UKS	4.05	0.00	0.00	0.00	0.88	1.46	0.0	0.0	0.0	0.0
WOWF.EOW.UKS	3.39	0.00	0.00	0.00	0.78	1.02	0.0	0.0	0.0	0.0
WOWF.YOP.UKN	5.34	0.00	0.00	0.00	1.26	2.10	0.0	0.0	0.0	0.0
WOWF.YOW.UKN	4.66	0.00	0.00	0.00	1.08	1.66	0.0	0.0	0.0	0.0
WOWF.EOP.UKN	3.99	0.00	0.00	0.00	0.94	1.38	0.0	0.0	0.0	0.0
WOWF.EOW.UKN	3.64	0.00	0.00	0.00	0.83	1.12	0.0	0.0	0.0	0.0
WOWF.YOP.IR	5.60	0.00	0.00	0.00	1.20	2.23	0.0	0.0	0.0	0.0
WOWF.YOW.IR	5.05	0.00	0.00	0.00	1.13	1.75	0.0	0.0	0.0	0.0
WOWF.EOP.IR	4.15	0.00	0.00	0.00	0.90	1.45	0.0	0.0	0.0	0.0
WOWF.EOW.IR	3.80	0.00	0.00	0.00	0.85	1.18	0.0	0.0	0.0	0.0
WOWF.YOP.DE	4.90	0.00	0.00	0.00	1.23	1.95	0.0	0.0	0.0	0.0
WOWF.YOW.DE	3.45	0.00	0.00	0.00	0.80	1.13	0.0	0.0	0.0	0.0
WOWF.EOP.DE	3.75	0.00	0.00	0.00	0.95	1.33	0.0	0.0	0.0	0.0
WOWF.EOW.DE	2.90	0.00	0.00	0.00	0.65	0.80	0.0	0.0	0.0	0.0
WOWF.YOP.GR	4.03	0.00	0.00	0.00	0.71	1.58	0.0	0.0	0.0	0.0
WOWF.YOW.GR	3.18	0.00	0.00	0.00	0.63	0.40	0.0	0.0	0.0	0.0
WOWF.EOP.GR	3.44	0.00	0.00	0.00	0.59	1.31	0.0	0.0	0.0	0.0
WOWF.EOW.GR	2.82	0.00	0.00	0.00	0.54	0.33	0.0	0.0	0.0	0.0
WOWF.YOP.SNW	5.25	0.00	0.00	0.00	1.02	2.08	0.0	0.0	0.0	0.0
WOWF.YOW.SNW	1.99	0.00	0.00	0.00	0.60	0.32	0.0	0.0	0.0	0.0
WOWF.EOP.SNW	4.14	0.00	0.00	0.00	0.81	1.69	0.0	0.0	0.0	0.0
WOWF.EOW.SNW	1.77	0.00	0.00	0.00	0.51	0.25	0.0	0.0	0.0	0.0
WOWF.YOP.SSE	4.98	0.00	0.00	0.00	0.82	1.98	0.0	0.0	0.0	0.0
WOWF.YOW.SSE	2.78	0.00	0.00	0.00	0.49	0.33	0.0	0.0	0.0	0.0
WOWF.EOP.SSE	4.00	0.00	0.00	0.00	0.66	1.63	0.0	0.0	0.0	0.0
WOWF.EOW.SSE	2.43	0.00	0.00	0.00	0.43	0.28	0.0	0.0	0.0	0.0
WOWF.YOP.PO	5.44	0.00	0.00	0.00	0.89	2.15	0.0	0.0	0.0	0.0
WOWF.YOW.PO	2.81	0.00	0.00	0.00	0.49	0.36	0.0	0.0	0.0	0.0
WOWF.EOP.PO	4.29	0.00	0.00	0.00	0.75	1.76	0.0	0.0	0.0	0.0
WOWF.EOW.PO	2.43	0.00	0.00	0.00	0.43	0.30	0.0	0.0	0.0	0.0
G.EXT.GN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	20.6
G.EXT.GS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	20.8
G.EXT.FN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	20.5
G.EXT.FS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	19.7
G.EXT.IN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	19.4
G.EXT.IS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	16.8
G.EXT.NL	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	21.2
G.EXT.BE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	20.8
G.EXT.UKS	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	21.4
G.EXT.UKN	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	21.1
G.EXT.IR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	21.8
G.EXT.DE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	18.5
G.EXT.GR	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	16.6
G.EXT.SNW	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	16.5
G.EXT.SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	16.8
G.EXT.PO	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	16.2

Appendix VI: Results of GOAL-QUASI

In this appendix the results are given of an optimization run in which the agricultural area to meet an agricultural production in a situation with autarky and a current diet (AUTOCUR) is minimized (MIN{AREA_G}). Three result files are listed:

- objective functions: a file with the optimal solution (minimum agricultural area) and the values for the other objective functions: the minimum agricultural area is $32.3 \cdot 10^6$ ha, the nitrogen loss with this optimum solution is $2606 \cdot 10^6$ kg, etc. The columns 'upper bound' and 'lower bound' indicate whether the objective functions were given upper or lower bounds (in this case no upper or lower bounds were given).

- non-zero variables: a file comprising the non-zero variables, with their optimum values and upper or lower bounds. First, all variables related to the objective functions are listed, subsequently all (selected) crop activities (e.g. $2.05 \cdot 10^6$ ha of Maize, Yield Oriented Potential production in Southern France (Cluster 2) are given, and finally all other (selected) variables.

