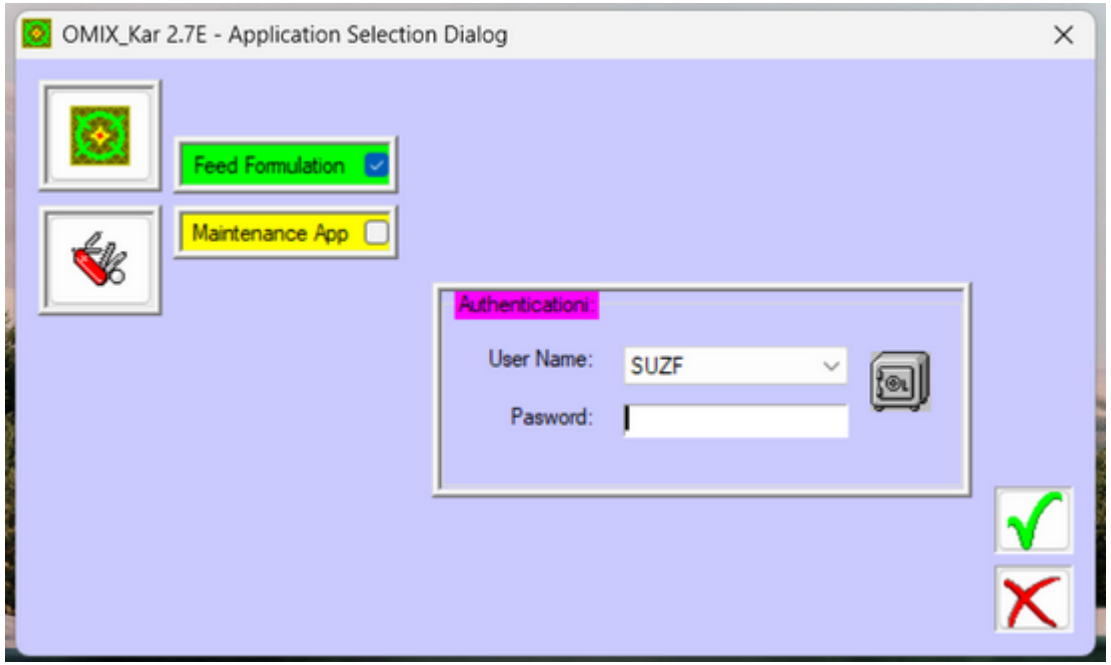
OMIX_Kar 2.7E – Least Cost Compound Feed Formulation Program (single blend)

by Prof. Dr. Ramazan YETİŞİR (emeritus)

Intention of this presentation is fast approach of the user to prepare mixed feed formulas on the program. First of all, It is important to Review the program's Help system.

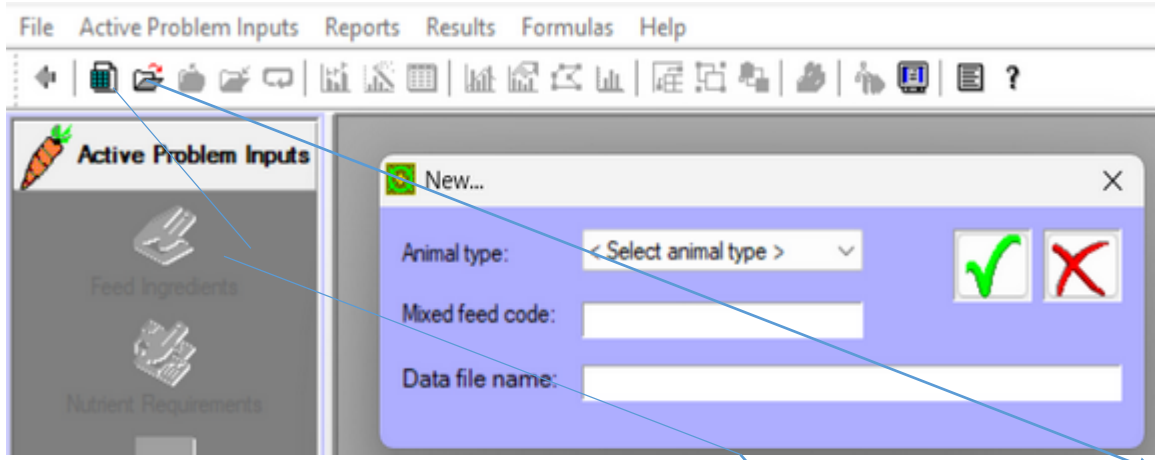


- When the program starts a dialog is appear. Default user name and pasword are SUZF and TR42 repectively. If you want, these can be changed later.

- User can select Feed Formulation or Meintenance app here. And than he/she goes to the selected app.

Data File Open

- The Data file can be New or existing one.
- In the Data file, Ingredient and Nutrient Names and limits. Ratio, Group and Combination names and limits and active problem matrix are kept as well. Limits are added to the entry windows by user in formulation sesion.
- Data file and relevant data is kept for solution of intended formula.



Create New data file

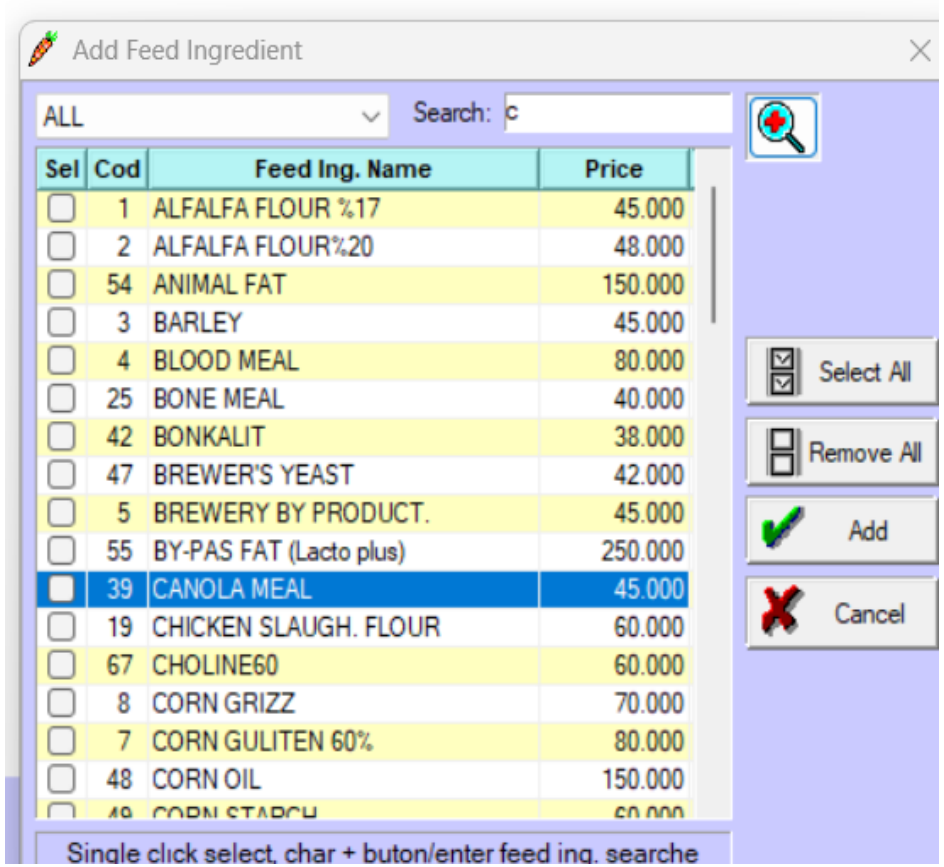
Open existing data file

If new data file is selected this dialog is appear. Here, animal type selection, Feed code and data file name writing is acieved.

If animal type nutrient specs are defined in the maintenace app. Relevant nutrient list is added to the Nutrient Data entry window, directly

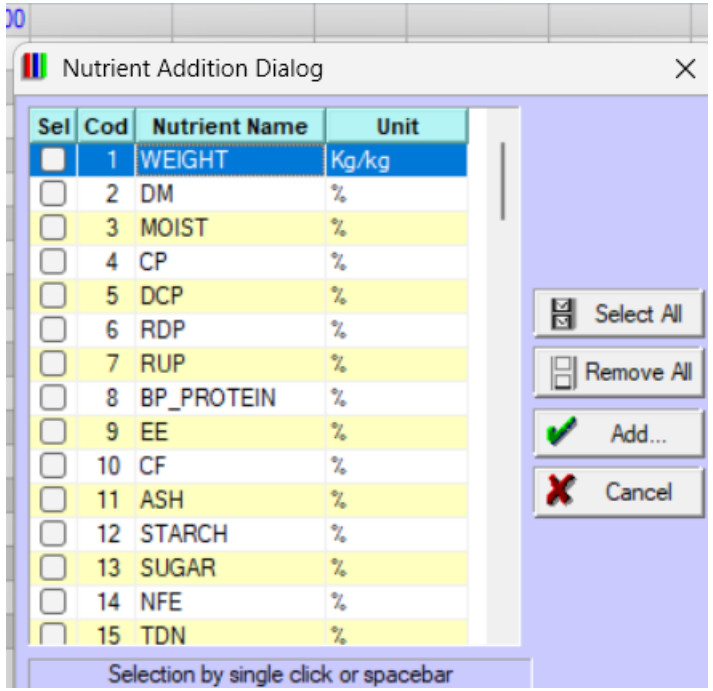
Feed Ingredient Data Entry Window

- If <New> data file is created, Ingredient data window is opened already at empty status. With right Mouse button click he/she select <Add Feed Ingredient> option and ingredient selection dialog, in the image, is emerced.



