

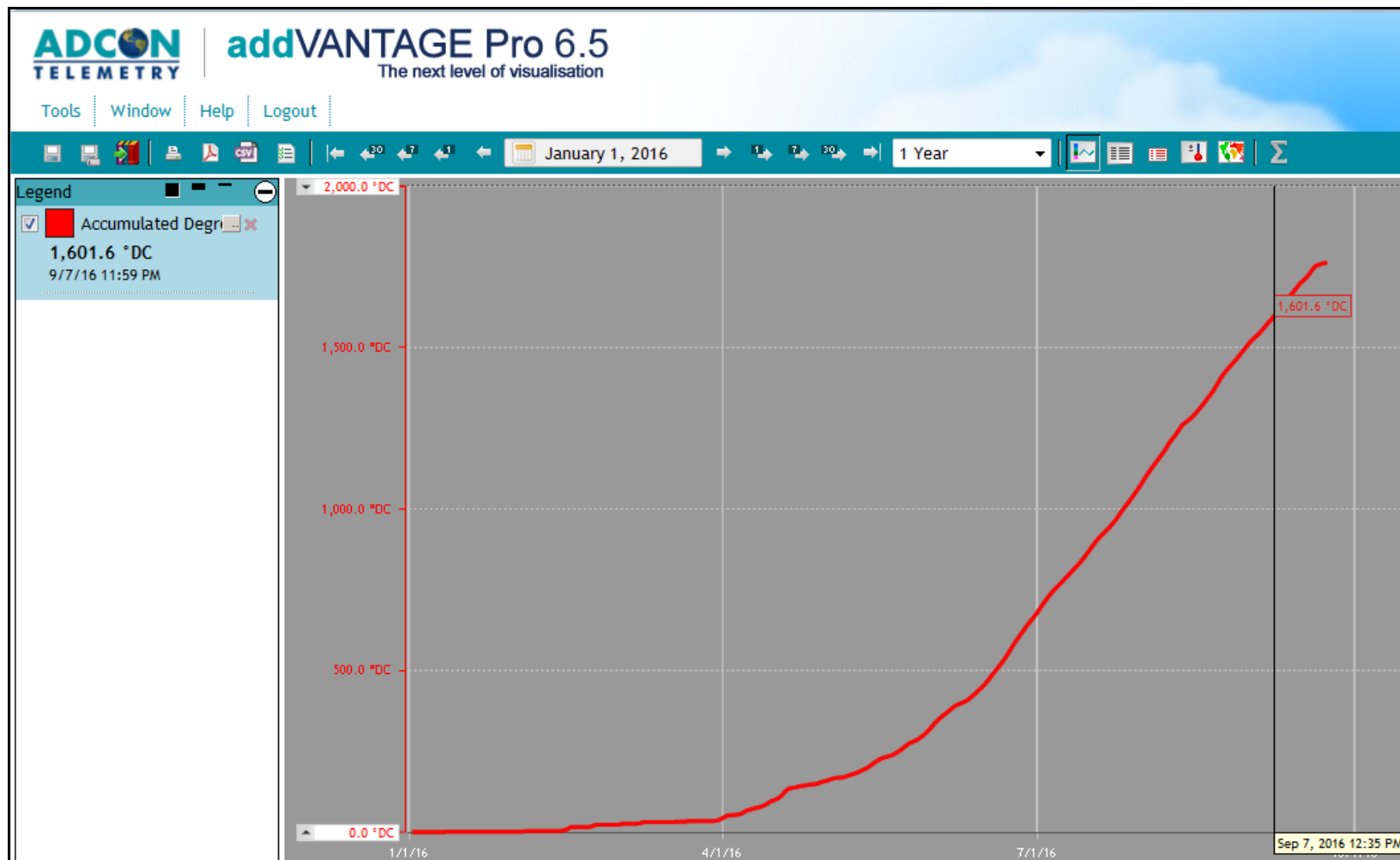
**WINEGROWING SEASON 2016,
as it was "seen" by the
BEIA-ADCON AGRO MONITORING
SYSTEM**

The Beia–Adcon agro monitoring station can be seen in the photo here-right. On the mast, from top to down: Remote telemetry unit (RTU) A753 GPRS, rain gauge, wind speed sensor, the solar panel powering both the RTU and all sensors, total solar radiation sensor (pyranometer), combined air relative humidity and air temperature sensor, leaf wetness sensor.

