Agrisoft Systems
NEWSLETTER
Twenty-first edition, Jan.— Mar. 2017

Message from the Management

Moving towards web-based reporting with OMP

Dear Customers and Friends,

In order to use OMP effectively as a management information system for plantation and field managers, it is crucial to establish methods and routines by which information can be efficiently disseminated to the managers. Historically, the options for this process have typically been limited by the communication infrastructure available at the plantations, which are often poor owing due to the remote locations of many oil palm plantations. In many cases, this in practice means that the OMP operators export a certain set of pre-agreed OMP reports, charts and maps at regular intervals (e.g. weekly or monthly) and distribute them to field managers via email, using USB sticks or even in print form. While this works well in general, it means that managers will have to request specific information from the operators whenever they need anything out of the ordinary. This in turn often doesn't happen, mainly because many managers are not fully aware of the range of information available in OMP. For this reason, it would be desirable to have an option for field managers to be able to explore, access and generate OMP reports on demand without having to take the detour via the OMP operator.

With ever-improving IT and communications infrastructure, many plantations can now provide reliable internet access not only in the main office, but also in field offices, housing complexes and in some cases even in the field via 3G mobile phone signal. In light of these changes, we are shifting the main focus of our development strategy towards making use of the new opportunities. The medium term goal is to provide a web-based reporting solution which can tie into the OMP dataset and provide the most important reports for managers to access remotely using laptops, smartphones or tablets. At the same time, the OMP desktop program will continue to provide more powerful tools for agronomists and plantation managers looking to carry out detailed yield gap and correlations analysis, create crop or field work budgets, or generate fertilizer recommendations.

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The OMP data structure has historically been designed with a focus on atomicity, in order to function as a relatively light-weight database which can easily be copied to any laptop or computer and be used without requiring any local area network or internet connection. In order to move towards better multi-user and web support, we are therefore planning to completely redesign and modernize the OMP data structure. As part of this, we will also migrate the database to an SQL Server backend and integrate all the OMP add-in applications into a single data file.

Besides the mobile reporting aspect mentioned above, the improvements in the internet availability and the advent of smartphones and tablets also provide great opportunities for simplifying and streamlining the data collection process. In this context, we have been continuing our development of a flexible field survey and data collection app for smartphones and tablets. The app will support any Android or iOS handhelds and will be accompanied by a new dedicated OMP Field Survey add-in which allows you to create your own questions and surveys to record any kind of data.

Over the past months, the Agrisoft Systems development team has been working hard on the new OMP 9.0, which is due for release in the next months. This release includes major changes to many fundamental aspects of the software and represents the first major step towards the redesigned data structure. One aspect which has been completely revamped is the way pick-up list values are defined and stored in OMP, which is crucial to support the OMP Field Survey add-in mentioned above. For a more detailed look at the changes in the new version, please take a look at the dedicated feature article in this newsletter.

Yours sincerely,

Max Kerstan

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Feature

Preview: OMP 9

As discussed in more detail in the introduction of this newsletter, the strategic direction of the OMP development is to move towards an integrated application combining all add-ins with a single SQL Server database to allow for more powerful multi-user and web reporting solutions. While upcoming release still has individual MS Access data files and does not yet integrate the add-ins, it does represent the first major step in this direction with a major revamp of the data structure, the user interface and many of the system functionalities of OMP. This is reflected in our decision to increase the major version number and move to OMP 9 after over a decade of OMP 8.

For existing OMP users, the most obvious change when opening up the new version will be the redesigned main menu shown in figure xxx. Whereas the old menu was fundamentally based on a split into separate sections for data edits, analysis and reporting, the new menu is based on a thematic split into the different topics covered by OMP. We are confident that this will prove to be significantly more intuitive to use and removes the need to jump back and forth between different sub-menus for data analysis forms, charts and reports when analyzing a particular topic like e.g. yield or fertilizers. An important advantage of this layout is that it gives us the flexibility of integrating the topics covered in the various OMP add-ins in future versions, which would not have been possible with the old menu. Furthermore, the fact that the entire menu is contained within a single form will also reduce the clutter on screen from having multiple submenus open at the same time.