- This dialog is capable of adding selected ingredient names and price to this data window and nutrint content to the formula matrix, if nutrients allready selected.
- User select ingredient by mouse click of checkbox or navigation arrows and space bar, than click <Add>.
- User can select ingreients group by group. Already, we defined Ingredient as <Energy>, <Protein> and <Min+Wit> groups. User also can add more groups in the main matrix editing session.
- In this dialog, if user press a alfa character the searche entry is opened for particular ingredient finding.
- If user select ingredient group by group, selection and add is possible for each group seperately.

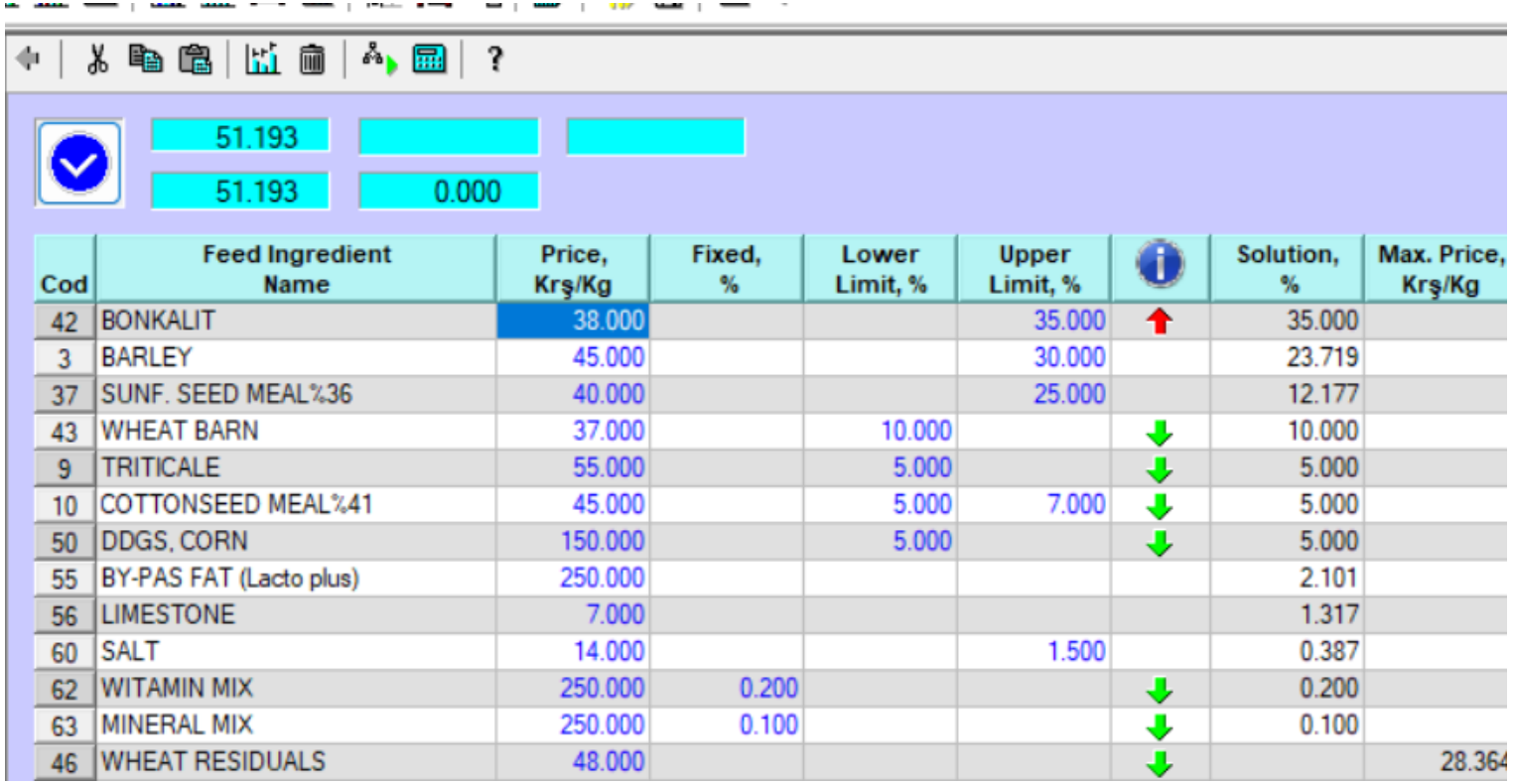
Nutrient Data Entry Window



- When the user passed to the Nutrient Entry window and it is almost empty, right click <Add Nutrient> from the context menü is selected and this dialog is apeared.
- Nutrients dedicated to the actual formula are selected and click <Add> button to transfer to actual formula entries.
- If the abbreviations are not understood, the Maintenance section's Nutrient Definitions dialog should be reviewed.
- If user defined <Animal Type> and <Nutrient Specifications> in Meintenance app, checked nutrients are came to this window directly, otherwise they must be selected in this dialog.
- User is responsible for the needed nutrients and limits, for dedicated Animal.

- After complation the feed ingredient and nutrient selection, so active matrix is formed. Than the matix is reviewed and if any data is empty, user try to complate them from tables or data sources suitable, otherwise empty data is accepted as 0.0 value. Entered all data, nutrient and ingredient names are considered in the solution.
- After the data entry, it is time to set limits in these Windows. Now we are going to do this issue.

