

# Rice Monitoring in Europe

## Second part of the season

### Despite some downward revisions in the final figures the average yield potential remains satisfactory

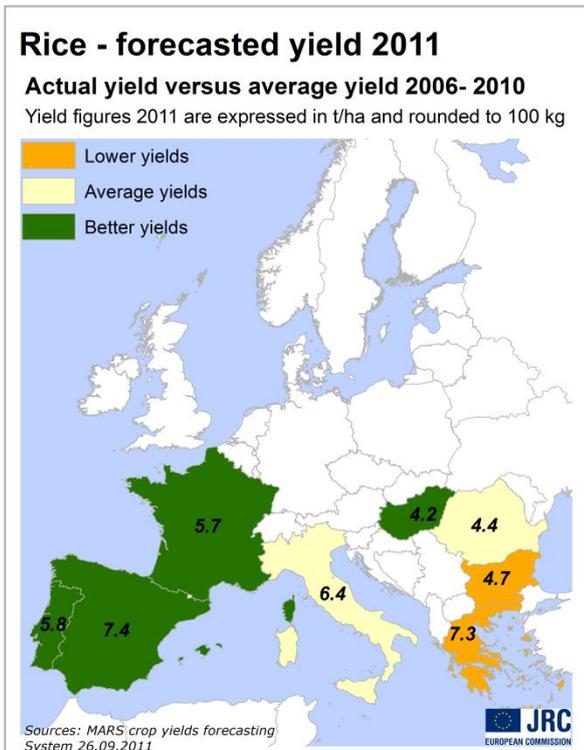
#### Highlights

Even though the average yield potential is in line with last year's expectations (+0.2%) rice production at EU-27 level is forecast to be lower (-7.9%). However the depicted values remain higher than the 5-year average (+0.5%). Even if not an exceptional year, the decrease with respect to 2010 can mainly be explained by a reduction of the dedicated surfaces.

#### MARS yield forecast

Country	Yield t/ha				
	2010*	MARS 2011 forecasts	Avg 5yrs	%11/10	%11/5yrs
EU27	6.5	6.5	6.5	+0.2	+0.5
BG	5.2	4.7	4.9	-10.6	-4.5
ES	7.6	7.4	7.2	-1.9	+3.5
FR	5.0	5.7	5.5	+14.0	+2.8
GR	6.8	7.3	7.5	+8.7	-1.9
HU	4.4	4.2	3.9	-2.8	+7.8
IT	6.3	6.4	6.4	+1.6	+0.3
PT	5.8	5.8	5.8	-0.1	+1.3
RO	5.0	4.4	4.4	-12.3	+0.1

\* Source EUROSTAT New Cronos and EES: last update 2011-09-26



previous analysis, EU-27 yields are confirmed as being similar with respect to the 5-years' average (+0.5%) and to last year (+0.2%).

Even if a satisfactory potential is still expected for Italy, figures were revised slightly down with respect to the previous analysis (6.4 t/ha, +0.3% with respect to the 5-year average). This is mainly due to the heat wave at the end of August which enhanced the risk of blast infection (especially in *Lombardy* and *Po delta*). On the contrary the yield potential for Spain was revised upwards (7.4 t/ha, +3.5%) thanks to the optimal conditions registered in *Andalucía*.

The persistence of the hot conditions in France forced a revision down (5.7 t/ha) but the yield potential remains still above the 5-year average (+2.8%). Again average conditions are expected for Portugal (5.8 t/ha, +1.3%).

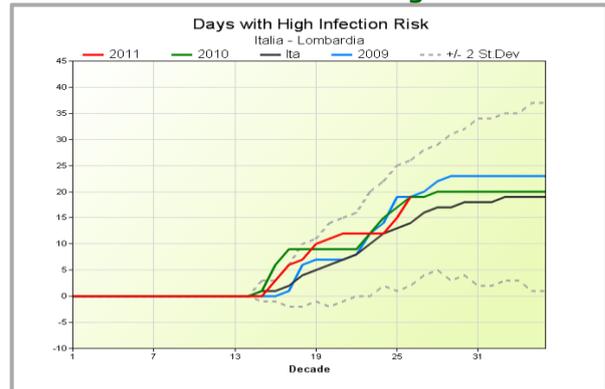
A slight improvement, with respect to the initial part of the season, has been observed for Hungary (4.2 t/ha, +7.8%) and Greece (7.3 t/ha, -1.9%) whereas a further worsening in the climatic conditions characterized the yield potential for Bulgaria (4.7 t/ha, -4.5%) and Romania (4.4 t/ha, +0.1%).