- all constraints: a file listing the left hand side, slack/surplus (right hand side minus left hand side) and shadow price of all constraints. For instance, the third row, CROPPR.POT, indicates that $31.3 \cdot 10^9$ kg potatoes are produced, which is exactly the required amount (no surplus), the shadow price of this constraint is $0.0087 \cdot 10^6$ ha, which means that $1 \cdot 10^9$ kg less potatoes, requires 0.0087 million ha less land.

objective functions

	optimal	lower bound	upper bound	unit
OPTIMAL SOLUTION	32.268490497260	0.000000000000	0.000000000000	[10^6 ha]
GOAL.EC.AREA_G	32.268490497260	0.000000000000	999000000.00000	[10^6 ha]
GOAL.EC.NLS_G	2605.6596535772	0.000000000000	999000000.00000	[10^6 kg]
GOAL.EC.NLSHA_G	1.4555640342079	0.000000000000	999000000.00000	*
GOAL.EC.PST_G	87.157699198758	0.000000000000	999000000.00000	[10^6 kg]
GOAL.EC.PSTHA_G	3.3185568127357	0.000000000000	999000000.00000	**
GOAL.EC.COST_G	116932.34173265	0.000000000000	999000000.00000	[10^6 kg]
GOAL.EC.LAB_G	1.8614033322816	0.000000000000	999000000.00000	[10^6 MPU]
GOAL.EC.REGLAB_G	0.000000000000	0.000000000000	999000000.00000	[%]
GOAL.EC.REGAREA_G	0.000000000000	0.000000000000	999000000.00000	[%]

* nitrogen loss per ha: $2605.66/32.27 = 80.7$ kg/ha

** pesticides per ha: $87.16/32.27 = 2.70$ kg/ha

non-zero variables

	optimal	lower bound	upper bound	unit
OPTIMAL SOLUTION	32.268490497260	0.000000000000	0.000000000000	[10^6 ha]
GOAL.EC.AREA_G	32.268490497260	0.000000000000	999000000.00000	[10^6 ha]
GOAL.EC.NLS_G	2605.6596535772	0.000000000000	999000000.00000	[10^6 kg]
GOAL.EC.NLSHA_G	1.4555640342079	0.000000000000	999000000.00000	*
GOAL.EC.PST_G	87.157699198758	0.000000000000	999000000.00000	[10^6 kg]
GOAL.EC.PSTHA_G	3.3185568127357	0.000000000000	999000000.00000	**
GOAL.EC.COST_G	116932.34173265	0.000000000000	999000000.00000	[10^6 kg]
GOAL.EC.LAB_G	1.8614033322816	0.000000000000	999000000.00000	[10^6 MPU]
GOAL.LR.FN	16.194099102135	0.000000000000	999000000.00000	[%]
GOAL.LR.FS	58.646977186331	0.000000000000	999000000.00000	[%]
GOAL.LR.IN	15.068317391964	0.000000000000	999000000.00000	[%]
GOAL.LR.IS	12.501604829222	0.000000000000	999000000.00000	[%]
GOAL.LR.BE	6.9908659433613	0.000000000000	999000000.00000	[%]
GOAL.LR.UKS	26.104459468853	0.000000000000	999000000.00000	[%]
GOAL.LR.UKN	27.770291648916	0.000000000000	999000000.00000	[%]
GOAL.LR.IR	21.774439105509	0.000000000000	999000000.00000	[%]
GOAL.LR.GR	10.193823790511	0.000000000000	999000000.00000	[%]
GOAL.LR.SNW	16.626465333046	0.000000000000	999000000.00000	[%]
GOAL.LR.SSE	17.568044811210	0.000000000000	999000000.00000	[%]
GOAL.LR.PO	5.9693611515514	0.000000000000	999000000.00000	[%]
GOAL.AR.FN	44.269674949443	0.000000000000	999000000.00000	[%]
GOAL.AR.FS	76.662694301605	0.000000000000	999000000.00000	[%]
GOAL.AR.IN	40.449496601945	0.000000000000	999000000.00000	[%]
GOAL.AR.IS	31.794752710266	0.000000000000	999000000.00000	[%]
GOAL.AR.BE	23.571323787999	0.000000000000	999000000.00000	[%]
GOAL.AR.UKS	51.923435402994	0.000000000000	999000000.00000	[%]
GOAL.AR.UKN	31.000625373549	0.000000000000	999000000.00000	[%]