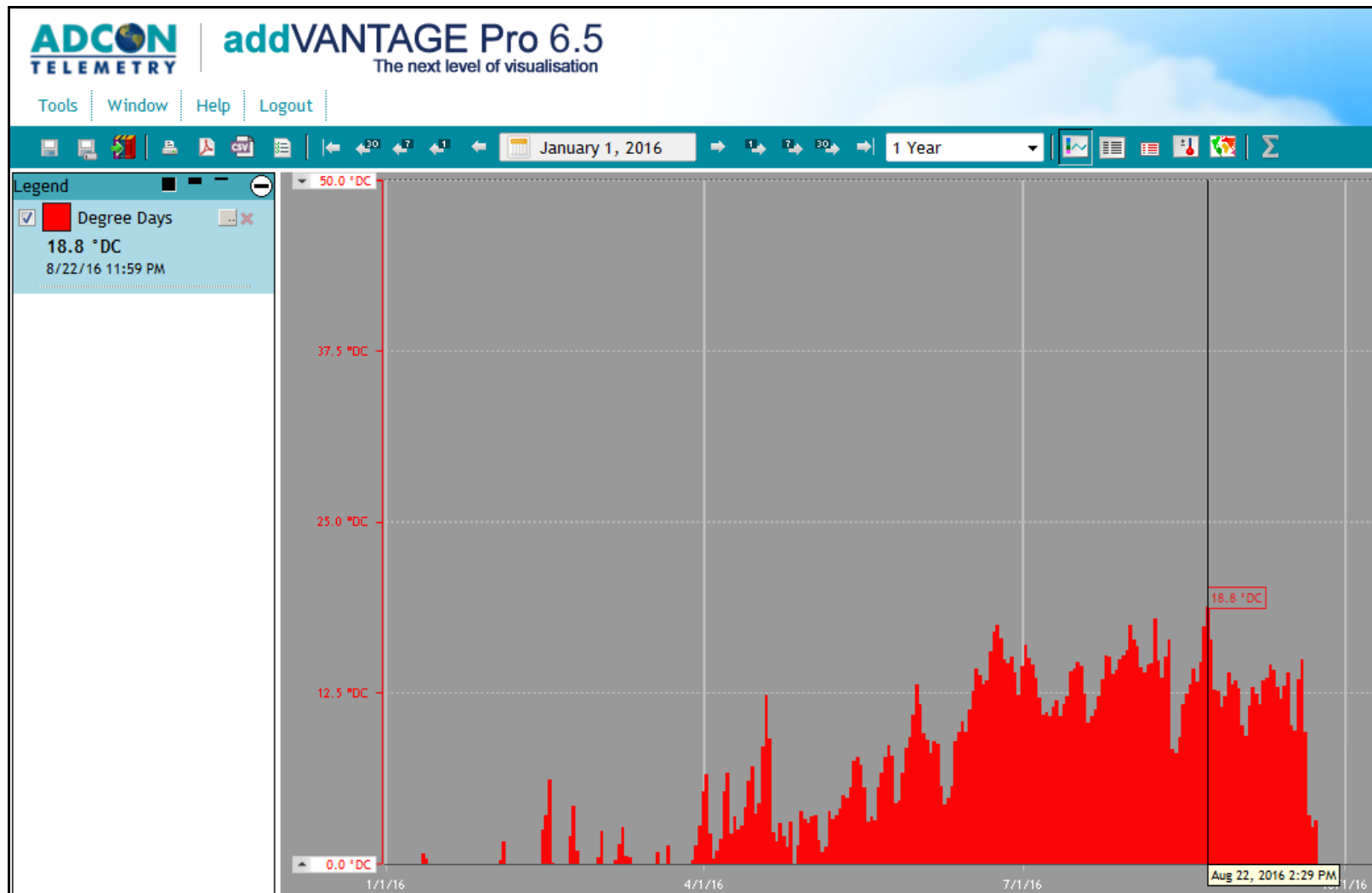


What follows is a survey of the winegrowing season 2016, as it was "seen" by the Adcon addVANTAGE Pro 6.5 server, based on the data received from an Adcon station similar to the one featured above. Station has functioned in the middle of an irrigated Cabernet Sauvignon vine, somewhere in the Northern part of the Constanza county. Station installation, data transmission to the server, 24/24 server functioning and permanent technical assistance were provided by **Beia Consult International Bucharest**, the authorized distributor in Romania for all **Adcon Telemetry** hard- and software products.