Set Limits-Ingredient Data Entry



51.193

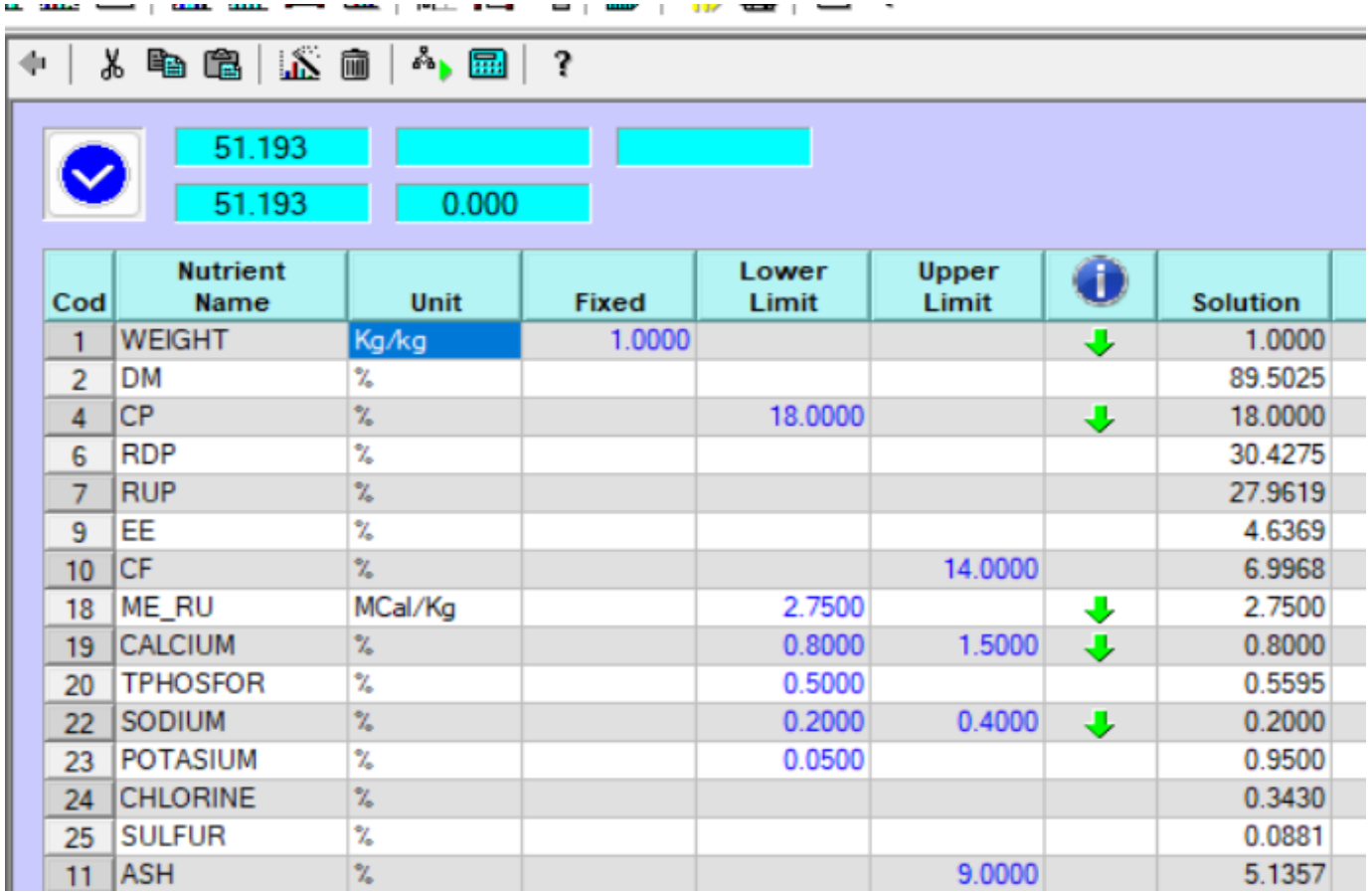
51.193 0.000

Cod	Feed Ingredient Name	Price, Krş/Kg	Fixed, %	Lower Limit, %	Upper Limit, %		Solution, %	Max. Price, Krş/Kg
42	BONKALIT	38.000			35.000	↑	35.000	
3	BARLEY	45.000			30.000		23.719	
37	SUNF. SEED MEAL%36	40.000			25.000		12.177	
43	WHEAT BARN	37.000		10.000		↓	10.000	
9	TRITICALE	55.000		5.000		↓	5.000	
10	COTTONSEED MEAL%41	45.000		5.000	7.000	↓	5.000	
50	DDGS, CORN	150.000		5.000		↓	5.000	
55	BY-PAS FAT (Lacto plus)	250.000					2.101	
56	LIMESTONE	7.000					1.317	
60	SALT	14.000			1.500		0.387	
62	WITAMIN MIX	250.000	0.200			↓	0.200	
63	MINERAL MIX	250.000	0.100			↓	0.100	
46	WHEAT RESIDUALS	48.000				↓		28.364

- For ingredient limit setting, like other limits, Fixed, Lower and Upper limit are posible.
- At any solution session, at the start, only Min+Vit mixture or additves like DCP, Salt, AA mixture can be set as fixed.
- Fixed limit is set especially (not writen in the matrix) empty nutrient content material and recomended in prospectus as 1, 2 or certain % inclusion. In this case, it must be set as fixed limit. For example 1 kg in 1 Ton like that can be set as %0.01.
- Indeed, too much fixed entry is not suitable for solution. Especially, for ingredients.

- At formulation sesion, first check price. If price of one ingredient is not exist, it is not considered in the solution. If prices have been updated, when leaving the window, the program ask to user for update also in the main matrix for these ingredients. For this, keeping prices updated olmost easy.
- Out of fixed entries, other limits are not been set. If you are exactly defined, may be add upper limits.
- After the first solution, the excessive entries can be set as upper limit, as well.
- If one ingredient is necessay to include to solutioins, it can be set as lower limit.
- After change the any limit, request solution and than cost and inclusion levels are checked.

Set Limits-Nutrient Data Entry



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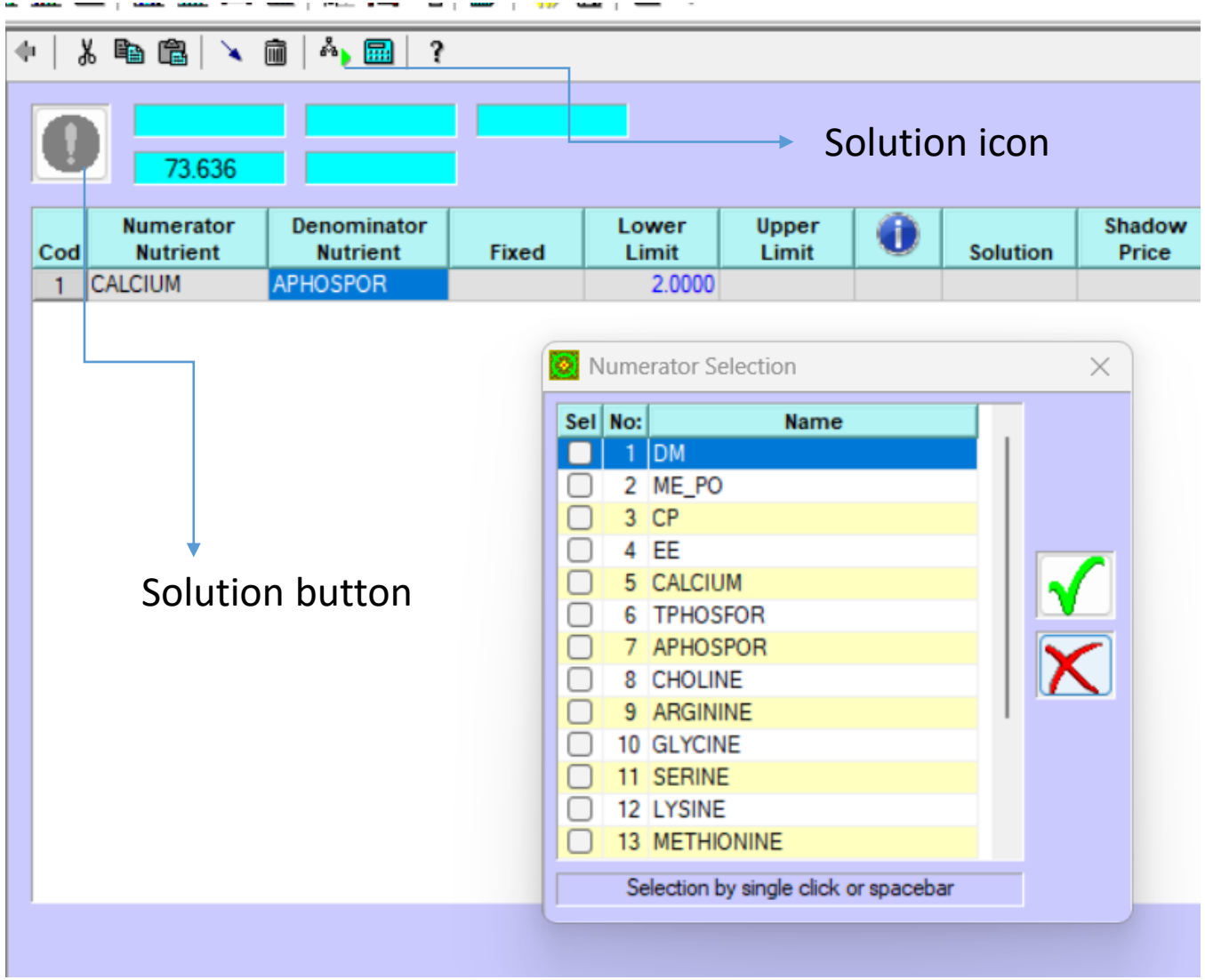
Cod	Nutrient Name	Unit	Fixed	Lower Limit	Upper Limit		Solution
1	WEIGHT	Kg/kg	1.0000			↓	1.0000
2	DM	%					89.5025
4	CP	%		18.0000		↓	18.0000
6	RDP	%					30.4275
7	RUP	%					27.9619
9	EE	%					4.6369
10	CF	%			14.0000		6.9968
18	ME_RU	MCal/Kg		2.7500		↓	2.7500
19	CALCIUM	%		0.8000	1.5000	↓	0.8000
20	TPHOSFOR	%		0.5000			0.5595
22	SODIUM	%		0.2000	0.4000	↓	0.2000
23	POTASIUM	%		0.0500			0.9500
24	CHLORINE	%					0.3430
25	SULFUR	%					0.0881
11	ASH	%			9.0000		5.1357

On these Windows, cost status (upside), active solution, previous solution and saved solution results can be revieved.

- In Nutrient data entry window, like others, fixed, lower and upper limits are exist.
- WEIGHT is set as 1.000 (one) and it is reserved Word. It is added by program for keep total ingredient at %100.
- Here, Nutrient requirements is set at lower limit. It is formulation of the particular nutrient that must be at least lower limit.
- Upper limit is set for tolerance edge.
- Enrgy unit is set as Mcal/kg not as Kcal/Kg, because of the calculation sensitivity.
- For Ash, Salt and CF is set mostly as Upper limit.
- Nutrient units can be different from each other, but must be convenient with the matrix units.
- During the solution sesions, user can work in Ingredient Data Entry Window but must be checked the nutrient entries as well, for excessive entries.