VI-2

GOAL.AR.IR	64.491243669366	0.000000000000	99900000.00000	[%]
GOAL.AR.GR	22.357174895873	0.000000000000	99900000.00000	[%]
GOAL.AR.SNW	15.217266012165	0.000000000000	99900000.00000	[%]
GOAL.AR.SSE	23.202906953730	0.000000000000	99900000.00000	[%]
GOAL.AR.PO	35.053818380157	0.000000000000	99900000.00000	[%]
CA.M .YOP.FS .C2	2.0492560252949	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.M .YOP.IN .C2	0.5316994371497	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.M .YOP.IS .C3	0.3688957978277	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.M .YOP.GR .C3	0.4353043196840	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.M .YOP.SNW.C3	0.4853720912229	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.M .YOP.SSE.C3	0.1942242798728	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.M .YOP.PO .C3	0.1653118803889	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.S .YOP.FS .C2	2.6300138693675	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.S .YOP.IN .C2	0.5994253414161	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.S .YOP.IS .C3	0.4646578785458	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.S .YOP.GR .C3	0.2138109111643	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.S .YOP.SNW.C3	0.5800370736343	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.S .YOP.SSE.C3	0.2450357610929	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.S .YOP.PO .C3	0.1881732899692	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.G .YOP.FS .C2	2.1396467753824	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.G .YOP.IN .C2	1.0550087147828	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.G .YOP.IS .C3	0.7319563575745	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.G .YOP.GR .C3	0.3230194479740	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.G .YOP.SNW.C3	0.7880234008925	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.G .YOP.SSE.C3	0.3853712721697	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.G .YOP.PO .C3	0.3280311665888	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.WWO .YOP.UKN.C1	1.8963082541000	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.WWO .YOP.IR .C1	0.4864563998003	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.CWOF .YOP.FN .C1	7.2603152310586	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.CWOF .YOP.BE .C1	0.2961972547200	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.WOWFB .YOP.UKS.C1	4.6731611097049	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.WOWFB .YOP.IR .C1	0.0249192657314	0.000000000000	99900000.00000	[10 ⁶ ha]
CA.WOWFWP .YOP.IR .C1	2.7288578901482	0.000000000000	99900000.00000	[10 ⁶ ha]
CVACT.CVWHT	62.5333333333333	0.000000000000	99900000.00000	[10 ⁹ kg]
CVACT.CVSET	79.230769230769	0.000000000000	99900000.00000	[10 ⁹ kg]
CVACT.CVOSD	18.6666666666666	0.000000000000	99900000.00000	[10 ⁹ kg]
NVIRACT.NVHSK	15.6333333333333	0.000000000000	99900000.00000	[10 ⁹ kg]
NVIRACT.NVPLP	6.3384615384615	0.000000000000	99900000.00000	[10 ⁹ kg]
NVIRACT.NVOSC	13.0666666666666	0.000000000000	99900000.00000	[10 ⁹ kg]
NVACACT.NVWHT	8.6773091017979	0.000000000000	99900000.00000	[10 ⁹ kg]
NVACACT.NVCRN	27.939821069135	0.000000000000	99900000.00000	[10 ⁹ kg]
NVACACT.NVFBN	28.737262395953	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVGRS .FS	236.10321959977	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVGRS .IN	112.08334699969	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVGRS .IS	89.920833784230	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVGRS .GR	36.191673256793	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVGRS .SNW	90.946958282481	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVGRS .SSE	46.489640824517	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVGRS .PO	41.418887185378	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVMWG .FS	77.902974966223	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVMWG .IN	19.461438768065	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVMWG .IS	15.613281076179	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVMWG .GR	16.804071830756	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVMWG .SNW	19.298174269695	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVMWG .SSE	8.0721652455486	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVMWG .PO	7.1917118677929	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVSLM .FS	172.52512365933	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVSLM .IN	35.516332979848	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVSLM .IS	28.493601948870	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVSLM .GR	11.468211406014	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVSLM .SNW	38.102560934117	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVSLM .SSE	14.731372749260	0.000000000000	99900000.00000	[10 ⁹ kg]
NVRCACT.NVSLM .PO	13.124581200584	0.000000000000	99900000.00000	[10 ⁹ kg]
PPACT.PRKPR	8.3333333333333	0.000000000000	99900000.00000	[10 ⁶]
PPACT.CMTPR	32.100840336134	0.000000000000	99900000.00000	[10 ⁶]
PPACT.EGGPR	26.386554621848	0.000000000000	99900000.00000	[10 ⁶]
CTACT.ZERO2 .GR	1.4168652385653	0.000000000000	99900000.00000	[10 ⁶]
CTACT.SUM .IN	5.0196629705302	0.000000000000	99900000.00000	[10 ⁶]
CTACT.SUM .IS	4.0271127844455	0.000000000000	99900000.00000	[10 ⁶]
CTACT.SUM .GR	1.6208474046474	0.000000000000	99900000.00000	[10 ⁶]
CTACT.SUM .SNW	3.0684009728066	0.000000000000	99900000.00000	[10 ⁶]
CTACT.SUM .SSE	2.0820428262257	0.000000000000	99900000.00000	[10 ⁶]
CTACT.SUM .PO	1.8549486596397	0.000000000000	99900000.00000	[10 ⁶]
CTACT.BEPR .FS	16.077487336947	0.000000000000	99900000.00000	[10 ⁶]

CTACT.BEPR .SNW	1.5275832571382	0.0000000000000	999000000.00000	[10 ⁶]
LABUSE.FN	305.15075343423	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.FS	809.20219417041	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.IN	326.18296248481	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.IS	286.59191476306	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.BE	13.358496187872	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.UKS	212.64118385219	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.UKN	70.041951893979	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.IR	130.55017386781	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.GR	200.87337532153	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.SNW	321.43180610974	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.SSE	157.83289570794	0.0000000000000	999000000.00000	[10 ⁶ h]
LABUSE.PO	144.38762385706	0.0000000000000	999000000.00000	[10 ⁶ h]
AREAUSE.FN	7.2603152310586	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.FS	6.8189166700449	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.IN	2.1861334933487	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.IS	1.5655100339481	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.BE	0.2961972547200	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.UKS	4.6731611097049	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.UKN	1.8963082541000	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.IR	3.2402335556800	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.GR	0.9721346788223	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.SNW	1.8534325657497	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.SSE	0.8246313131355	0.0000000000000	999000000.00000	[10 ⁶ ha]
AREAUSE.PO	0.6815163369470	0.0000000000000	999000000.00000	[10 ⁶ ha]