Over the past months, we have also put in a lot of work on modernizing the user interface design

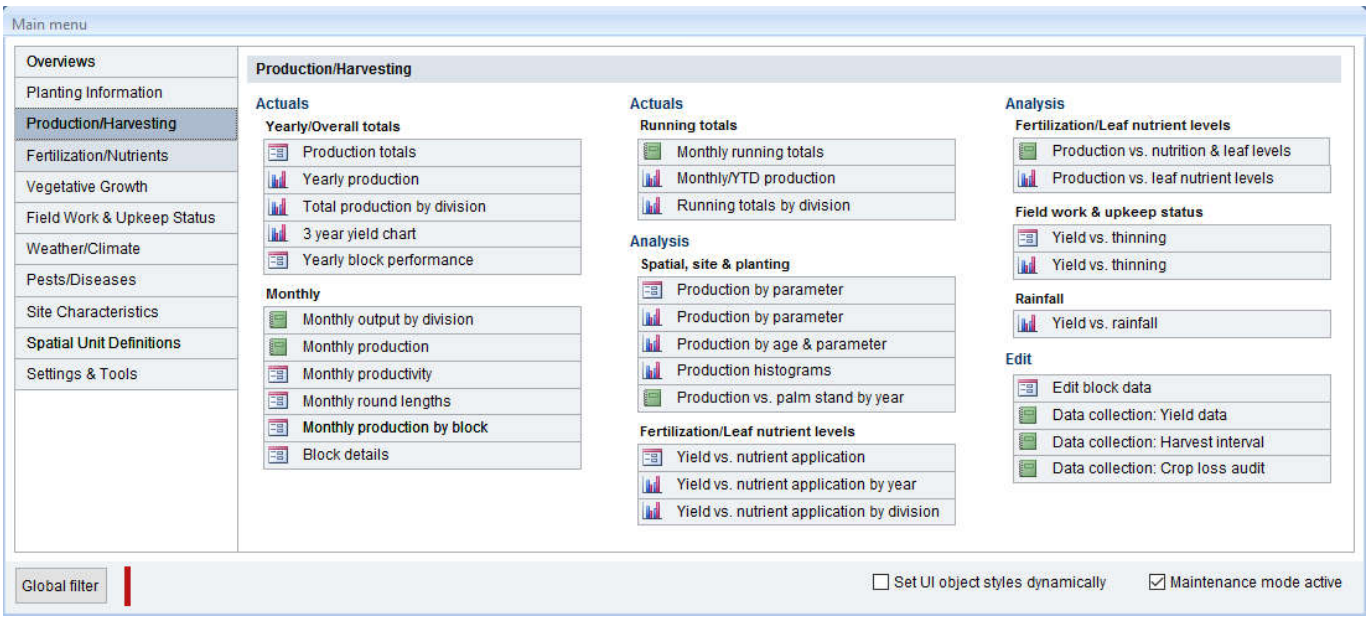

Figure 1: Preliminary layout of the new main menu.

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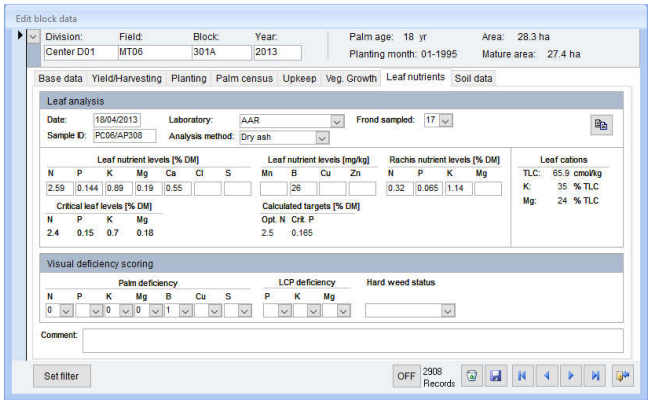

Figure 2: New layout and colour scheme of edit block data form.

and color scheme of all forms in the main OMP application. Like the new menu, this will improve user friendliness and readability through more consistent form layouts, labels and units throughout the whole program. The new UI layout, an example of which is shown in figure 02, matches the design of our newer OMP Fertilizer Planner and OMP Field Survey add-ins and allows us to integrate forms and reports from the new add-ins into the main OMP application in the future. As part of the OMP 9 release we have also completely recoded the technical realization of multi-language user interface support in OMP, aiming to provide consistent support for English, Spanish and Bahasa Indonesia in the future.