Despite a slight reduction with respect to the

## Agro-meteorological analysis

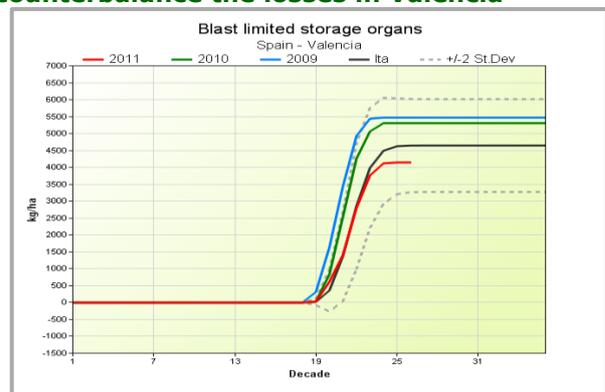
### ITALY: high temperatures at the end of August increased the risk of blast damage

The atmospheric disturbance erupting at the end of July caused a sudden drop in temperatures and wet conditions. This increased the risk of fungal attacks on leaves and reduced the advance in crop development. The negative impact on biomass accumulation could be controlled, until mid-August, thanks to well-ventilated conditions which kept the humidity down. Then, starting from the third decade of August, the risk of infection rose (moving eastwards) in correspondence to the increase of temperatures. This explains the slight reduction in the final yield expectation which is now forecast as closer to the 5-year average.



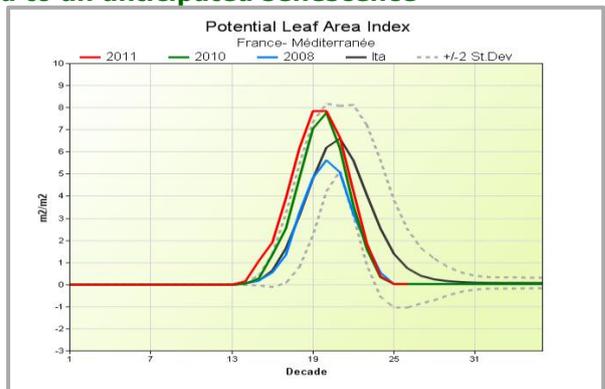
### SPAIN: positive expectations for Southern Spain counterbalance the losses in Valencia

In Southern regions, where maximum temperatures were often above the average, the advance in development continued during the whole period of analysis but any negative impact of the shortening of the cycle has been observed. Good canopy expansion guaranteed satisfactory biomass accumulation as well in *Extremadura*. In the east (*Valencia* and *Cataluña*), where it has been rather cold and solar radiation was low during the whole period of analysis the storage organ accumulation seems reduced and also shows strong losses due to blast infection. Nevertheless the yield expectation for the whole of Spain remains above the 5-years average.



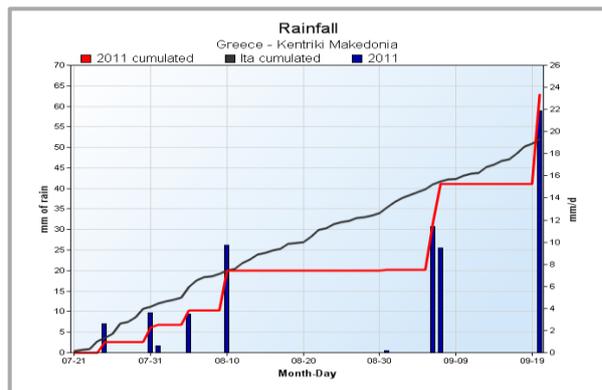
### FRANCE: the persistence of the strong advance led to an anticipated senescence

The climatic conditions during the period of analysis reflected the meteorological conditions observed during the first part of the cycle; dry and very hot. This kept the strong advance in development and allowed the reduction of the losses in storage organs accumulations due to blast limitation. Despite the exceptionally positive values of biomass accumulation the advance in the canopy senescence has negatively impacted on the grain filling phase. In fact the similarity of the leaf area index profiles with 2009 and 2010 does not make expect exceptional yields especially because water scarcity could not support adequately the green biomass.