* nitrogen loss per ha: 2605.66/32.27 = 80.7 kg/ha

** pesticides per ha: 87.16/32.27 = 2.70 kg/ha

all constraints

	left hand	slack/surplus	shadow price	unit
CROPPR.WHT	0.0000000000000	0.0000000000000	0.0498313476434	[10 ⁹ kg]
CROPPR.CRN	0.0000000000000	0.0000000000000	0.0205072133542	[10 ⁹ kg]
CROPPR.POT	31.3000000000000	0.0000000000000	0.0086988579830	[10 ⁹ kg]
CROPPR.SBT	0.0000000000000	0.0000000000000	0.0032115426445	[10 ⁹ kg]
CROPPR.OSD	0.0000000000000	0.0000000000000	0.4148684288844	[10 ⁹ kg]
CROPPR.FBN	0.0000000000000	0.0000000000000	0.1745030008502	[10 ⁹ kg]
ROUGHPR.MWG.GN	0.0000000000000	0.0000000000000	0.0340068320498	[10 ⁹ kg]
ROUGHPR.MWG.GS	0.0000000000000	0.0000000000000	0.0032115426445	[10 ⁹ kg]
ROUGHPR.MWG.FN	0.0000000000000	0.0000000000000	0.0290461327538	[10 ⁹ kg]
ROUGHPR.MWG.FS	0.0000000000000	0.0000000000000	0.0282849050243	[10 ⁹ kg]
ROUGHPR.MWG.IN	0.0000000000000	0.0000000000000	0.0273206643910	[10 ⁹ kg]
ROUGHPR.MWG.IS	0.0000000000000	0.0000000000000	0.0271779473706	[10 ⁹ kg]
ROUGHPR.MWG.NL	0.0000000000000	0.0000000000000	0.0334305406491	[10 ⁹ kg]
ROUGHPR.MWG.BE	0.0000000000000	0.0000000000000	0.0318971835951	[10 ⁹ kg]
ROUGHPR.MWG.UKS	0.0000000000000	0.0000000000000	0.0311466888217	[10 ⁹ kg]
ROUGHPR.MWG.UKN	0.0000000000000	0.0000000000000	0.0339467340422	[10 ⁹ kg]
ROUGHPR.MWG.IR	0.0000000000000	0.0000000000000	0.0312109862671	[10 ⁹ kg]
ROUGHPR.MWG.DE	0.0000000000000	0.0000000000000	0.0358294518093	[10 ⁹ kg]
ROUGHPR.MWG.GR	0.0000000000000	0.0000000000000	0.0262252156407	[10 ⁹ kg]
ROUGHPR.MWG.SNW	0.0000000000000	0.0000000000000	0.0271779473706	[10 ⁹ kg]
ROUGHPR.MWG.SSE	0.0000000000000	0.0000000000000	0.0270687028292	[10 ⁹ kg]
ROUGHPR.MWG.PO	0.0000000000000	0.0000000000000	0.0279835283506	[10 ⁹ kg]
ROUGHPR.SLM.GN	0.0000000000000	0.0000000000000	0.0189826216001	[10 ⁹ kg]
ROUGHPR.SLM.GS	0.0000000000000	0.0000000000000	0.0112844500580	[10 ⁹ kg]
ROUGHPR.SLM.FN	0.0000000000000	0.0000000000000	0.0161563233731	[10 ⁹ kg]
ROUGHPR.SLM.FS	0.0000000000000	0.0000000000000	0.0161194758124	[10 ⁹ kg]
ROUGHPR.SLM.IN	0.0000000000000	0.0000000000000	0.0168774558385	[10 ⁹ kg]
ROUGHPR.SLM.IS	0.0000000000000	0.0000000000000	0.0179241813153	[10 ⁹ kg]
ROUGHPR.SLM.NL	0.0000000000000	0.0000000000000	0.0198106479962	[10 ⁹ kg]
ROUGHPR.SLM.BE	0.0000000000000	0.0000000000000	0.0125879107458	[10 ⁹ kg]
ROUGHPR.SLM.UKS	0.0000000000000	0.0000000000000	0.0232260400730	[10 ⁹ kg]
ROUGHPR.SLM.UKN	0.0000000000000	0.0000000000000	0.0106941331393	[10 ⁹ kg]
ROUGHPR.SLM.IR	0.0000000000000	0.0000000000000	0.0132233912174	[10 ⁹ kg]
ROUGHPR.SLM.DE	0.0000000000000	0.0000000000000	0.0089563290643	[10 ⁹ kg]
ROUGHPR.SLM.GR	0.0000000000000	0.0000000000000	0.0187409592864	[10 ⁹ kg]
ROUGHPR.SLM.SNW	0.0000000000000	0.0000000000000	0.0165368700161	[10 ⁹ kg]
ROUGHPR.SLM.SSE	0.0000000000000	0.0000000000000	0.0179788313076	[10 ⁹ kg]
ROUGHPR.SLM.PO	0.0000000000000	0.0000000000000	0.0169359506665	[10 ⁹ kg]
ROUGHPR.GRS.GN	0.0000000000000	0.0000000000000	0.0075846994838	[10 ⁹ kg]
ROUGHPR.GRS.GS	0.0000000000000	0.0000000000000	0.0114759023582	[10 ⁹ kg]
ROUGHPR.GRS.FN	0.0000000000000	0.0000000000000	0.0093626654815	[10 ⁹ kg]
ROUGHPR.GRS.FS	0.0000000000000	0.0000000000000	0.0096007772686	[10 ⁹ kg]
ROUGHPR.GRS.IN	0.0000000000000	0.0000000000000	0.0094127160102	[10 ⁹ kg]