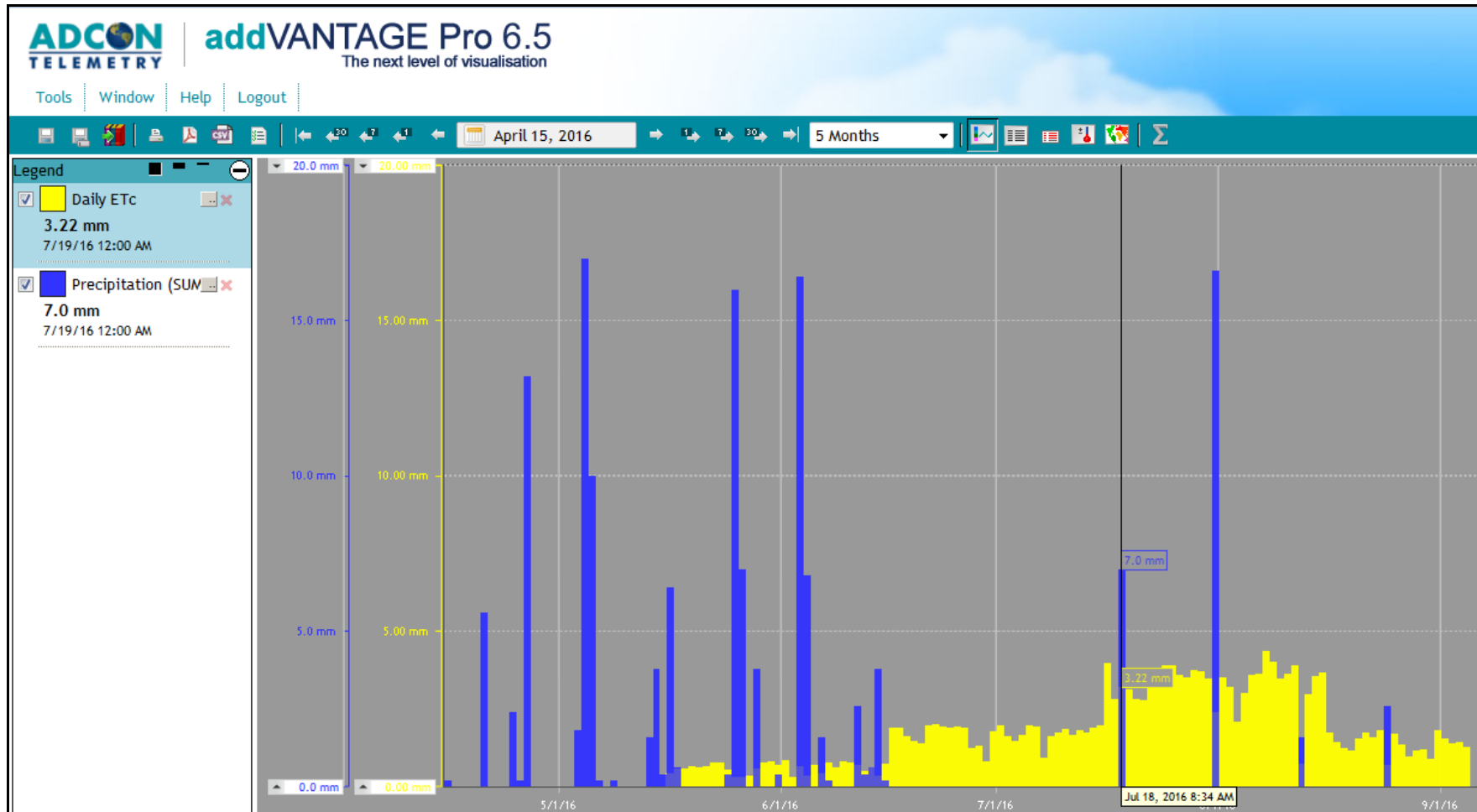
Learn more about Beia-Adcon telemetry applications at www.beia-telemetrie.ro , and more about Adcon Telemetry products at www.adcon.com .



