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## Improving cropping management and yield prediction with satellite derived crop phenology

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Spatiotemporal information about crop phenology and physiology during the growing season is critical for estimates and forecasts of productivity and yield. Further, knowledge of phenology during the season provides information for applying efficient irrigation, scheduling fertilization, pest management and harvesting at optimal times. Yield loss from climatic stress, like drought or heat, is critically dependent on both phenology and physiology. Yet, current yield forecasting models do not fully use all the potential of phenology and physiology related variables that can be retrieved from satellites. We attempt to address this research gap, focusing on the major winter crops grown in northern France, wheat and rapeseed. The yields of these crops are inaccurately predicted, in this region (and elsewhere) despite their economic importance. We will derive key crop phenological stages and physiological parameters at high spatial resolution with validation at site level, and using those data together with climate fields to develop statistical models of seasonal crop yield forecast. The proposed approach has potential to be applied to other crop types and areas.