VI-4

ROUGHPR.GRS.IS	0.000000000000	0.000000000000	0.0091058160742	
ROUGHPR.GRS.NL	0.000000000000	0.000000000000	0.0074223827625	
ROUGHPR.GRS.BE	0.000000000000	0.000000000000	0.0109894768946	
ROUGHPR.GRS.UKS	0.000000000000	0.000000000000	0.0067366862535	
ROUGHPR.GRS.UKN	0.000000000000	0.000000000000	0.0116970408950	
ROUGHPR.GRS.IR	0.000000000000	0.000000000000	0.0107515320933	
ROUGHPR.GRS.DE	0.000000000000	0.000000000000	0.0123456790123	
ROUGHPR.GRS.GR	0.000000000000	0.000000000000	0.0090124263919	
ROUGHPR.GRS.SNW	0.000000000000	0.000000000000	0.0094170108378	
ROUGHPR.GRS.SSE	0.000000000000	0.000000000000	0.0091074674224	
ROUGHPR.GRS.PO	0.000000000000	0.000000000000	0.0092790850244	
ROUGHPR.EXG.GN	0.000000000000	0.000000000000	0.0056207042476	
ROUGHPR.EXG.GS	0.000000000000	0.000000000000	0.0114757846936	
ROUGHPR.EXG.FN	0.000000000000	0.000000000000	0.0093626477998	
ROUGHPR.EXG.FS	0.000000000000	0.000000000000	0.0096007580288	
ROUGHPR.EXG.IN	0.000000000000	0.000000000000	0.0093650569210	
ROUGHPR.EXG.IS	0.000000000000	0.000000000000	0.0086473070084	
ROUGHPR.EXG.NL	0.000000000000	0.000000000000	0.0052058158681	
ROUGHPR.EXG.BE	0.000000000000	0.000000000000	0.0109893856952	
ROUGHPR.EXG.UKS	0.000000000000	0.000000000000	0.0034637586518	
ROUGHPR.EXG.UKN	0.000000000000	0.000000000000	0.0116969112417	
ROUGHPR.EXG.IR	0.000000000000	0.000000000000	0.0107514537994	
ROUGHPR.EXG.DE	0.000000000000	0.000000000000	0.0123455140746	
ROUGHPR.EXG.GR	0.000000000000	0.000000000000	0.0083648450071	
ROUGHPR.EXG.SNW	0.000000000000	0.000000000000	0.0604588979948	
ROUGHPR.EXG.SSE	0.000000000000	0.000000000000	0.0086434198357	
ROUGHPR.EXG.PO	0.000000000000	0.000000000000	0.0616671395802	[10 ⁹ kg]
INDUSTPR.FLR	46.900000000000	0.000000000000	0.0436966500748	[10 ⁹ kg]
INDUSTPR.HSK	0.000000000000	0.000000000000	0.0682354403492	
INDUSTPR.SUG	10.300000000000	0.000000000000	0.0029012884703	
INDUSTPR.PLP	0.000000000000	0.000000000000	0.0354296892926	
INDUSTPR.OIL	5.600000000000	0.000000000000	0.7057248170073	
INDUSTPR.OSC	0.000000000000	0.000000000000	0.2902156911174	[10 ⁹ kg]
FEEDPR.DCP_C	0.000000000000	0.000000000000	1.0662186585138	[10 ⁹ kg]
FEEDPR.ME_C	0.000000000000	0.000000000000	-0.0050960398962	[10 ⁹ MJ]
R_FEEDPR.GN.ME_S	0.000000000000	0.000000000000	0.0090165345020	
R_FEEDPR.GS.ME_S	0.000000000000	0.000000000000	0.0023629533376	
R_FEEDPR.FN.ME_S	0.000000000000	0.000000000000	0.0076783413862	
