

# SHOULD CROPS BE MANAGED DIFFERENTLY to cope with climate change?

An interview with Philippe GATE, Scientific Director



**2016 will be remembered as a very difficult year in French agricultural production history, and is likely to be a sign of things to come in terms of weather events. Will 2016 be a watershed, with a "before" and "after"? That is the question we put this month to Philippe Gate, Scientific Director at ARVALIS.**

*Perspectives Agricoles:* **How can we explain last season's historically low yields almost everywhere in northern France?**

**Philippe Gate:** Two main factors, which occurred at a very sensitive stage for cereals, are at the root of those results. The first one is very low radiation, which had a direct impact on grain fertilisation and filling, and the second is a surplus of water, which compounded those problems, while also causing a very high level of disease development. Low radiation at the ear emergence stage affected every species of cereal, while surplus water was more detrimental to those with an intermediate ear emergence date. Those conditions explain the variation in plant behaviour between species and between fields. We need to stress here the exceptional but widespread nature of those weather conditions. However, meteorologists have analysed the effect of global warming, and found that over the last 20 years, this shift has been combined with greater weather variations from one year to another, and an increased risk of adverse weather events.

*P. A.:* **What approach should be used when choosing cropping techniques?**

**P. G.:** We are forced to admit that there is very little you can do to counter weather events of the nature and extent of those encountered in 2016. It would be presumptuous to say that, nowadays, production is able to adapt to extreme and unpredictable conditions. To try and counter this greater

variability, greater diversity is key, in terms of species, varieties and cropping techniques, both at farm and at production area level. The first step is to choose an array of varieties that are resistant to diseases as well as to other sources of stress. Widening the window in terms of earliness can also help to mitigate the impact of the various stresses from one field to another. As climate change also sees the emergence of new bio-aggressors, the producer's choice should favour "multiresistant" varieties.

*P. A.:* **Can we do more to protect against the impact of weather events?**

**P. G.:** Besides using a more diverse array of varieties and cropping techniques, it is also important to be able to react quickly when unforeseen one-off problems arise. Diagnostic and decision support tools help to detect from a very early stage the factors that limit production, especially those that are quite a rare occurrence in a given place. Increasing a cropping system's resistance to climatic variations leads to reviewing the impact of the various agronomic action levers available. In a context where the use of synthetic inputs and the annual adjustment of production costs are becoming increasingly significant issues, it is crucial to consider factors such as rotation, the effect of preceding crops, as well as soil dynamics – the impact of which needs to be reviewed for each species and variety – from a perspective of several years, in order to enhance production resilience.