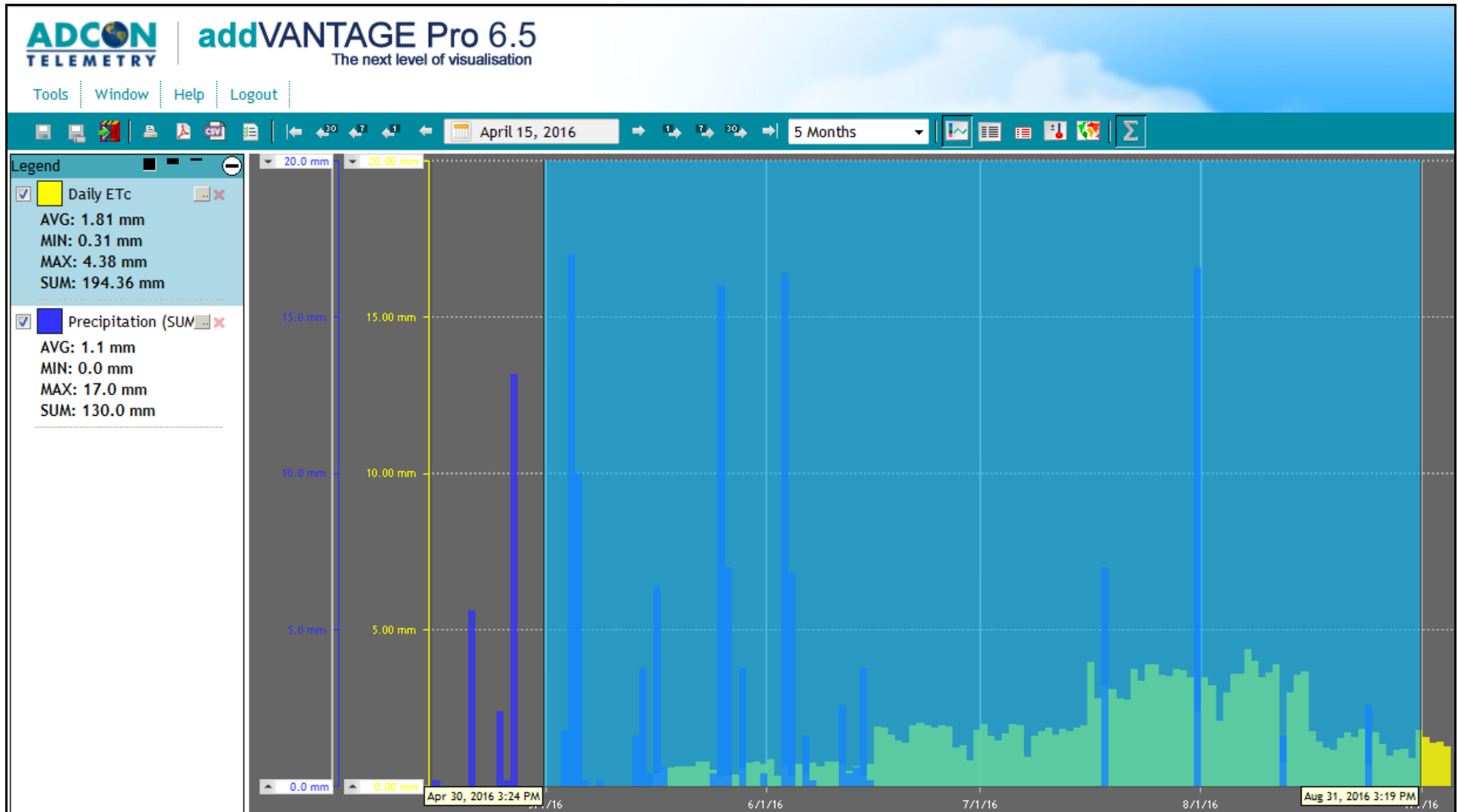
The **accumulated quantity of heat** received by the culture was measured by the system in accumulated degree-days Celsius (DC), taking into calculation what has exceeded + 10° C and a value of + 35° C only for temperatures exceeding this upper limit. Accumulated 1,600 DC, considered as necessary for Cabernet Sauvignon full maturation, were reached at 07.09.2016, which was 8 days earlier then during previous season 2015.











The **quantity of heat received daily by the culture** was also permanently registered. 22.08.2016 was the hottest day, when 18.8 DC were registered. It was seen as a special feature of season 2016 the constant high heat that appeared at the beginning of June and remained there till season's end in September.