R_FEEDPR.FS.ME_S	0.000000000000	0.000000000000	0.0077922303194	
R_FEEDPR.IN.ME_S	0.000000000000	0.000000000000	0.0086837744189	
R_FEEDPR.IS.ME_S	0.000000000000	0.000000000000	0.0096428312895	
R_FEEDPR.NL.ME_S	0.000000000000	0.000000000000	0.0098812749724	
R_FEEDPR.BE.ME_S	0.000000000000	0.000000000000	0.0038398551794	
R_FEEDPR.UKS.ME_S	0.000000000000	0.000000000000	0.0134267707130	
R_FEEDPR.UKN.ME_S	0.000000000000	0.000000000000	0.0016946731689	
R_FEEDPR.IR.ME_S	0.000000000000	0.000000000000	0.0045593416639	
R_FEEDPR.DE.ME_S	0.000000000000	0.000000000000	-0.0002742803949	
R_FEEDPR.GR.ME_S	0.000000000000	0.000000000000	0.0105837794732	
R_FEEDPR.SNW.ME_S	0.000000000000	0.000000000000	0.0082457379569	
R_FEEDPR.SSE.ME_S	0.000000000000	0.000000000000	0.0097162033968	
R_FEEDPR.PO.ME_S	0.000000000000	0.000000000000	0.0085838223426	[10 ⁹ MJ]
R_FEEDPR.GN.DCP_S	0.000000000000	0.000000000000	0.1696986135222	[10 ⁹ kg]
R_FEEDPR.GS.DCP_S	0.000000000000	0.000000000000	0.4651190748950	
R_FEEDPR.FN.DCP_S	0.000000000000	0.000000000000	0.1439138017274	
R_FEEDPR.FS.DCP_S	0.000000000000	0.000000000000	0.1276159960041	
R_FEEDPR.IN.DCP_S	0.000000000000	0.000000000000	0.0697956715217	
R_FEEDPR.IS.DCP_S	0.000000000000	0.000000000000	0.0230199916315	
R_FEEDPR.NL.DCP_S	0.000000000000	0.000000000000	0.1198055814323	
R_FEEDPR.BE.DCP_S	0.000000000000	0.000000000000	0.3725236502446	
R_FEEDPR.UKS.DCP_S	0.000000000000	0.000000000000	-0.0833975291245	
R_FEEDPR.UKN.DCP_S	0.000000000000	0.000000000000	0.5069829301653	
R_FEEDPR.IR.DCP_S	0.000000000000	0.000000000000	0.3274474242733	
R_FEEDPR.DE.DCP_S	0.000000000000	0.000000000000	0.6304228149651	
R_FEEDPR.GR.DCP_S	0.000000000000	0.000000000000	-0.0368847128900	
R_FEEDPR.SNW.DCP_S	0.000000000000	0.000000000000	0.1003259813768	
R_FEEDPR.SSE.DCP_S	0.000000000000	0.000000000000	0.0177461676869	
R_FEEDPR.PO.DCP_S	0.000000000000	0.000000000000	0.0858428357323	[10 ⁹ kg]
R_FEEDPR.GN.ME_G	0.000000000000	0.000000000000	0.0072720033401	[10 ⁹ MJ]
R_FEEDPR.GS.ME_G	0.000000000000	0.000000000000	0.0110027827020	
R_FEEDPR.FN.ME_G	0.000000000000	0.000000000000	0.0089766687263	
R_FEEDPR.FS.ME_G	0.000000000000	0.000000000000	0.0092049638242	
R_FEEDPR.IN.ME_G	0.000000000000	0.000000000000	0.0090246558103	
R_FEEDPR.IS.ME_G	0.000000000000	0.000000000000	0.0087304085084	
R_FEEDPR.NL.ME_G	0.000000000000	0.000000000000	0.0071163784876	