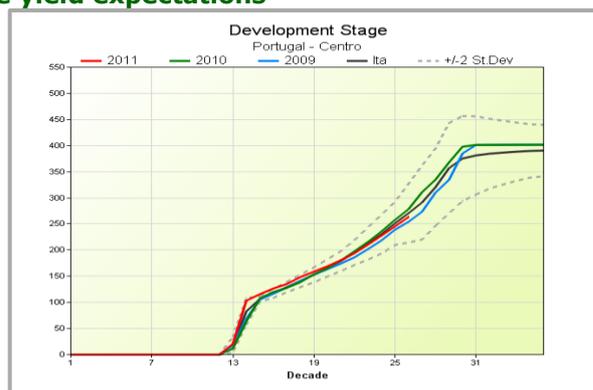
### GREECE: impact of blast infection nullified

The wet and humid conditions at the beginning of the season delayed the initial crop development which has recovered completely by now. The days with high infection risk is below the long-term average values but the persistent humid conditions enhance the impact of biotic damages on final biomass. However, the simulated values of potential leaf area index suggests a positive canopy expansion coupled with prevailing favourable weather conditions might counter balance the negative impact of blast on crop potential yield and still keeps it on average values.



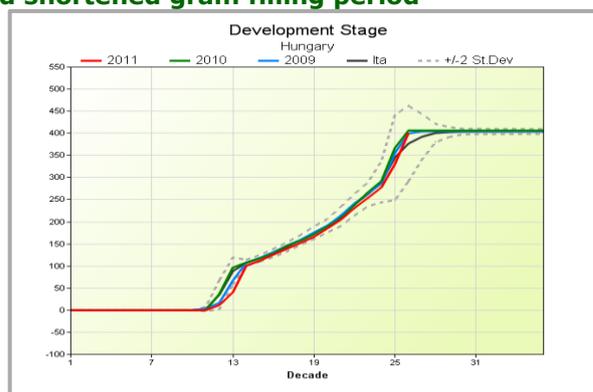
### PORTUGAL: delay in development but still average yield expectations

With the exception of some hot days, maximum temperatures were often below the average leading to a deficit in GDD's. As a consequence crop development shows a delay which is more significant in northern districts. Canopy expansion and biomass accumulation are close to the average and this is confirmed as well by the NDVI and fAPAR profiles. In the North the risk of blast infection seems higher than in the South but in both cases the expected reductions in grain biomass accumulation are contained. Average yield potential is therefore expected.



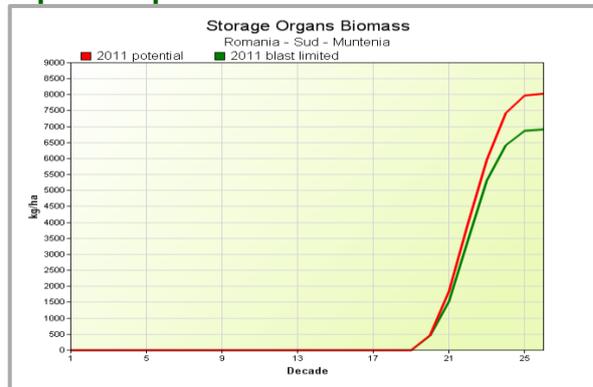
### BULGARIA: delayed phenological development and shortened grain filling period

Maximum temperatures dropped in the early growing stages of the crop and in the last decades, to below the average slowing down crop development and reducing the canopy expansion. In fact the differences between simulated values of potential and blast limited biomass accumulation depict a situation where infection might have negatively affected the crop yield. However a recovery at latter stage occurred (as shown by the supporting graph) but shortening of the grain filling, as an effect of higher solar radiation, led to a slight reduction in yield.



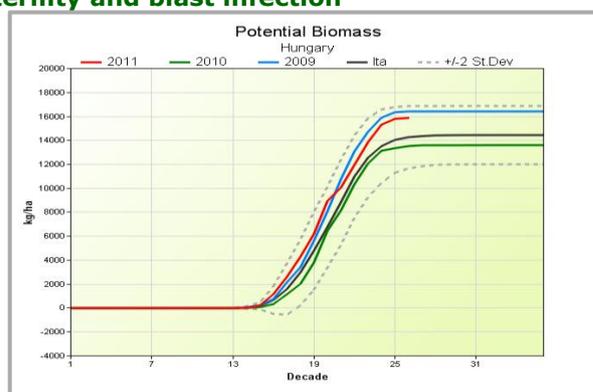
### ROMANIA: wet and cold conditions slowed down crop development but recovered

Cold conditions characterized the beginning of the season in south-east region of Romania leading to a deficit in thermal accumulation, to a slight delayed crop development and to lower biomass accumulation. However thanks to the following favourable temperature regime the crop could recover the delay. Moreover both canopy development and biomass accumulation seemed not to have suffered the enhanced risk of blast infection (concentrated in southern part of the region). Average conditions could lead to slight increased biomass production compared to average values.



