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Breeding API

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Plant breeding is a complex field that integrates data from many disciplines, each with their own standards and data structures. The size of datasets used in plant breeding research is growing and the types of data used is expanding. This is due to the increased use of technologies such as genomics, climate and high-throughput imaging from drones and satellites, but also data from the processing industry to the consumer. Plant breeding is one of the approaches widely recognised as crucial to feeding a rapidly growing population. A major challenge is to assess the response of current food crop cultivars to different climates and to utilise the phenotypic and genotypic observations made on these cultivars effectively in order to translate this into knowledge to breed more effective cultivars which can produce optimally in a changing environment. Doing so requires standardised access to breeding data, which is only possible through strong international collaboration.

WUR is part of a strong international network that seeks to define a uniform language to exchange plant breeding data types. To provide uniform access to plant breeding data, a global consortium consisting of the leading plant breeding research institutes has defined a standardised communication language known as the breeding API (BrAPI). Standardising data is a lengthy process that is accelerated during week-long hackathons. This is the only way to define the semantics of each attribute, which often have to be revisited once or twice before they are fully understood and accepted by the community, for instance through open source platforms and open discussions like hackathons and the GIT repository. BrAPI recycles existing data standards as much as possible and is compatible with both the FAO Multi-Crop Passport Descriptors and the minimum information standards for plant phenotyping. BrAPI specifies a standard interface for plant phenotype/genotype databases to serve their data to crop breeding applications. It is a shared, open API to be used by all interested data providers and data consumers.