R_FEEDPR.BE .ME_G	0.000000000000	0.000000000000	0.0105364112125	
R_FEEDPR.UKS.ME_G	0.000000000000	0.000000000000	0.0064589513456	
R_FEEDPR.UKN.ME_G	0.000000000000	0.000000000000	0.0112148043097	
R_FEEDPR.IR .ME_G	0.000000000000	0.000000000000	0.0103082762160	
R_FEEDPR.DE .ME_G	0.000000000000	0.000000000000	0.0118367008747	
R_FEEDPR.GR .ME_G	0.000000000000	0.000000000000	0.0086408690239	
R_FEEDPR.SNW.ME_G	0.000000000000	0.000000000000	0.0090287735741	
R_FEEDPR.SSE.ME_G	0.000000000000	0.000000000000	0.0087319917760	
R_FEEDPR.PO .ME_G	0.000000000000	0.000000000000	0.0088965340598	
R_FEEDPR.GN .ME_E	0.000000000000	0.000000000000	0.0053889781856	
R_FEEDPR.GS .ME_E	0.000000000000	0.000000000000	0.0110026698884	
R_FEEDPR.FN .ME_E	0.000000000000	0.000000000000	0.0089766517735	
R_FEEDPR.FS .ME_E	0.000000000000	0.000000000000	0.0092049453776	
R_FEEDPR.IN .ME_E	0.000000000000	0.000000000000	0.0089789615733	
R_FEEDPR.IS .ME_E	0.000000000000	0.000000000000	0.0082908025009	
R_FEEDPR.NL .ME_E	0.000000000000	0.000000000000	0.0049911945044	
R_FEEDPR.BE .ME_E	0.000000000000	0.000000000000	0.0105363237730	
R_FEEDPR.UKS.ME_E	0.000000000000	0.000000000000	0.0033209574802	
R_FEEDPR.UKN.ME_E	0.000000000000	0.000000000000	0.0112146800016	
R_FEEDPR.IR .ME_E	0.000000000000	0.000000000000	0.0103082011499	
R_FEEDPR.DE .ME_E	0.000000000000	0.000000000000	0.0118365427369	
R_FEEDPR.GR .ME_E	0.000000000000	0.000000000000	0.0080199856252	
R_FEEDPR.SNW.ME_E	0.000000000000	0.000000000000	0.0090287633497	
R_FEEDPR.SSE.ME_E	0.000000000000	0.000000000000	0.0082870755855	
R_FEEDPR.PO .ME_E	0.000000000000	0.000000000000	0.0087282854357	[10 ⁹ MJ]
PPPR.PRK	12.500000000000	0.000000000000	0.4442309807041	[10 ⁹ kg]
PPPR.CMT	5.400000000000	0.000000000000	0.5658738172506	[10 ⁹ kg]
PPPR.EGG	4.600000000000	0.000000000000	0.4586432962960	[10 ⁹ kg]
CTPR.MLK	99.700000000000	0.000000000000	0.0103600238217	[10 ⁹ kg]
CTPR.BEEF	8.800000000000	0.000000000000	1.7346920423855	[10 ⁹ kg]
ARCULT.GN	0.000000000000	5.194400000000	0.0000000000000	[10 ⁶ ha]
ARCULT.GS	0.000000000000	5.9857999999999	0.0000000000000	[10 ⁶ ha]
ARCULT.FN	7.2603152310586	9.1398847689413	0.0000000000000	
ARCULT.FS	6.8189166700449	2.0757833299550	0.0000000000000	
ARCULT.IN	2.1861334933487	3.2184665066512	0.0000000000000	
ARCULT.IS	1.5655100339481	3.3582899660518	0.0000000000000	
ARCULT.NL	-0.0000000000000	1.7847000000000	0.0000000000000	
ARCULT.BE	0.2961972547200	0.9604027452800	0.0000000000000	
ARCULT.UKS	4.6731611097049	4.3269388902950	0.0000000000000	
ARCULT.UKN	1.8963082541000	4.2206917458999	0.0000000000000	
ARCULT.IR	3.2402335556800	1.7840664443199	0.0000000000000	
ARCULT.DE	0.0000000000000	2.1436000000000	0.0000000000000	
ARCULT.GR	0.9721346788223	3.3760653211776	0.0000000000000	
ARCULT.SNW	1.8534325657497	10.326367434250	0.0000000000000	
ARCULT.SSE	0.8246313131355	2.7293686868644	0.0000000000000	
ARCULT.PO	0.6815163369470	1.2626836630529	0.0000000000000	
ARGRS.GN	0.0000000000000	7.1938568607600	0.0000000000000	
ARGRS.GS	0.0000000000000	5.9618308125800	0.0000000000000	
ARGRS.FN	7.2603152310586	13.446767303451	0.0000000000000	
ARGRS.FS	6.8189166700449	4.0033047748550	0.0000000000000	
ARGRS.IN	2.1861334933487	3.6333157165812	0.0000000000000	
ARGRS.IS	1.5655100339481	1.2838711371618	0.0000000000000	
ARGRS.NL	0.0000000000000	2.9715465920100	0.0000000000000	
ARGRS.BE	0.2961972547200	1.6469649886800	0.0000000000000	
ARGRS.UKS	4.6731611097049	6.8726791050550	0.0000000000000	
ARGRS.UKN	1.8963082541000	1.4832105380400	0.0000000000000	
ARGRS.IR	3.2402335556800	1.8318603291999	0.0000000000000	
ARGRS.DE	0.0000000000000	4.2361195177000	0.0000000000000	
ARGRS.GR	0.9721346788223	0.7538619194476	0.0000000000000	
ARGRS.SNW	1.8534325657497	12.510964291260	0.0000000000000	
ARGRS.SSE	0.8246313131355	6.7033164070444	0.0000000000000	
ARGRS.PO	0.6815163369470	2.4156024879529	0.0000000000000	
ARMOW.GN	0.0000000000000	6.9193337306800	0.0000000000000	
ARMOW.GS	0.0000000000000	5.7825030004200	0.0000000000000	
ARMOW.FN	7.2603152310586	13.446767303451	0.0000000000000	
ARMOW.FS	2.6300138693675	8.0481456968124	0.0000000000000	
ARMOW.IN	0.5994253414161	4.7825744258938	0.0000000000000	
ARMOW.IS	0.4646578785458	2.3845471030741	0.0000000000000	
ARMOW.NL	0.0000000000000	2.8895089562400	0.0000000000000	
ARMOW.BE	0.2961972547199	1.6469649886800	0.0000000000000	
ARMOW.UKS	4.6731611097049	1.6446157679250	0.0000000000000	
ARMOW.UKN	1.8963082541000	0.0000000000000	-0.0119350556371	
ARMOW.IR	3.2402335556800	0.0000000000000	-0.0038014536206	
ARMOW.DE	0.0000000000000	3.9168292656500	0.0000000000000	