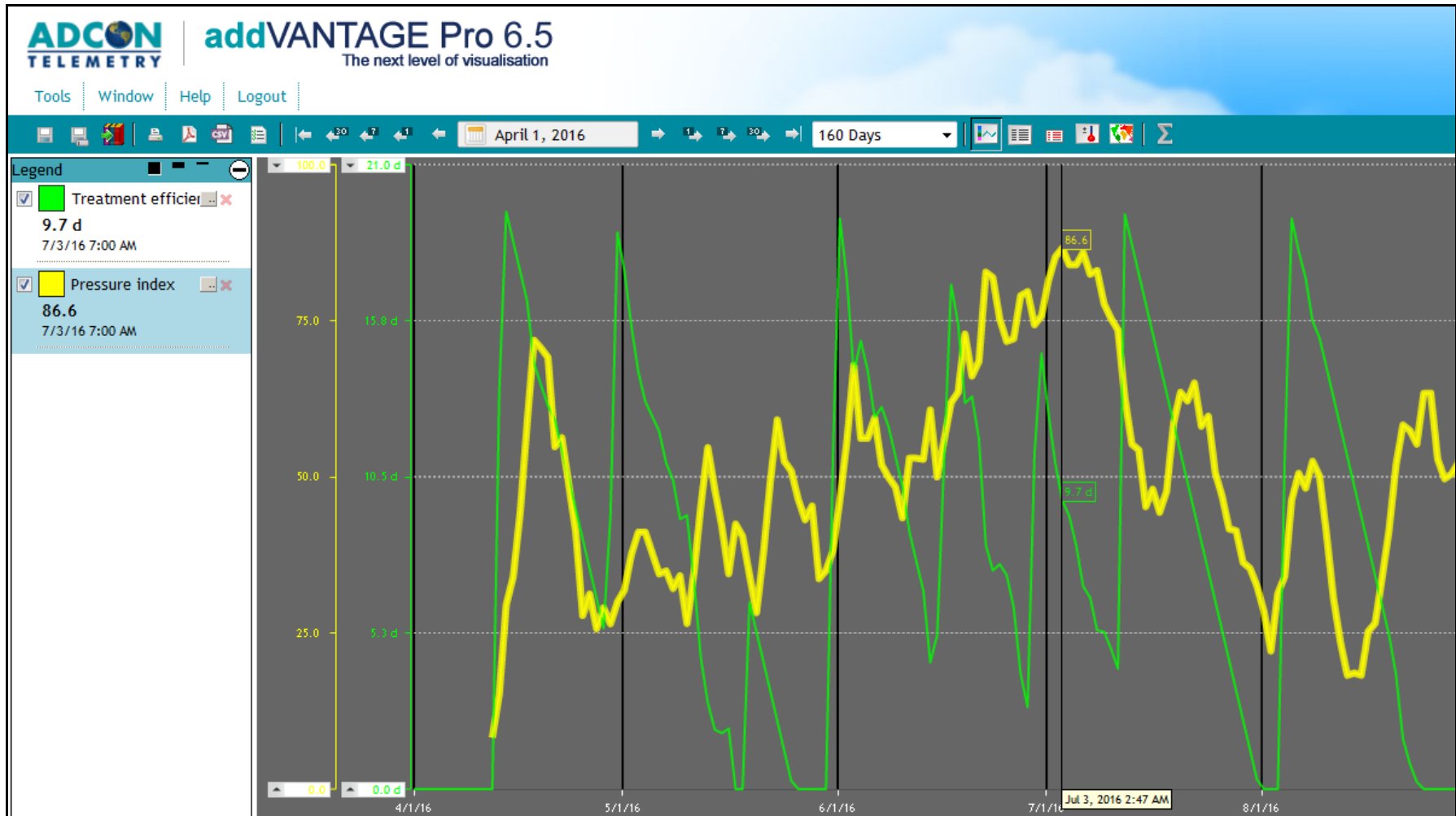
The **quantity of precipitations fallen each day** is represented in the above diagram by a blue vertical bar, while the **culture's daily water need** (Specific Evapotranspiration ETC) is represented by an yellow bar. During the whole 18.07.2016 day, for instance, total precipitations have amounted to 7.0 mm, while the culture's water need was 3.22 mm only (see cursor values and also upper-left legend values). The diagram clearly shows abundant precipitations in April-May, when they were not particularly necessary, as well as scarce precipitations in July and first half of August, when they would have been very welcome!