Further aspects of the program which have been completely redesigned and recoded in the OMP 9 release are the system settings area, the pick-up list definitions and the data importing module. With a clear, thematic layout the new pick-up list and system settings modules make it much easier for the user to find the fields and settings he is looking for. The more flexible technical realization has allowed us to integrate more than 20 new pick-up fields ranging from field upkeep parameters such as circle and path weeding scores over new vegetative growth fields to additional visual nutrient deficiency scores for LCP deficiency symptoms. This is particularly useful in combination with the new OMP Field Survey add-in and smartphone app, which is a custom-built tool to greatly simplify data collection in the field. An additional feature of the new system is that it is now possible to

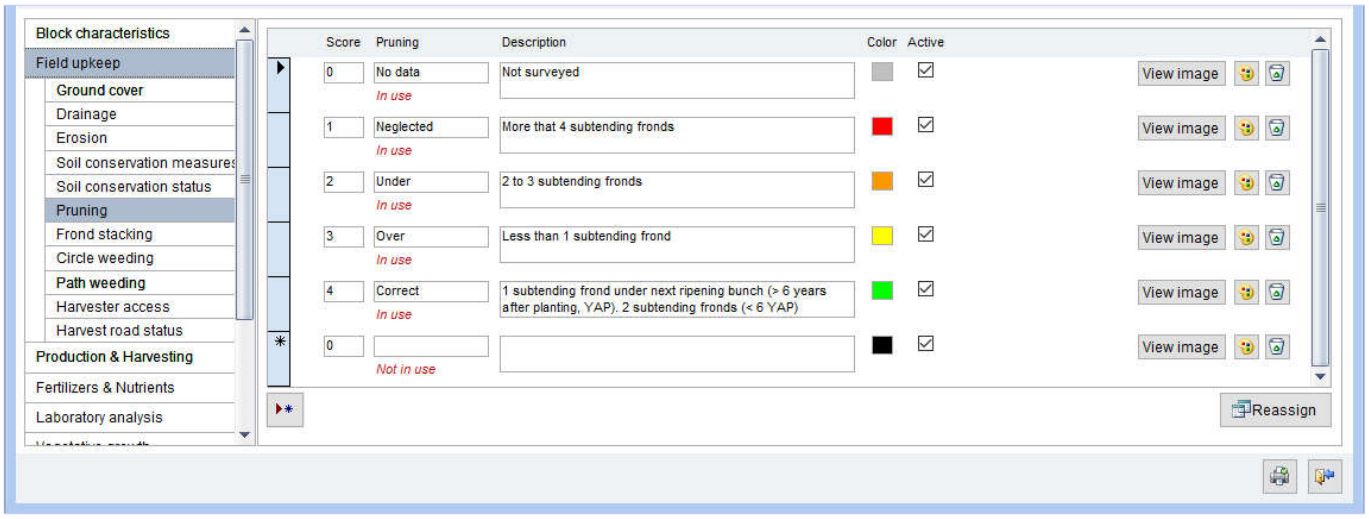

Figure 3: The new pick-up list form.

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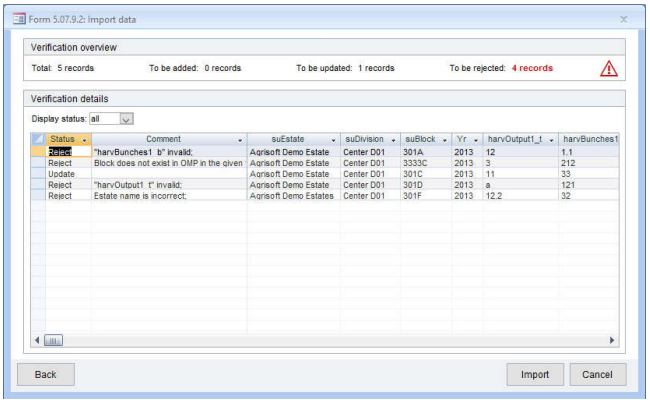

Figure 4: Data import verification results.

define and store GIS range settings and colors directly in OMP, which makes it much easier to customize OMP-GIS maps to the specific situation of each individual estate.

OMP operators are sure to appreciate the revamped module for importing data from Excel spreadsheets. Importing data has become ever more important in the last years as more and more data is available in electronic form which can be imported into OMP directly, avoiding the potential for data transcription errors and greatly reducing the time required for data input. The new importing module incorporates much more powerful data verification logic to guarantee that inconsistent data cannot be imported into the database. As shown in figure 04 results of the data verification checks are output with detailed explanations for each row, making it very easy to correct the mistakes in the spreadsheet and get all the data into OMP.