ARMOW.GR	0.2138109111643	1.5121856871056	0.0000000000000
ARMOW.SNW	0.5800370736343	13.784359783375	0.0000000000000
ARMOW.SSE	0.2450357610929	7.2829119590870	0.0000000000000
ARMOW.PO	0.1881732899692	2.9089455349307	0.0000000000000
ARTUB.GN	0.0000000000000	6.2118806087200	0.0000000000000
ARTUB.GS	0.0000000000000	4.4620368510600	0.0000000000000
ARTUB.FN	0.0000000000000	13.007631388850	0.0000000000000
ARTUB.FS	0.0000000000000	8.6344065783100	0.0000000000000
ARTUB.IN	0.0000000000000	2.1702854286800	0.0000000000000
ARTUB.IS	0.0000000000000	1.3914655414000	0.0000000000000
ARTUB.NL	0.0000000000000	2.2488903082800	0.0000000000000
ARTUB.BE	0.0000000000000	1.7821862263200	0.0000000000000
ARTUB.UKS	4.6731611097049	0.3625794686550	0.0000000000000
ARTUB.UKN	0.0000000000000	1.8885523123000	0.0000000000000
ARTUB.IR	2.7537771558796	0.4829737756003	0.0000000000000
ARTUB.DE	-0.0000000000000	3.8609426408000	0.0000000000000
ARTUB.GR	0.0000000000000	1.1232659199600	0.0000000000000
ARTUB.SNW	0.0000000000000	3.9433160157300	0.0000000000000
ARTUB.SSE	0.0000000000000	2.1263272726300	0.0000000000000
ARTUB.PO	0.0000000000000	1.4623626258000	0.0000000000000
ARMAI.GN	0.0000000000000	0.0478766599800	0.0000000000000
ARMAI.GS	0.0000000000000	2.0689615254700	0.0000000000000
ARMAI.FN	7.2603152310586	10.297979206401	0.0000000000000
ARMAI.FS	0.0000000000000	10.261457414130	0.0000000000000
ARMAI.IN	0.0000000000000	5.3817750281299	0.0000000000000
ARMAI.IS	-0.0000000000000	2.8487979816900	0.0000000000000
ARMAI.BE	0.2961972547200	0.0000000000000	-0.0202603137636
ARMAI.GR	0.0000000000000	1.7253991940900	0.0000000000000
ARMAI.SNW	0.0000000000000	14.364396857010	0.0000000000000
ARMAI.SSE	0.0000000000000	7.5279477201799	0.0000000000000
ARMAI.PO	0.0000000000000	3.0443405816000	0.0000000000000
AREXGRS.GN	0.0000000000000	2.2227853355000	0.0000000000000
AREXGRS.GS	0.0000000000000	8.0758966304200	0.0000000000000
AREXGRS.FN	0.0000000000000	8.8762016497399	0.0000000000000
AREXGRS.FS	0.0000000000000	10.046872965530	0.0000000000000
AREXGRS.IN	-0.0000000000000	6.1252825266300	0.0000000000000
AREXGRS.IS	0.0000000000000	7.4401515700800	0.0000000000000
AREXGRS.NL	0.0000000000000	0.4840640653600	0.0000000000000
AREXGRS.BE	0.0000000000000	1.0634347663200	0.0000000000000
AREXGRS.UKS	0.0000000000000	2.6291876972800	0.0000000000000
AREXGRS.UKN	0.0000000000000	5.3672522993600	0.0000000000000
AREXGRS.IR	-0.0000000000000	1.7503669229200	0.0000000000000
AREXGRS.DE	0.0000000000000	0.0376909795500	0.0000000000000
AREXGRS.GR	0.0000000000000	3.7313997351700	0.0000000000000
AREXGRS.SNW	0.0000000000000	14.238609223740	0.0000000000000
AREXGRS.SSE	0.0000000000000	7.1092911584800	0.0000000000000
AREXGRS.PO	0.0000000000000	3.5340041548000	0.0000000000000
IRRI.GN	0.0000000000000	5.1234789449900	0.0000000000000
IRRI.GS	0.0000000000000	8.4541699190900	0.0000000000000
IRRI.FN	4.8512365156163	10.168312456153	0.0000000000000
IRRI.FS	11.934206052720	0.0000000000000	-0.0362278443772
IRRI.IN	3.1568538296443	6.2286514681956	0.0000000000000
IRRI.IS	6.6868161999100	0.0000000000000	-0.0281679581334
IRRI.NL	-0.0000000000000	1.8193818757800	0.0000000000000
IRRI.BE	0.2509975536497	1.8319329302502	0.0000000000000
IRRI.UKS	2.9193246612641	5.5865916346758	0.0000000000000
IRRI.UKN	0.6492077581826	6.7831121466173	0.0000000000000
IRRI.IR	0.9881630146832	4.5018457741967	0.0000000000000
IRRI.DE	0.0000000000000	2.2956839153500	0.0000000000000
IRRI.GR	4.5504200160300	0.0000000000000	-0.0021219585937
IRRI.SNW	9.9824895035600	0.0000000000000	-0.0172170987306
IRRI.SSE	4.9002915174500	0.0000000000000	-0.0167597139212
IRRI.PO	4.5015707667000	0.0000000000000	-0.0280657081907
MANURE.GN	0.0000000000000	0.0000000000000	0.0000000000000
MANURE.GS	0.0000000000000	0.0000000000000	0.0000000000000
MANURE.FN	0.0000000000000	0.0000000000000	0.0000000000000
MANURE.FS	-2701.0249021726	2701.0249021726	0.0000000000000
MANURE.IN	-936.43172797998	936.43172797998	0.0000000000000
MANURE.IS	-741.44731300750	741.44731300750	0.0000000000000
MANURE.NL	0.0000000000000	0.0000000000000	0.0000000000000
MANURE.BE	0.0000000000000	0.0000000000000	0.0000000000000
MANURE.UKS	0.0000000000000	0.0000000000000	0.0000000000000
MANURE.UKN	0.0000000000000	0.0000000000000	0.0000000000000
MANURE.IR	0.0000000000000	0.0000000000000	0.0000000000000

[10⁶ ha]
[10¹⁰ m³]

[10¹⁰ m³]
[10⁶ kg]
[10⁶ kg]

MANURE.DE	0.000000000000	0.000000000000	0.000000000000	
MANURE.GR	-409.18788878815	409.18788878815	0.000000000000	
MANURE.SNW	-797.16304543334	797.16304543334	0.000000000000	
MANURE.SSE	-371.29059422762	371.29059422762	0.000000000000	
MANURE.PO	-346.71345707701	346.71345707701	0.000000000000	[10 ⁶ kg]