

3.4 Optimising Sugar Beet Harvest

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Abstract (Technical Topics and Desired Outcomes): Sugar beet is harvested between September and February. Early beet are harvested immature and late beet risk damage due to adverse weather (frost and rain). During the months September - November there is still a reduced photosynthesis activity. In the UK 10,000

fields are harvested and processed in four factories. The average field size is 10 hectares, and the average yield (per field) is approximately 67 megatonnes (MT). These factories process between 1.5 - 2.0 million MT of beet annually. Maximum transport distance to the fields is about 70 - 50 miles.

Currently, the harvest date is negotiated between grower and factory prior to the production period and depends on: distance to factory, soil type, follow up crop (winter wheat requires the beet to be harvested in autumn so that wheat can be sown and established before winter), etc. However crop growth potential is not taken into account.

Beet production per field depends on four groups of parameters: soil, inputs, management and environment. The environment can be divided into a-biotic (climate etc) and biotic factors (pest, weeds and disease). During the growing season Rezatec measures the growth parameters (approx. 30 in beet production!) and, models the crop performance to produce simulations. Phenotyping (crop performance measurements) in combination with crop modelling produces actual crop performance information: Beet per hectare in MT.



Aspirations: We would like support in optimising the sugar beet harvest date per field across 2,000 fields to be processed in one factory.

Knowing the beet yield per hectare and estimated potential we could optimise the harvest date. The challenge is to compare field potential and make better harvest date decisions integrating biological production unit (field) potential with harvest capacity, factory processing demand, financial, farm operational, logistical and site conditions.

Resources Available for this Problem:

- Experts from Rezatec Ltd.
- Measured growth parameters
- Historical harvest data

References:

1. <http://rezatec.com>