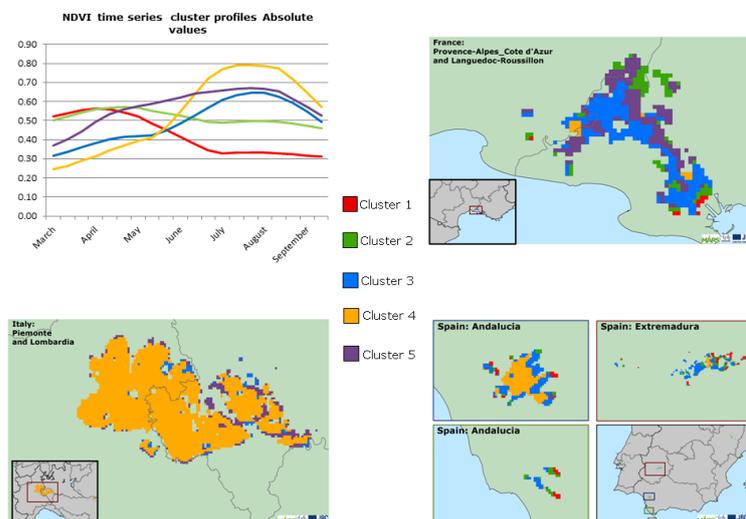
### HUNGARY: Average production despite spikelet sterility and blast infection

Despite the initial delay in crop development due to the cold air irruption at the onset of the season, a complete recovery has been achieved by now. As a consequence the biomass accumulation as well depicts satisfactory values. Both biotic and abiotic damage might have occurred; indeed 10-days of high infection risk occurred and 9.5% of spikelet seems to have been affected. However the actual impact on storage organs should not be dramatic and does not seem to hamper the crop total biomass production. In view of favourable weather events above average yield could be expected.

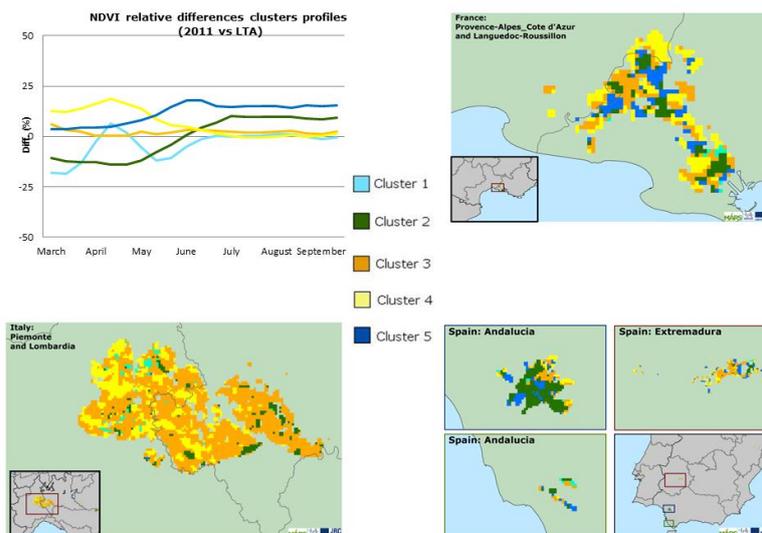


## Satellite analysis

The cluster maps below display the NDVI time series for rice from 1st March 2011 until 20th September 2011. The first map shows the NDVI absolute values for the main rice regions in Europe. In *Piemonte* and *Lombardia* (Italy) rice canopy area is very dense and has reached the flowering stage in the third decade of July with NDVI values ranging between 0.60 and 0.80. And the senescence phase has started around mid - September. In France the main rice area has also reached the maximum development stage in the third decade of July with NDVI values ranging around 0.65. Spanish regions, mainly *Andalucía*, seem to have a good canopy development, which reached the maximum development stage at the end of July.