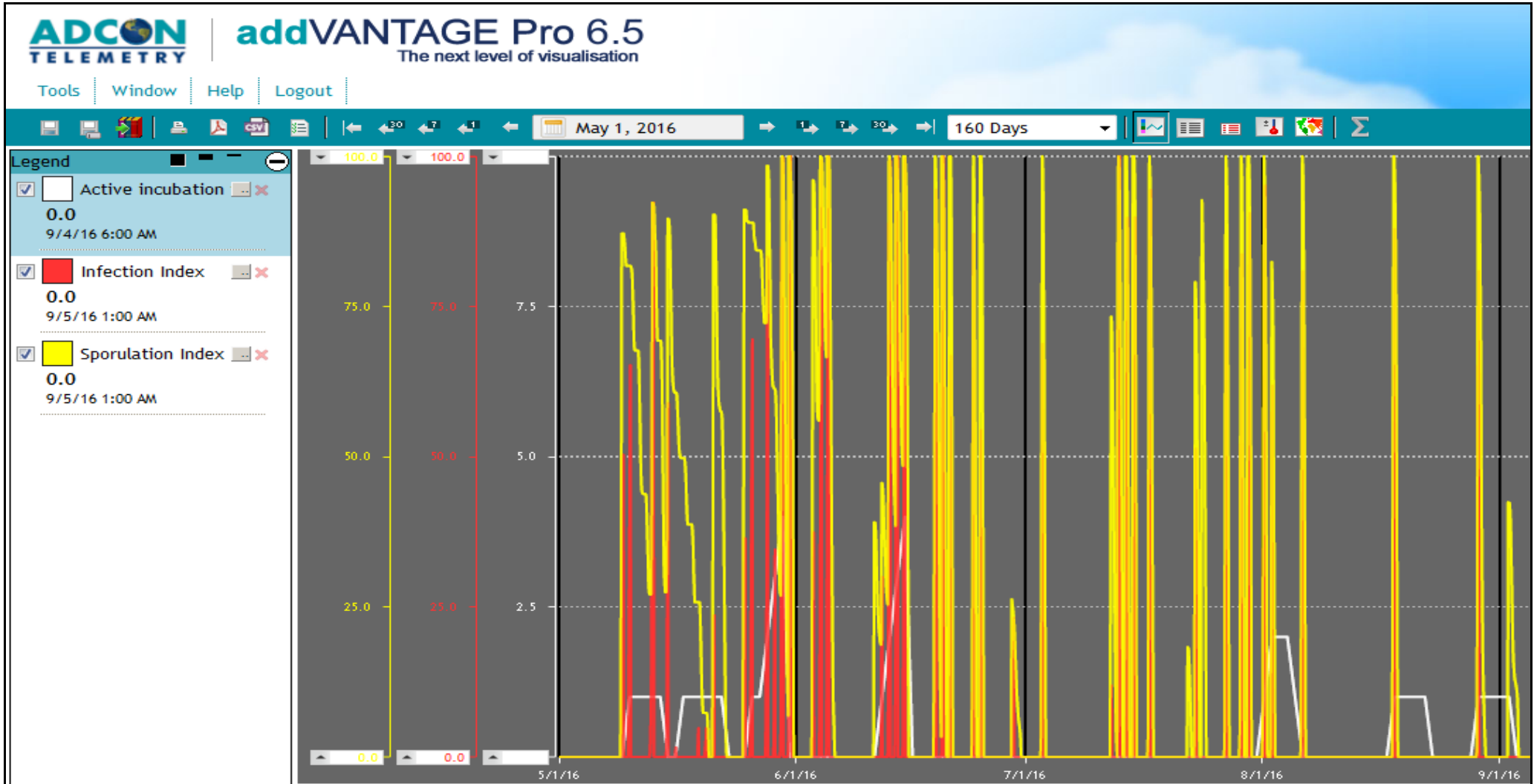
Total precipitations during 4 season main months (01.05 – 31.08.2015) have amounted to 130.0 mm, which is not very bad if compared with the total water need during same time, which was 194.36 mm (see SUM values at the Legend upper-left).