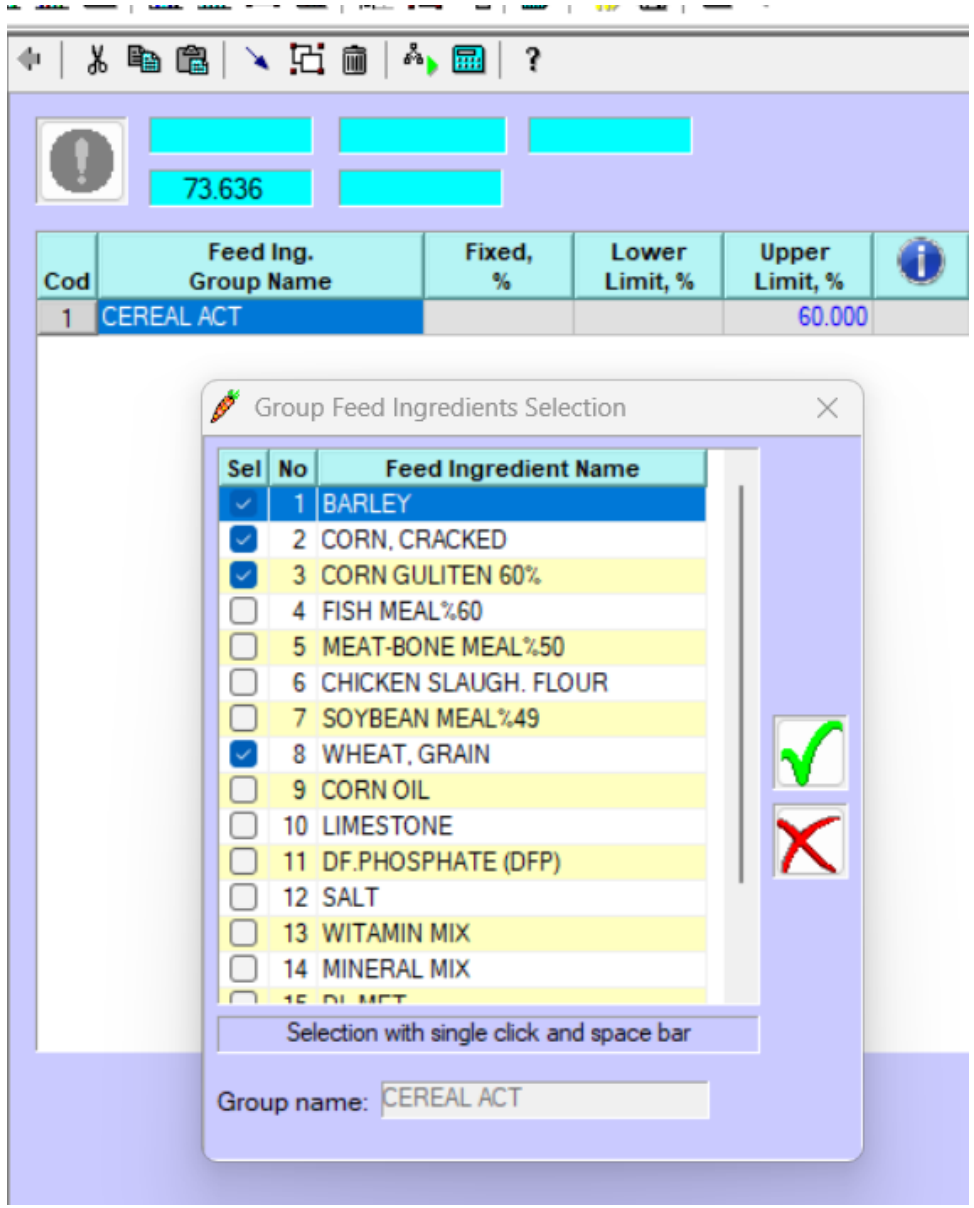
- **In this sence, Dual Data Enrty Windows can be useful.**

Set Limit-Nutrient Ratio



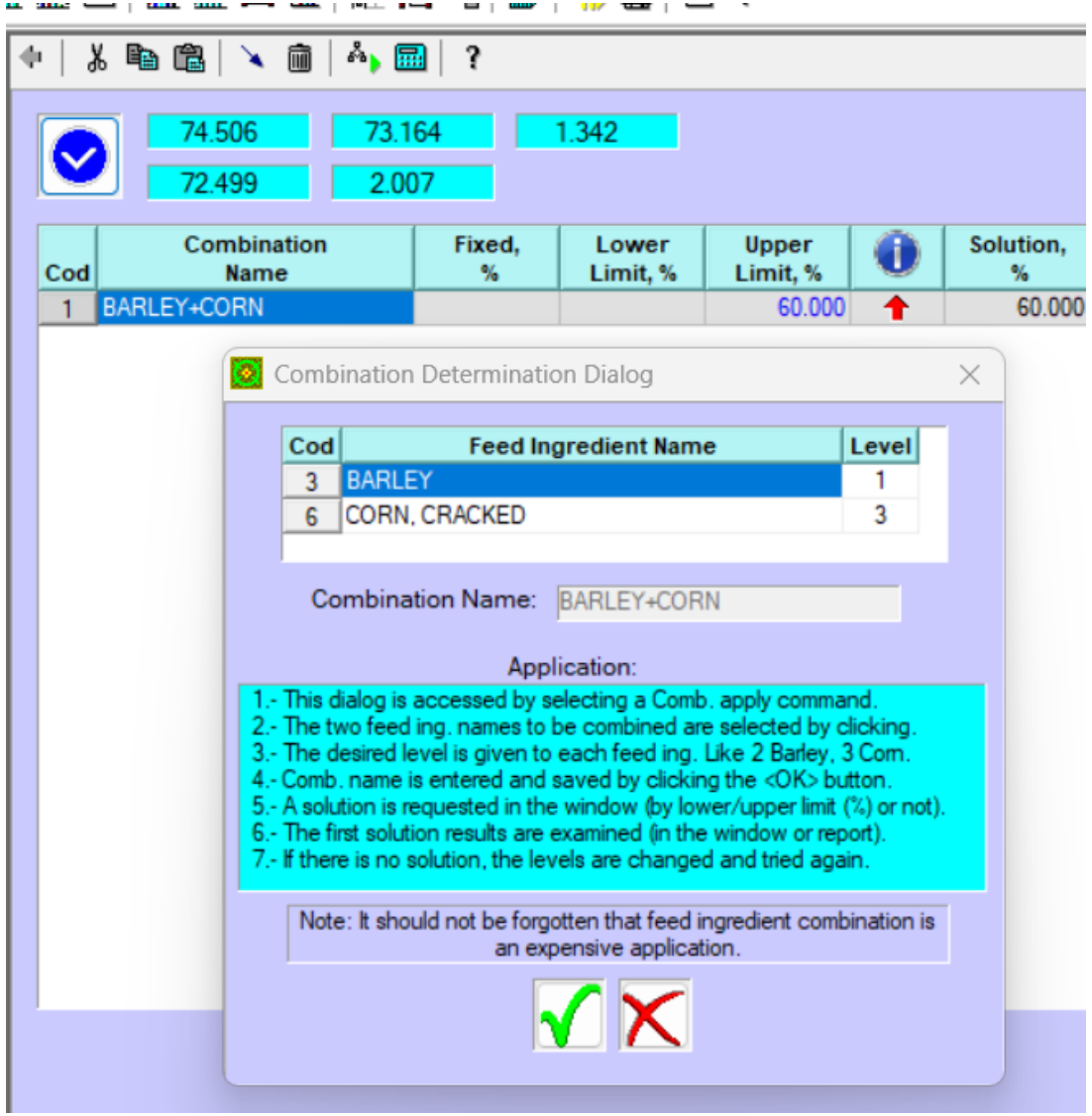
- In deed, the Ratio is division of two nutrient.
- In nutritional aspects, certain ratio betwean two interacting nutrients is needed. For example; CALCIM/PHOSPOR ratio in young animal set to 2.0, nutritionist want to know ME/CP ratio in the formula. Some AA ratios in the total CP of poultry feed is wondered, etc.
- When user passed to the this window, and takes a right mouse click and <Add Ratio> option is selected, and this dialog is apeared.
- In two sesion, Numerator and Denominator nutrient is selected, respectively.
- Then can be set a limit and click solution icon to take the status of the ratio. Than upper, lower limit or if there is a solution also can be set a fixed limit, as well.
- And, the results can be reflected to report.

Set Limits-Ingredient Groups



- For nutritional aspects or status knowlege wondering, some ingredients can be grouped, in formulation.
- In the called dialog, ingredients dedicated to particular group are selected and given a name and saved. Whether set limit or not, after the solution, % statsus of group is known.
- Well known goups can be Cereal activity, oil meal activity, additives activity, fat activity etc.
- For status of the activities, user or nutritionist can develop feeding, economic or nutritional policy.

