POSTER SUMMARY

A WEB-BASED DECISION SUPPORT TOOL FOR ANALYSING MONTHLY SUGARCANE GROWTH RATES IN SOUTH AFRICA

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Abstract

Monthly sugarcane growth information can support a range of decision-making, such as crop yield estimation, mill planning, harvest scheduling, carryover field selection and chemical ripening. This information can be difficult to obtain. The objective of this work was to develop a decision support program (DSP) for providing situation-specific monthly growth rates.

The DSSAT-Canegro model was used to calculate monthly yield increments for all permutations of 48 homogenous climate zones (HCZ), five soil-water holding capacities, five cycle lengths (12 to 24 months), nine harvest dates (15 April to 15 December), fully-irrigated and rainfed, for 27 growing seasons using historic weather data (1983-2010). These represent most sugarcane-growing situations in South Africa.

A web-based DSP was developed to enable easy querying of the yield increment database. Prospective users were consulted during the development to ensure that the DSP produced useful information and was easy to use. The DSP allows users to define the growing situation (HCZ, soil, crop cycle and irrigation condition) and then view the relevant monthly cane and sucrose yield increments for below-normal, normal and above-normal climatic growth conditions, in graphical and tabular formats, and to compare scenarios. Data can be downloaded in CSV format.

The DSP is valuable for supporting field-level decision-making, such as assessing yield gains when harvesting is delayed, and exploring ripener application strategies. The underlying database may also be used in future as the basis for more application-specific decision-support tools. For example, a prototype crop estimates tool has been developed, which allows users to define multiple fields and assess different harvesting strategies.

Keywords: growth rate, cane yield, crop model, Canegro, decision support, climate