General	Crop	Treatments	Irrigation	Action	Security
BBCH	Name	Date			
00	Winter Dormancy	Jan 1, 2016			
07	Bud Burst	Apr 11, 2016			
13	3 Leaves Unfolded	Apr 26, 2016			
55	Inflorescence Swelling	May 6, 2016			
65	Full Flowering	Jun 6, 2016			
69	End of Flowering	Jun 22, 2016			
81	Beginning of Ripening	Jul 31, 2016			
89	Berries Ripe for Harvest	Sep 5, 2016			

Based on data gathered during previous years, a preliminary estimation of the time of occurrence of various culture development phases was made. Actual weather evolution during 2016 has however led to some adjustments, so that the final **culture development calendar** that the system has worked with was the one featured in the table above.



Just as during previous seasons, **Powdery Mildew** was during 2016 the most serious threat for the culture. This disease's pressure index (see yellow diagram above) did however also have long intervals of values under 50, so that the number of treatments that the system has recommended was lower than during previous seasons. Green diagram shows the evolution of treatment efficiency, measured in days (d) till treatment efficiency end.

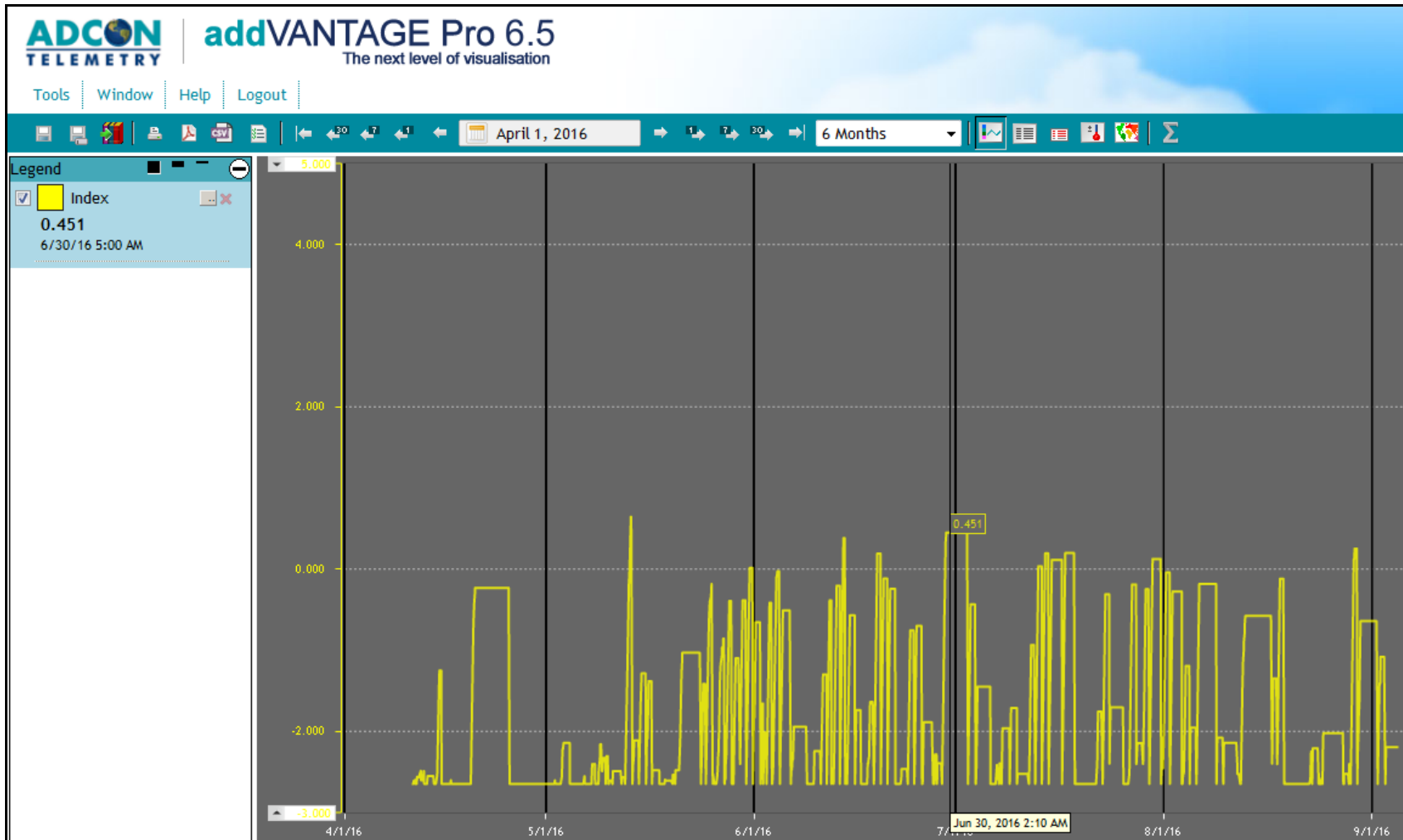


The **Downy Mildew** threat was also strictly followed through 3 distinct indexes: active incubation, infection and sporulation index. Whenever the values of the 3 mentioned indexes did have value combinations indicating high Downy Mildew danger, the system has issued the treatment recommendations visible in the event list on the following page.

#	Begin Date	Duration	Source	Area	Comments
<input checked="" type="checkbox"/>	Aug 18, 2016 3:00:00 AM	13d 18h	Mana (Downy Mildew - Ka...	Viticola SA Cogecalac	Treatment recommended
<input checked="" type="checkbox"/>	Jul 31, 2016 2:45:00 PM		Mana (Downy Mildew - Ka...	Viticola SA Cogecalac	Treatment from Jul 11, 2016 9:08:00 AM was washed out by rain!
<input checked="" type="checkbox"/>	May 26, 2016 1:00:00 AM	4d 11h	Mana (Downy Mildew - Ka...	Viticola SA Cogecalac	Treatment recommended
<input checked="" type="checkbox"/>	May 25, 2016 1:45:00 PM		Mana (Downy Mildew - Ka...	Viticola SA Cogecalac	Treatment from May 18, 2016 1:11:00 PM was washed out by rain!
<input checked="" type="checkbox"/>	May 16, 2016 7:00:00 AM		Mana (Downy Mildew - Ka...	Viticola SA Cogecalac	Treatment recommended for sensitive cultivars
<input checked="" type="checkbox"/>	May 16, 2016 7:00:00 AM	2d 7h	Mana (Downy Mildew - Ka...	Viticola SA Cogecalac	Treatment recommended