Set Limits-Ingredient Combinations



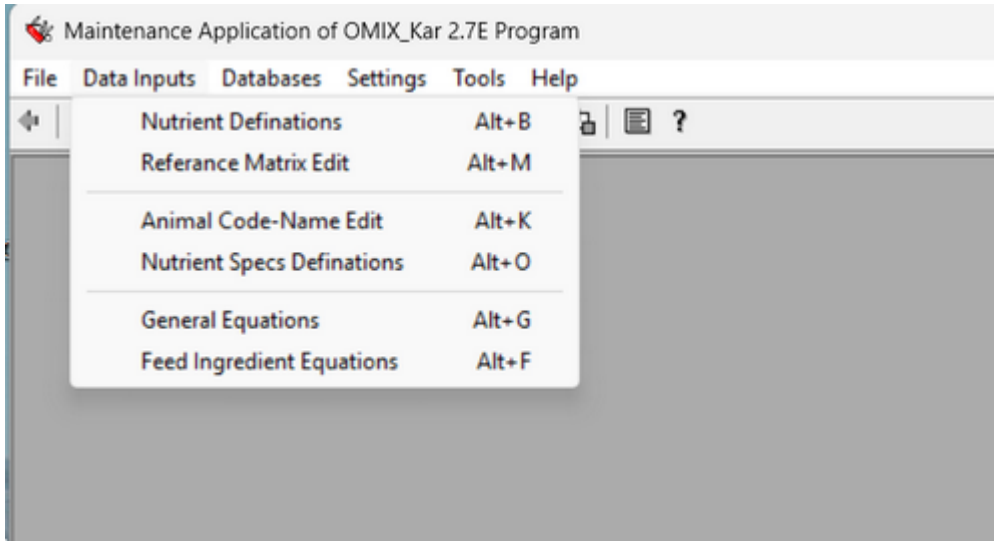
- As to the other data input windows, this ingredient combination window is used less frequiently.
- But in certain condition, ingredient combinations are used.
- For example user/factory has two Sun Flower Seed Meal, one is 28%CP and other is 36%CP. If you can combine 2 weight for first, 3 weight for second, or with other combinations, repectively. In this case, you can use the combination appliance.
- Than on the data window, you can also give a limit % upper, for example.
- During the solution session, if combination give optimal solution you can use it. If not give an optimal solution, you can change limit or delete it. Because the combination as result is fixed entry and can be a costly appliance.
- In this case, you can try these ingredients in the ingredient data entry window as lower limit, if they are not in the solution.

Dual Entry Windows or All Entries in One Window

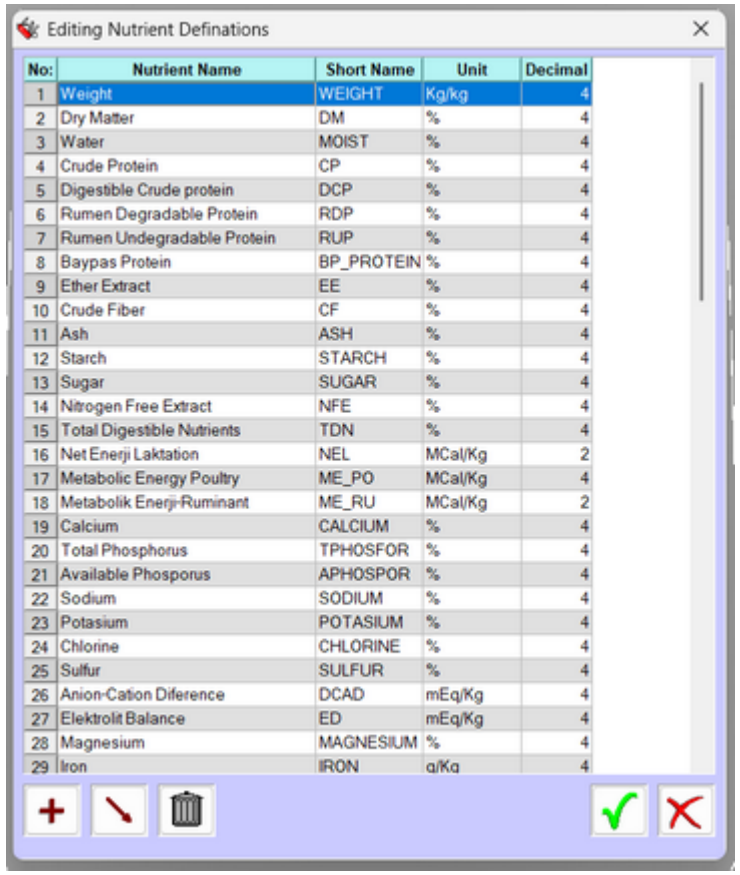
- After the Ingredient and Nutrient entry in the first two windows, composition matrix is formed. User, if desire, he can fallow the formulation session in the dual data windows or all enries in the one window (five entry in one).
- This kind of work usefull for maturation of the formulation. In these sutiation, User can see/review the solution results together. After any solution, user can see every limit’s results in five entry one window.
- Than can be take a report for appliance of result.
- For reporting, the related icon on main window is used.
- So, It is better to try this reporting on the program.
- At the end, we can say that formulation is complated in one session work, not with any button click.

Maintenance App.

- At starting dialog, we have second preference which is maintenance app. In selection of this, user passes to the this app.



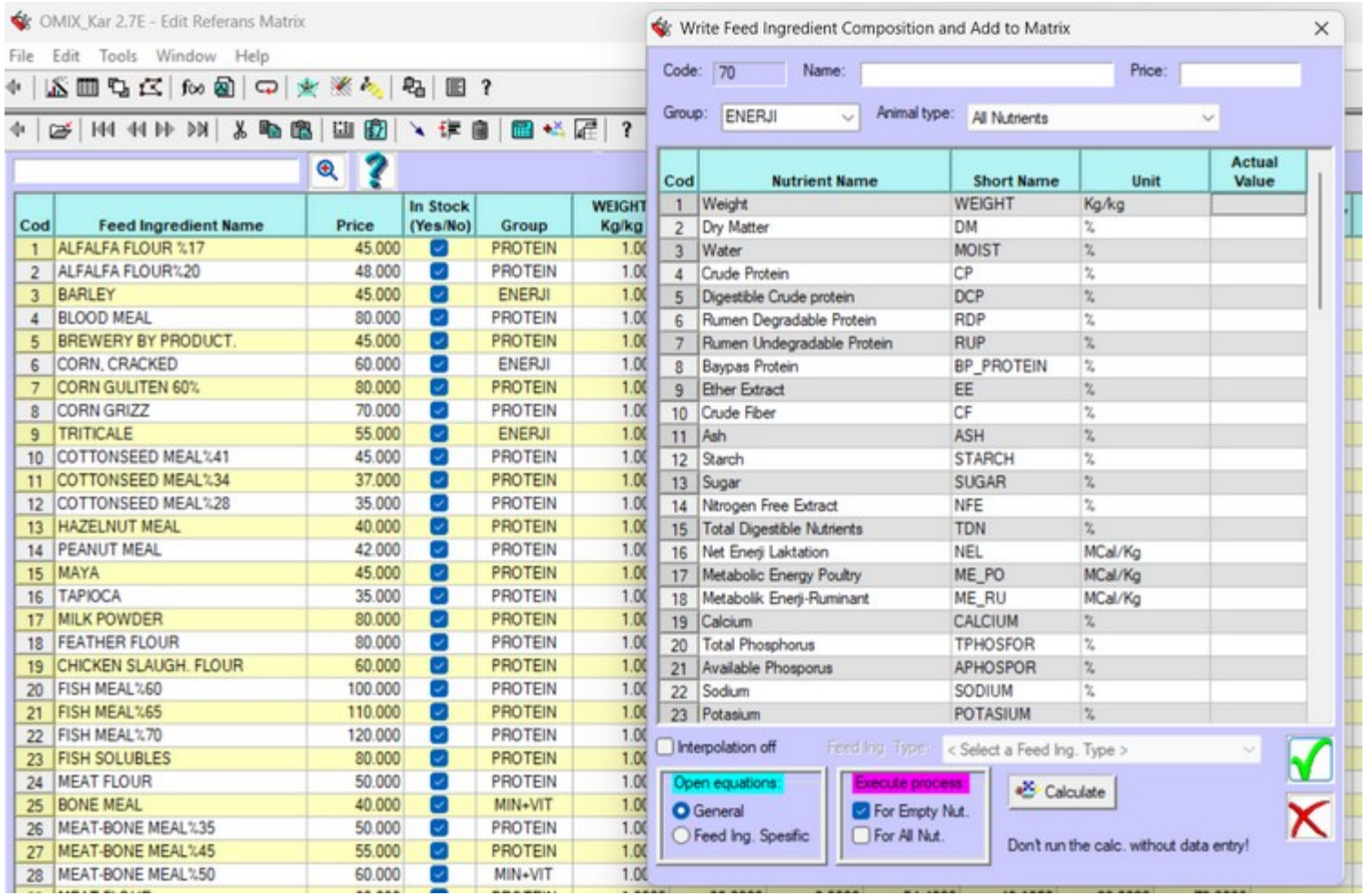
On maintenance app; the main menu option is <Data Input> which include several sub options. We can see them in the open menu image. First of all is Nutrient Defination Data dialog. %60 of the image is seen in right side.



