**BBRO PROJECT REPORT FORM**

**Please note the details on page 2 will be used to formulate the BBRO printed Annual Report.**

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| **Project Title:** **Sequential Harvest trial 2018** |
| **BBRO project no:**  |  |
| **Project sponsor:**  |  |
| **Interim report / Final report** (delete as appropriate) |
| **Project lead or student name:** | **Dr Simon Bowen** |
| **Project mentor or supervisors:** |  |
| **Report Date:** | **2019** |
| **Reporting period covered:****(e.g. 1/1/16 - 31/12/16)** | **2018 crop year** |
| **Timeline (e.g. Year 1 of 4)** | **Year 1of1** |
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| BBRO use only | Date assessed:  |
|  Assessors comments |  |
|  Action required |  |

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| **Project summary for BBRO Publication (no more than 300 words)** |
| A single site replicated trial measured the yield progression of eight varieties at five harvest dates between September 2018 and January 2019. Crop canopy characteristics of each variety was assessedFigure 1 (below): Mean yields of sugar beet varieties grown in sequential harvest trial 2018/19. Analysis shows no significant interaction between varieties and the five harvest dates (P=0.146) and also no significant yield differences between varieties (P=0.165). Figure 2 (below): Significant increases in mean yield of the sugar beet were found to occur at later harvest dates (P<0.001). Error bar shows LSD at 5%. The increase in overall yield of all varieties across the experiment was 27.1%. This is a lower value than reported in previous seasons for yield progression across the harvesting campaign. This reflects the impact of the drought in 2018.The 2018/19 replicated plot trial data above clearly indicates no difference between varieties in respect of harvest date. The trial highlighted the differences between the growth habit of varieties with some demonstrating a more upright growth habit and other a more prostrate growth habit. These characteristics were less obvious when drought resulted in wilting and some limited leaf senescence. When the canopies regrew after the trial received rain, the differences between varieties were much less obvious. Observational data from variety demonstration plots at the same location (Bracebridge) was also available in 2018. This is shown in table below. The demonstration site was on a much thinner soil with a higher stone content compared to the replicated trial site and shower greater symptoms of drought-stressed in July & August compared to the replicated trial.

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|  | *Bracebridge*  | *Adjusted plot weights (kg)* | *% crop cover* |
|  |  |  |  |  |  |  |  |
| *Variety* | *Sept*  | *Dec* | *% increase* | *Sept* | *Dec* |  |
|  |  |  |  |  |  |  |  |
| *Sabatina* | *8.2* | *12.5* | *52.4* |  | *85* | *90* |  |
| *Daphna* | *10.1* | *11.5* | *13.8* |  | *70* | *95* |  |
| *Firefly* | *8.1* | *10.4* | *28.3* |  | *80* | *95* |  |
| *Degas* | *7.5* | *11.4* | *52* |  | *70* | *90* |  |
| *Flixter* | *12.5* | *11.6* | *-7.2* |  | *90* | *75* |  |
| *BTS 1140* | *9.6* | *10.2* | *5.6* |  | *65* | *65* |  |
| *Cayman* | *11.6* | *11.8* | *1.7* |  | *70* | *75* |  |
| *BTS 860* | *9.3* | *8.9* | *-4.3* |  | *55* | *65* |  |
| *Jura* | *9* | *8.9* | *-1.1* |  | *70* | *65* |  |
| *Haydn* | *7.6* | *7.8* | *2.6* |  | *65* | *60* |  |

The impact on canopy development is clearly visible and some varieties appeared to be relatively less affected by the drought and recovered better than others in the period between September and December. Varieties that recovered less well after the drought and showed little yield progression included: BTS 1140, BTS 860, Jura & Haydn. It may be that the performance of the varieties at different harvest dates in 2018/19 was strongly influenced by the weather conditions. Indeed, any genuine differences between the growth of varieties in 2018 may reflect their ability to deal with the drought stress more than intrinsic differences in their growth patterns and canopy growth habit. |
| **Short summary of key objectives** |
| * The project will assess the yield performance of a range of sugar beet varieties beet crops at each of five harvest dates.
* Sugar beet varieties will be assessed for key canopy and root growth characteristics. Any relationship between canopy characteristics and yield will analysed.
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| Insert picture/graph | Insert picture/graph |
| **Outcomes/Key messages for growers and industry** |
| * Previous trial work has shown differences between varieties and their yield at different harvest dates.
* Earlier work has indicated that this may be related to their canopy growth characteristics with upright canopies associated with greater yield progression at later harvest dates than varieties with more prostrate growth habits.
* The replicated trial in 2018/19 highlighted the differences between the growth habit of varieties but showed that this was not related to yield progression although the levels of yield increases was lower than average due to the drought conditions.
* Variety demonstration plots on an adjacent site but more severely droughted soil type, showed that differences between varieties was related to the extent of canopy recovery after drought stress and this was a linked to yield progression.
* The relationship between varieties, their growth habits was possibly masked in 2018 and the effect of the drought on variety yield progression was more important.
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| **Section 1: To be completed by Project Lead:** |
| **Other project objectives (not listed on previous page)** |
| **Milestones for current period** |
| **Note: mentors will be asked to comment on the status of this project (yellow column) using the scoring system in section 2.** |
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| **Summary of results (including figures and tables)*****For Project Annual Report****: please provide a 2-page summary of key findings from the reporting year.****For Project Final Report:*** *please provide a summary of project findings and outcomes with relevant supporting data.* |
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| **Annual report: Key issues to be addressed next year:** |
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| **Publication of results to date/planned publications**: |
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| **Section 2: To be completed by project mentor** |
| **Status - Mentor’s scoring system for interim reports.** |
| Red | “Major concern - escalate to the next level" Slippage greater than 10% of remaining time or budget, or quality severely compromised. Corrective Action not in place, or not effective. Unlikely to deliver on time to budget or quality requirements. |
| Amber | "Minor concern – being actively managed” Slippage less than 10% of remaining time or budget, or quality impact is minor. Remedial plan in place |
| Green | "Normal level of attention" No material slippage. No additional attention needed |
| **Milestone** | **Comments + action required** | **Status** **R/A/G** |
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| **Is the project on track to meet the stated objectives? (please comment in relation to milestones and the status score awarded in section 1).** |
| **Are conclusions scientifically robust? (please comment on data analysis/interpretation)** |
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| **For final reports only:**  |
| **How would you rate the project against the following criteria (please give a score out of 10, with 10 being highest)?**1 ) The project met its original objectives:2) Contribution to scientific knowledge:3) Direct relevance to growers: |