<input checked="" type="checkbox"/>	May 16, 2016 4:30:00 AM		Mana (Downy Mildew - Ka...	Viticola SA Cogecalac	Treatment from May 9, 2016 11:16:00 AM was washed out by rain!

For each of the monitored diseases (Powdery Mildew, Downy Mildew and Grape Bunch Rot) as well as for other monitored parameters, the system has continuously kept update **event lists** like the one above, dedicated to grape Downy Mildew. The system has issued for the mentioned disease 3 treatment recommendations, at 16.05, 26.05 and 18.08.2016. For these important and urgent events, the system has also sent **e-mail alerts** towards e-mail addresses in a predefined list.

For both Powdery Mildew and Downy Mildew, treatment recommendations were fewer in 2016 than in 2015, and also issued in moments that have allowed in a greater extent simultaneous treatment application for both diseases. It was a situation able to highlight the advantages that the Beia-Adcon station and system can bring in terms of pesticides savings and reduction to the minimum necessary of chemicals action on leaves, fruits and soil. In absence of such a measuring and appraisal system, chemical treatments could have been excessive, as a normal result of the fear that applied treatments could have been insufficient!



The climate of the inland part of Constantza county has, in 2016 also, minimized the danger presented by the **Grape Bunch Rot** disease. The pressure index of this disease has only once and for a very short time exceeded the alert limit set by Broome at + 0.50.

Conclusion and Invitation

Only very few was shown above of what an Beia-Adcon addVANTAGE Pro server can offer when provided with accurate data by an Beia-Adcon agro station installed in a wine-growing area.

Besides Wine and Table Grapes, disease management can be as well performed for Apple, Pear, Potato, Wheat, Corn and other crops.

And besides Degree-days and Evapotranspiration, agro-meteo calculation extensions also include Chill/Heat hours, Dew point, Wet bulb temperature, Sunshine duration, Soil moisture, Flow to volume, Volume to flow, Formula calculations and many others.

These are only a few of the many reasons to again kindly invite you to learn more about Adcon Telemetry at www.adcon.com and more about Adcon applications in Romania at www.beia-telemetrie.ro .

September 2016

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