No:	Nutrient Name	Short Name	Unit	Decimal
1	Weight	WEIGHT	Kg/kg	4
2	Dry Matter	DM	%	4
3	Water	MOIST	%	4
4	Crude Protein	CP	%	4
5	Digestible Crude protein	DCP	%	4
6	Rumen Degradable Protein	RDP	%	4
7	Rumen Undegradable Protein	RUP	%	4
8	Baypas Protein	BP_PROTEIN	%	4
9	Ether Extract	EE	%	4
10	Crude Fiber	CF	%	4
11	Ash	ASH	%	4
12	Starch	STARCH	%	4
13	Sugar	SUGAR	%	4
14	Nitrogen Free Extract	NFE	%	4
15	Total Digestible Nutrients	TDN	%	4
16	Net Enerji Laktation	NEL	MCal/Kg	2
17	Metabolic Energy Poultry	ME_PO	MCal/Kg	4
18	Metabolik Enerji-Ruminant	ME_RU	MCal/Kg	2
19	Calcium	CALCIUM	%	4
20	Total Phosphorus	TPHOSFOR	%	4
21	Available Phosporus	APHOSPOR	%	4
22	Sodium	SODIUM	%	4
23	Potasium	POTASIUM	%	4
24	Chlorine	CHLORINE	%	4
25	Sulfur	SULFUR	%	4
26	Anion-Cation Diference	DCAD	mEq/Kg	4
27	Elektrolit Balance	ED	mEq/Kg	4
28	Magnesium	MAGNESIUM	%	4
29	Iron	IRON	g/Kg	4

- Name, abreviation, unit and decimal numbers are can be edited in this data dialog.
- Add, Insert and delete nutrient can be possible.
- After cahanging, existing nutrients list, if saved these nutrinets forms the main matrix’s colums.
- If you delete a nutrient here, you can delete it in the main matrix as well, and it is not recomended, because of the data lose.

Main Matrix Editing



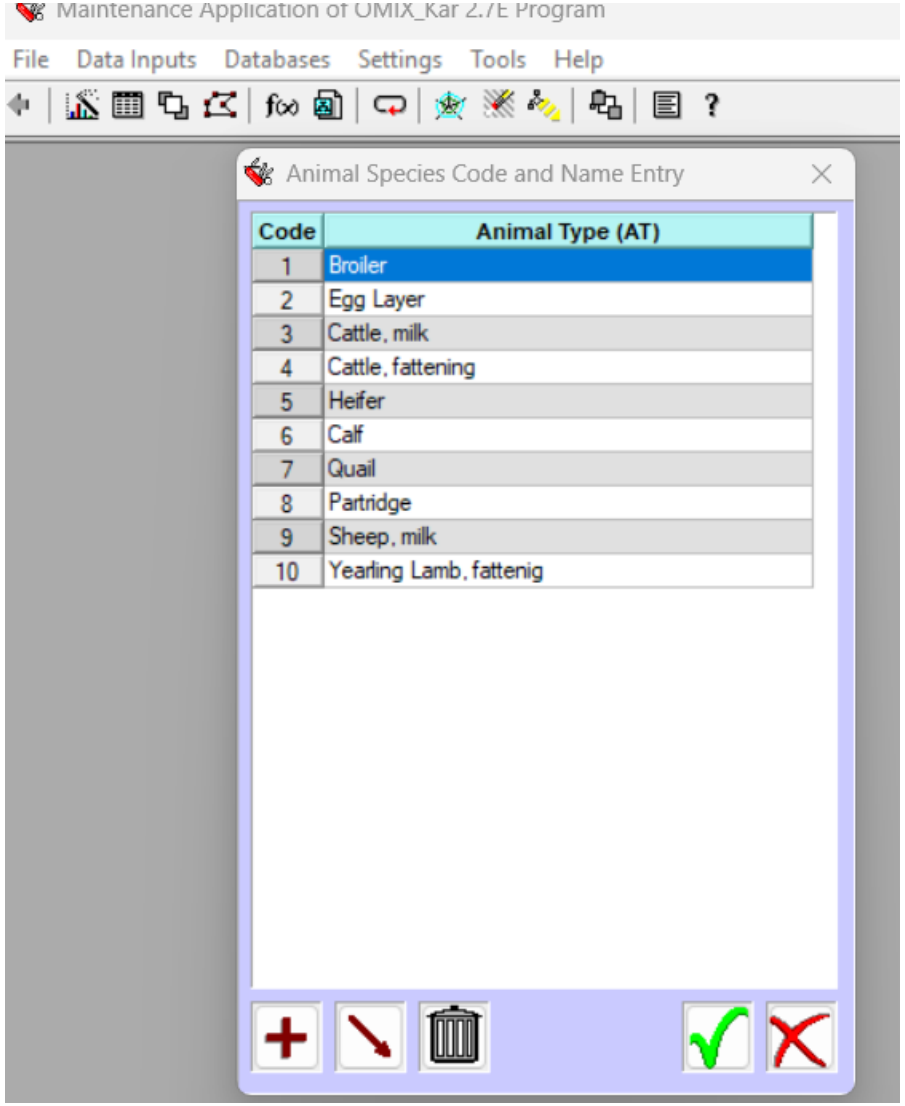
- When user select <Add New Ingredient> dialog window on the left side image is came and can be entered ingredient's nutrient content. Than, save or several calculation for empty nutrients is possible.

- If user select <Edit Selected Ingredient> menu option, content may be changed and Saved differently (Save as…), also.

- If you are entering laboratory analisysis results, with general equation or ingredient paticular equation entered in that section, can be calculate additional nutrient status of ingredient and saved for using in the formulation

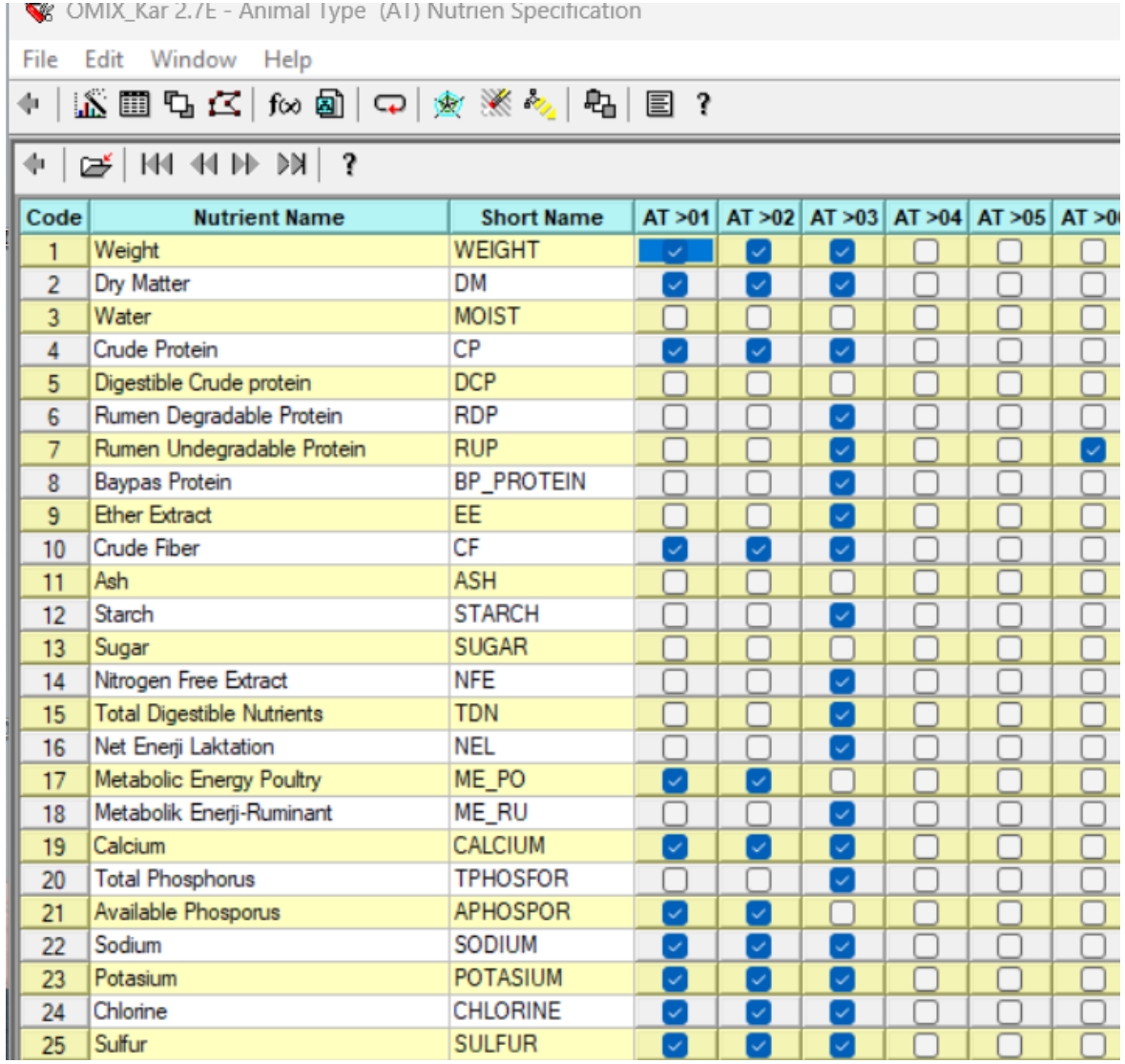
When the user select <Matrix Editing> menu option, the main Browser window came. And with right mouse click, <Add New Ingredient> or <Edit Selected Ingredient> options are active and can be selected to impliment.