In addition to the improvements mentioned above and further “under-the-bonnet” changes to the data structure, the new OMP release of course also includes many additions and improvements to the data analysis and field diagnostics features. A full review of all the additions goes beyond the scope of a newsletter article. However, highlights include a new extended version of the familiar block nutrient history report (renamed to the “Block agronomic summary” and shown in figure 05), a new “Site and soil summary” report shown in figure 06 and monthly dashboard reports by division and field.

New histogram charts for vegetative growth and palm stand (figure 07) have been added along with new charts for monthly and year-to-date production parameters. As mentioned above, a multitude of new fields have been added which

Division: Center D01 Field: MT08 Block: 302C *Printed: 09-Apr-17*

Area: 26.64 ha YOP: 1995 mYOP: 1 Palm age: 18 yr Planting material: Marihat Density: 135.0 p/ha Seedling age at planting: mt

Land class: Class 3 Previous land use: 2nd forest Land clearing: Full Man Trunk diameter: m DFH: 01/07/1997 MFH: 30 mt

Soil type: Class 3 Soil texture (obs.): Soil deficiency scoring: N P K Mg

Topography: Hilly Soil acidity status:

Drainage: Well drained Erosion: Moderate Soil consv. meas.: Silt traps Soil consv. status: Field Marker: BMP06

Ground cover: < 50 % LCP Pruning: Harvester access: Crop recovery: Growth Marker:

		Production data						Inorganic fertilizer inputs [kg/p]										Crop residues [t/ha]						Leaf analysis [% DM, mg/kg]; Deficiency scores																			
Yr	Age	Yield			BW	BN	HR	N		P2O5		K2O		MgO		B		EFB		Pome		Deca		N			P			K			Mg			B		PCS	PH	SPH
		Pot	Act	Gap				A	R	A	R	A	R	A	R	A	R	A	R	A	R	A	R	L	Rc	D	L	Rc	D	L	Rc	D	L	Rc	D	L	D			
	yr	t/ha	t/ha	t/ha	kg																																	cm²	m	p/ha
2013	18	25.0	24.9	-0.1	21.9	8	35	1.6	1.6	-	0.5	-	2.4	0.5	0.3	-	0.028	-	-	-	-	-	-	2.44	0.34	-	0.143	0.06		1.07	1.30	1	0.18	-	16	1	43	7.0	133
2012	17	26.0	23.1	-2.9	21.0	8	-	2.0	1.6	2.7	3.0	1.8	1.8	0.4	0.4	0.022	0.022	37	40	-	-	-	-	2.45	0.31	-	0.140	0.05		1.01	1.20	3	0.19	2	17	1	28	6.8	142
2011	16	26.0	24.7	-1.3	20.1	9	-	1.0	1.8	1.1	0.7	2.4	2.3	0.1	0.1	0.017	0.017							2.61	0.26	1	0.153	0.05		1.07	1.03		0.19		14	1	57	6.3	123
2010	15	27.0	18.1	-8.9	18.1	7	-	1.1	1.2	0.3	0.5	1.4	1.5	-	-	0.007	0.008							2.56	0.43	1	0.150	0.05		1.03	1.26	3	0.20	3	13	2	55	5.7	138

Comments:

Figure 5: Extended "Block agronomic summary" report.

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Feature

OMP *Agrisoft Demo Estate* — *Report 0.0 printed: 09-Apr-17*

Site and soil summary report by division — **Year: 2013**

Division: Center D03 — Area: 1,099.08 ha — # Block: 49

Distribution of site and soil characteristics

Land class	Area ha	Area %
Class 2	302.58	27.53
Class 3	796.50	72.47

Topography	Area ha	Area %
Hilly	926.30	84.28
Sloping	172.78	15.72

Previous land use	Area ha	Area %
2nd forest	1075.61	97.86
Scrub/beluka	23.47	2.135

Land clearing	Area ha	Area %
Full Man	713.21	64.89
Full Mech	385.87	35.11

Soil type	Area ha	Area %
Class 2	302.58	27.53
Class 3	796.50	72.47

Soil texture	Area ha	Area %
	1093.08	99.45
Sand	6.00	0.546

Root restriction	Area ha	Area %
	1099.08	100

Soil acidity status	Area ha	Area %
	1099.08	100

Distribution of soil deficiency scores

Score	Value	Area [ha] N	Area [ha] P	Area [ha] K	Area [ha] Mg	Area [%] N	Area [%] P	Area [%] K	Area [%] Mg	Block N	Block P	Block K	Block Mg
		1099.08	1099.08	1099.08	1099.08	100	100	100	100	49	49	49	49
1	Severity 1	0.00	0	0	0	0	0	0	0	0	0	0	0
2	Severity 2	0.00	0	0	0	0	0	0	0	0	0	0	0
3	Severity 3	0.00	0	0	0	0	0	0	0	0	0	0	0