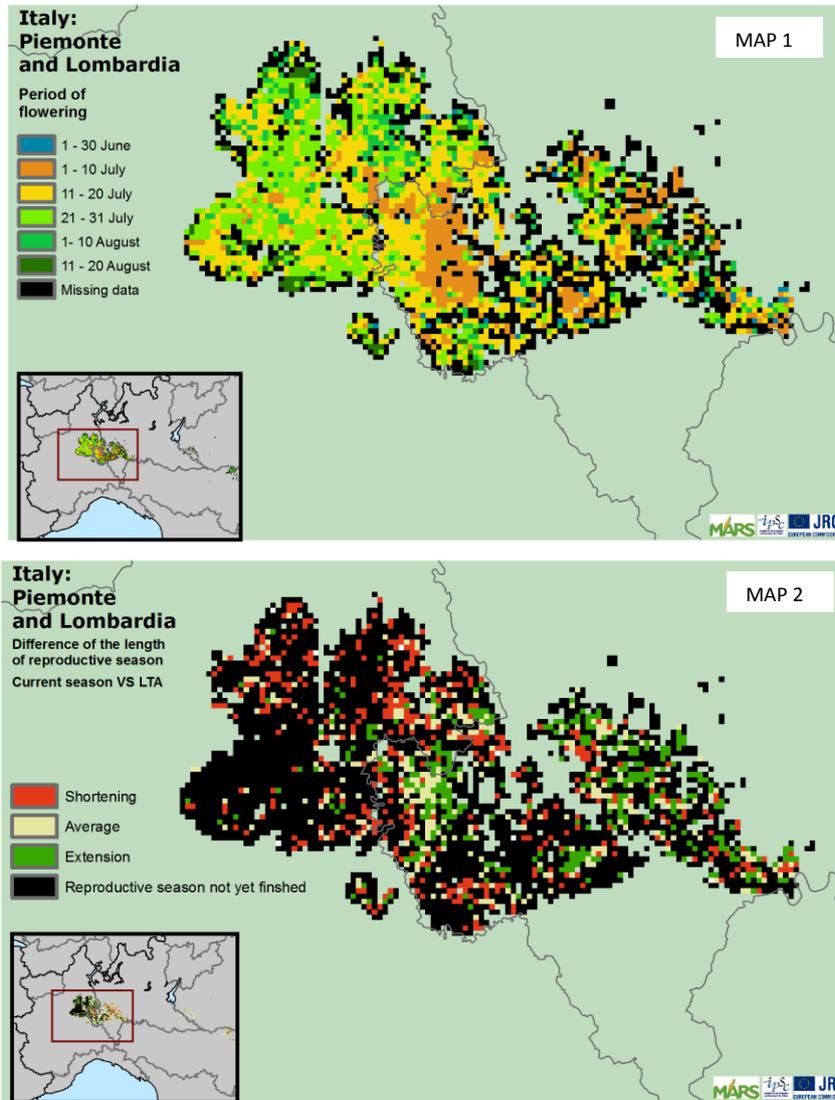


The following cluster maps display the relative differences between the NDVI values for the current season and the long term average (LTA: 1998 – 2010). The period of the season considered for analysis is: 1th March – 20th September. In Italy the NDVI values range around the average conditions compared with the LTA. In France the main areas have values around the average with some areas experiencing values slightly above the average but around the normal for the LTA. In southern Spain the NDVI values in Andalucía show a slight delay until June and afterwards recover and are moving slightly above average, while for the other regions the situation is around the normal values.



Data used from: MARS remote sensing database \ SPOT-VGT. Rice Mask from CLC 2000

The map 1 displays the decade of flowering stage for rice in *Lombardy* and *Piedmont* (Italy) fields. Date of flowering stage is considered as date of seasonal maximum NDVI. On the map below is presented the difference of the length of the current reproductive season against LTA. Reproductive season is here defined as the period between the date of maximum NDVI and the date of half senescence (half point of the senescence curve). It is also assessed whether or not the rice has reached this half senescence point ("Reproductive season not yet finished" class). The maps are derived from SPOT-VGT NDVI for the period 01 March 2011 – 20 September 2011.



Data used from: MARS remote sensing database \ SPOT-VGT. Rice Mask from CLC 2000

For the western areas, the date of flowering has been reached between the end of July and the beginning of August (map above), which is close to the LTA values. Nevertheless on the map below these areas are expressed by not reaching the half senescence point (missing data class), usually foreseen in the LTA for the first half of September. The given region would probably face a normal or extended reproductive phase. While for some central and east parts of the maps, where the flowering stage has been reached in the first and second decade of July, the reproductive season is close to average and even experiencing extension compared to the LTA.

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Further information can be found in the website. All MARS Bulletin are available under:

<http://mars.jrc.it/mars/About-us/AGRI4CAST/MARS-Bulletins-for-Europe>.

MARS agrometeorological data and data processing is available at <http://www.marsop.info>.

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The geographic borders are purely a graphical representation and are only intended to be indicative. The boundaries do not necessarily reflect the official EC position.

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22 Mar	Agrometeorological analysis and weather forecast	Vol. 19 No. 3
12 Apr	Crop yield forecast	Vol. 19 No.4
12 Apr	Agrometeorological analysis and weather forecast	Vol. 19 No. 5
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12 Jul	Agrometeorological analysis and weather forecast	Vol. 19 No. 10
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Special issues are planned for crop monitoring in countries outside EU27

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