Animal Name and Code Entry



- Animal Name and Code entry is for the help to crearte Nutrient Specification for particular animal in the other next database window.
- Invoked dialog has capability To doing this issue.
- Any animal spacies or any type can be writen and saved to the related database.
- Add, Insert or delete buttons help doing this issues

Nutrient Specifications Entry



Code	Nutrient Name	Short Name	AT >01	AT >02	AT >03	AT >04	AT >05	AT >0
1	Weight	WEIGHT	☑	☑	☑	☐	☐	☐
2	Dry Matter	DM	☑	☑	☑	☐	☐	☐
3	Water	MOIST	☐	☐	☐	☐	☐	☐
4	Crude Protein	CP	☑	☑	☑	☐	☐	☐
5	Digestible Crude protein	DCP	☐	☐	☐	☐	☐	☐
6	Rumen Degradable Protein	RDP	☐	☐	☑	☐	☐	☐
7	Rumen Undegradable Protein	RUP	☐	☐	☑	☐	☐	☑
8	Baypas Protein	BP_PROTEIN	☐	☐	☑	☐	☐	☐
9	Ether Extract	EE	☐	☐	☑	☐	☐	☐
10	Crude Fiber	CF	☑	☑	☑	☐	☐	☐
11	Ash	ASH	☐	☐	☐	☐	☐	☐
12	Starch	STARCH	☐	☐	☑	☐	☐	☐
13	Sugar	SUGAR	☐	☐	☐	☐	☐	☐
14	Nitrogen Free Extract	NFE	☐	☐	☑	☐	☐	☐
15	Total Digestible Nutrients	TDN	☐	☐	☑	☐	☐	☐
16	Net Enerji Laktation	NEL	☐	☐	☑	☐	☐	☐
17	Metabolic Energy Poultry	ME_PO	☑	☑	☐	☐	☐	☐
18	Metabolik Enerji-Ruminant	ME_RU	☐	☐	☑	☐	☐	☐
19	Calcium	CALCIUM	☑	☑	☑	☐	☐	☐
20	Total Phosphorus	TPHOSFOR	☐	☐	☑	☐	☐	☐
21	Available Phosporus	APHOSPOR	☑	☑	☐	☐	☐	☐
22	Sodium	SODIUM	☑	☑	☑	☐	☐	☐
23	Potasium	POTASIUM	☑	☑	☑	☐	☐	☐
24	Chlorine	CHLORINE	☑	☑	☑	☐	☐	☐
25	Sulfur	SULFUR	☑	☑	☑	☐	☐	☐

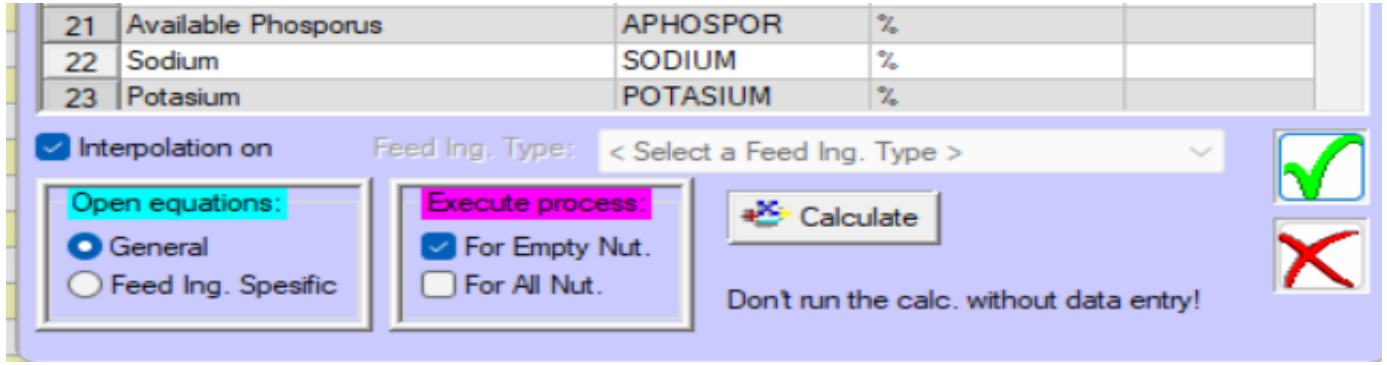
- If the user selects, animal specific nutrients which considered must be included in formulas, with checkbox these nutrients are outo added to the new data files directly. At the same time, these data used filtering the nutrients for Matrix editing also possible. These records are saved to the DBF file and are used lather.
- When the mouse hovers over a column, the type of animal appears as a short message (tool-type). Clicking adds it to the entry below.
- Usually, organic and macro mineral nutrients such as DM, ME_RU, CP, Ash, CF, CALCIUM, PHOSPHORUS, SODIUM, CHLORINE and POTASIUM are selected for the ruminant group of animals.
- If the prepared compound feed is to be used in the daily ration, elements such as DCP, TDN, RDP, RUP, NEL, and DCAD are also added. Even if limits are not set for these, the levels in the prepared compound feed are determined.
- For poultry, in addition to nutrients such as DM, ME_PO, CP, Ash, CF, CALCIUM, PHOSPHORUS, SODIUM, CHLORINE, essential amino acids (AA) and Linoleic acid for layer feeds etc. are chosen.
- In poultry feeds, for performance purposes, AA/CP ratios or AA/ME_PO ratios are taken into consideration.

Equation Writing

Equation writing is done with two options under the menu command. These are;

1. **General Equation,**
2. **Feed Ingredient Specific Equations.**

- The aim of this modules is to calculate the maximum amount of other nutrients using the chemical analysis results obtained in the laboratory through the equations entered here.
- These nutrient are ME_RU, ME_PO, DCAD, EB, NFE, TDN, amino acids etc. can be specified as. General and feed material specific equations are written in separate dialog windows.
- The equations written in these data dialogs are used in the <Referance Matrix-><Write in the Form> dialog. Like in the image.

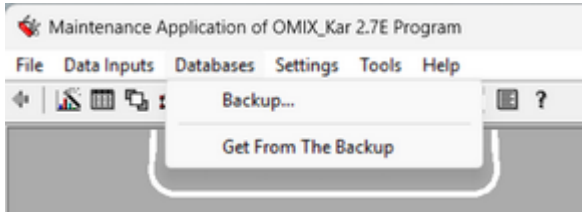


- In the analysis of feed ingredients, if DM, CP, EE, CF, Ash, SUGAR, Starch, ADF, ADL and NDF analyzes are performed some nutrients can also be calculated.
- When carrying out special equations for feed ingredients, one Feed Ingredient type is chosen. For example, when Fish Meal is selected, amino acids are also calculated in addition to BP_PROTEIN. If Fish Meal 70 is selected, BP_PROTEIN is calculated first. Amino acids are calculated accordingly since the Base Feed Ingredient is Fish Meal.
- if Fish Meal is entered in the Basic Feed Ingredient field for Fish Meal 70, less data entry is required. If you pay attention, only CP changes in the amino acid calculation.