Soil analysis results

Soil type	Area ha	Sampling zone	Sampling depth	USDA	Soil texture Sand %	Silt %	Clay %	Acidity pH H2O	pH KCl	Organic matter Tot. N %	Org. C %	C/N	Exchangeable cations [cmol/kg] K	Ca	Mg	Na	ECEC	BS %	Count rcs
Class 2	302.58	Circle	0-20 cm	SL	55.26	25.07	19.67	4.5252	3.8	0.132	1.29	9.727	0.274	1.618	0.287		2.18	31.02	27
		Circle	20-40 cm	SCL	51.5	23	25.5	4	3.8	0.14	1.265	8.997	3.435	1.325	3.055		7.815	129.2	2
		Interrow	0-20 cm	SCL	53.70	24.93	21.37	4.4111	3.713	0.138	1.317	9.512	0.193	1.304	0.288		1.784	24.06	27
		Interrow	20-40 cm	SCL	53	22	25	4.05	3.8	0.15	0.835	5.201	2.335	0.86	2.735		5.93	89.55	2

Figure 6: Site and soil summary report.

allow more detailed recording of site characteristics, field upkeep status and visual nutrient deficiency scoring in particular. In the climate module, new fields have been added for the recording of photosynthetically active radiation, soil moisture tension and wind speed. Furthermore, it is now possible to choose to enter the monthly evapotranspiration manually if it is known from e.g. automatic weather station measurements. This allows for much more accurate water deficit estimates and is particularly important in climates where water stress is a significant factor. Besides this, the new version contains a large number of smaller improvements and bug fixes throughout the program. Overall, we are confident that you can look forward to OMP 9 as a major step up in terms of usability and analysis features.

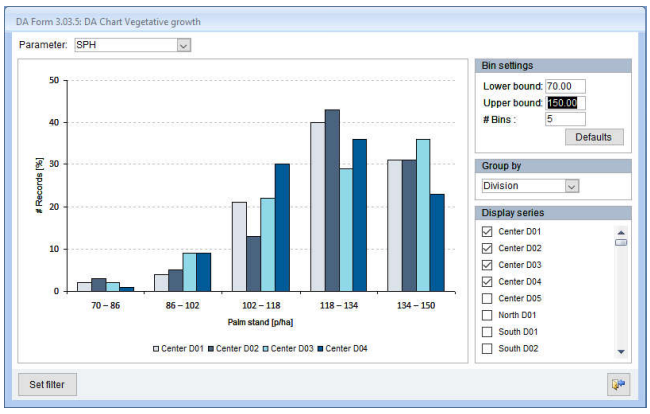

Figure 7: Palm stand histogram.

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From the developers desk

A selection of the on-going developments and plans which are part of our constant efforts to continue to improve Agrisoft products.

OMP Plantation medium-term plans

- Integration of daily production recording (OMP-HRR add-in) and crop budgeting into main OMP application
- Integration of new field work module as developed in BMP
- Calculation of latest number of palms per block based on records of pest and disease control, thinning or palm death since last palm census
- Date-based recording of field scoring results and block status changes
- Migration to SQL Server back-end and implementation of web-based data analysis features
- Recording of sub-block or plot data on planting dates and soil types
- Enhanced yield gap calculation and analysis
- Improved production and harvesting dashboards
- Additional planning tools and data analysis forms for replanting
- Additional analysis tools to review effectiveness of past fertilizer recommendations
- Daily weather recording and evaluation of effect on field work and fertilization

OMP-Field Survey

- New OMP add-in and smartphone app for field data collection
- Flexible definition of questions and survey types
- Possibility of determining survey point locations by manual entry or by scanning QR codes or NFC chips
- GPS-based recording of survey location
- Implementation of data restrictions and lists of allowed scores
- Descriptions for each allowed score to ensure consistent scoring
- Email-based data transfer between app and add-in
- Automatic aggregation of point-based scores to block values
- Support for user-defined expression fields calculated from raw survey data