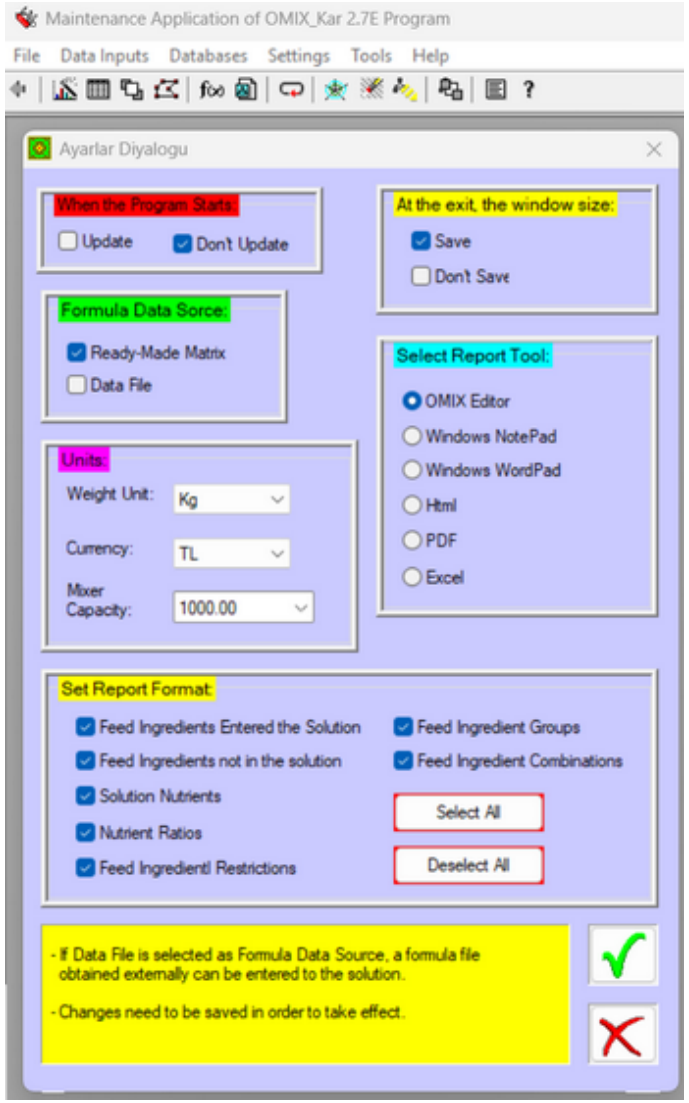
Databases

- Databases menu has two sub options
    1. Backup
    2. Get From the Backup

- When user update main matrix, auto backup is exist, but if you Update the program from internet or any other way, it came with own databases, for this reason before program update need manually back up your databases. Than, after program update is finished, it must be retriewed from the back up directory.
- For this reason, preventing the data lose, these command are important work to do.
- User must know what he is doing and take care of it.



Settings



- On the Setting Dialog, as can be seen on the image, several sets can be done. These setting effects the program's functionality. All settings has default option.

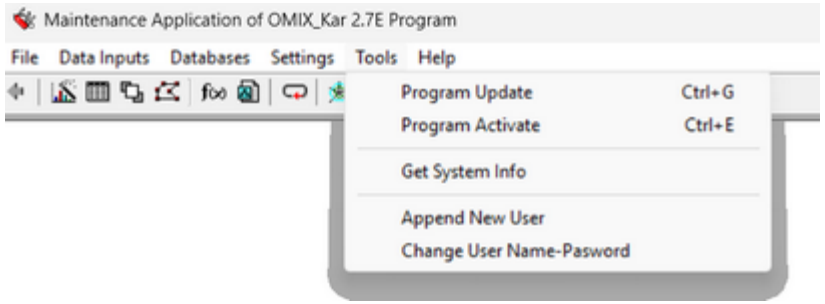
- Actually, these setting are;

1. **Program Update** (at program start Setup file is downloaded or pause update),
2. **Formula Data source** (data file or ready matrix),
3. **Units** (weight unit, currency and mixer capacity),
4. **Set Report Format** (which part of the OMIX output will be reported),
5. **Main window size** (main window size is saved or not at quit the program),
6. **Select Report Viewer Tool** (six option is possible),

- Lastly; Html, PDF and Excel output routines were added. User select viewer/printing tool, how is he/she confortable.

- The entered data is saved and remembered when the program starts.

Tools



Tools Menu has five sub options. They can be seen on the image.

They are;

1. **Program Update:** (FTP protocol, because of the web site adminstrations's security policy, nowadays, it is not active). User can update by selecting related Setting dialog option via HTTP protocol.

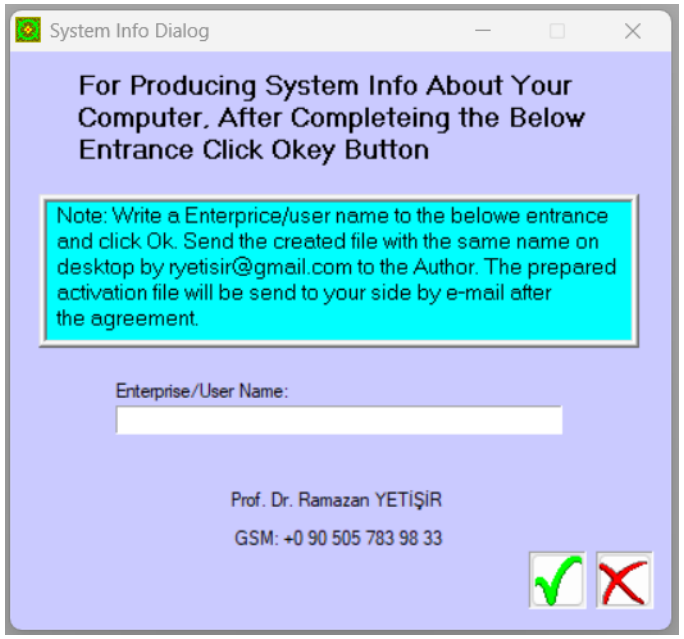
2. **Program Activate:** If user get activation file from the autor, it is introduced to the program.

3. **Get System Info:** For getting activation file, system info file is send to the author by e-mail. Program throw to the desktop this file.

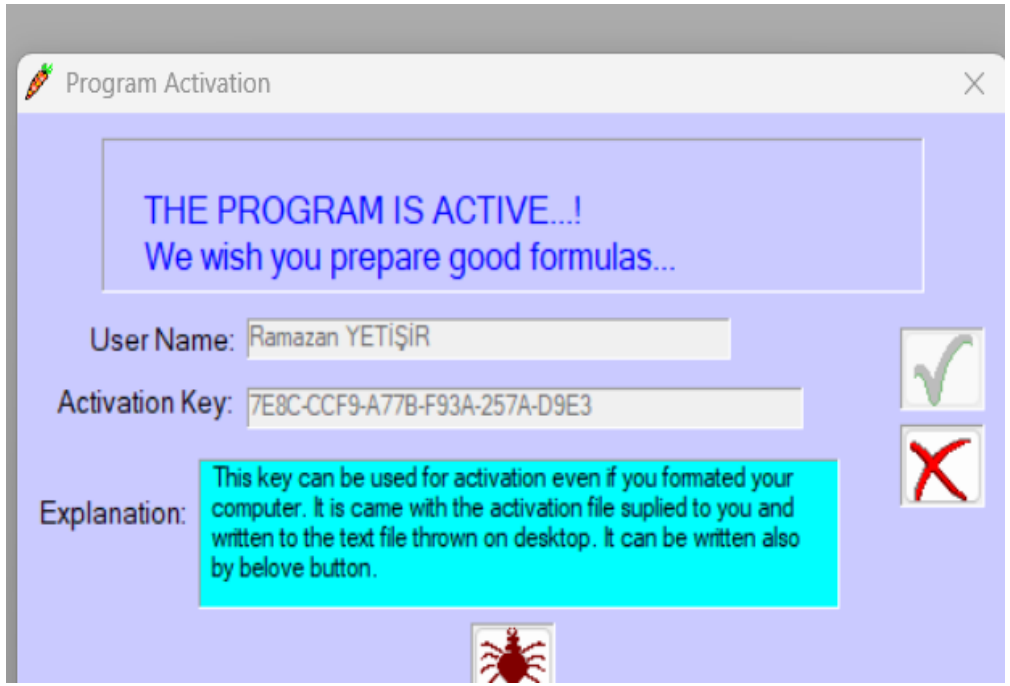
4. **Append New User**: Add new user by a dialog

5. **Change User Name and Pasword:** Change active user name and pasword.

Tools



Messages on dialog are explain how user get the system info and what to do with the file thrown on the desktop .



After activation process, the dialog looks like so.
When the activation is complate, user also have a text file on desktop including Lifelong activation Key against hard disk formating for this computer. This Key also can be extracted by button at the bottom.

Results

- We have introduced here a short presentation of OMIX_Kar 2.7E (english version) program and we strongly recomend that, the user must review the program's help system.
- Most important things to learn are the entry of the limits in feed formulation sessions. At start, leave the limits for feed ingredients allmost empty and after the solution on data window, set upper limit for excessive entries, and folow like that. As long as the solution is optimal, changes can continue.
- After any change, take a solution again and evaluate the results.
- If you are in the Ingredient entry window, after some solution request take a look to the solution results of the Nutrients, as well.
- User is responsible of the nutriet requirement entries. Nutrient requirements must be entered at Lower limit. Usually, an upper limit is set for CF and Ash.
- Requirments of the poultry are found generally in the hybrid catalog of the genotype raised. You can find them almost in the intertnet.
- The requirements of other animal types can be found on the factory's declaration documents or searching the internet with related sites, as well.
- Other important things are upper limits of the ingredients used in the formulation. We introduced a PDF document of 3 table for this purpose, additionally.
- Have a good luck and prepare good formulas.

Prof. Dr. Ramazan YETİŞİR