



IRRIGATION RESEARCH & EXTENSION COMMITTEE

2009



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Greenhouse inventory scorecard for rice growers

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GREENHOUSE INVENTORY SCORECARD FOR RICE GROWERS

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The Greenhouse Scorecard was developed to:

1. Calculate the greenhouse gas emissions from a rice-based farming enterprise;
2. Identify which agricultural activity on a rice farm produces these Greenhouse Gas Emissions;
3. Calculate the greenhouse efficiency of the farming enterprise in producing farm gate items relative to the production of Greenhouse Gas Emissions;
4. Compare emissions with other rice farming enterprises and other agricultural industries in Australia as well as rice industries overseas;
5. Assist in the development of a Greenhouse Action Plan which aims at reducing input costs and Greenhouse Gas Emissions relative to farm-gate production;
6. Provide a tool for the on-going monitoring of emissions from a rice enterprise and monitoring the effectiveness of implementing a Greenhouse Action Plan.

The initial development of the Greenhouse Scorecard in 2002 was a partnership between the Ricegrowers' Association of Australia (RGA), the Australian Greenhouse Office (AGO) and the Snowy Mountains Electricity Commission (SMEC). The scorecard used emission factors provided by the Australian Greenhouse Office (AGO) and modelling by Peter Grace based on the CERES-Rice model to estimate methane emissions from rice production. The scorecard has primarily been used as an educational tool through the rice industry's Environmental Champions Program.

The Greenhouse Scorecard has been recently updated by Perenia Carbon to:

1. Incorporate feedback from growers and other users of the original scorecard;
2. Update with the latest (2008) National Greenhouse Accounts (NGA) Factors prepared by the Department of Climate Change. These replace the AGO Factors used in 2002;
3. Include any other information or factors developed since the original scorecard such as the alternate wet-and-dry (AWD) rice cultural method;
4. Resolve programming and formatting glitches and to enhance its usability

The Greenhouse Scorecard calculates emissions of the following inputs and on-farm activities:

1. Energy
2. Rice ponding
3. Inorganic fertilizer application
4. Burning of stubble
5. Soil disturbance
6. Livestock

Methane from rice ponding accounts for the majority of the Greenhouse Gas Emissions from rice based farming systems. Methane is produced from the breakdown of organic matter under anaerobic conditions when water is ponded (permanent water) on the soil surface.

Burning stubbles produces less greenhouse gas emissions than incorporating the stubble into the soil prior to rice ponding. However, incorporating stubble has positive benefits in terms of increasing soil organic matter levels, increasing soil humus and carbon content, improving soil structure and generally increasing soil health.

A Greenhouse Workbook has been developed in conjunction with the Greenhouse Scorecard. This Workbook provides information on ways to increase on-farm efficiencies in the use of farming inputs. It also provides a series of management options to help rice growers understand and identify how their practices, both on the farm and in the home, influence Greenhouse Gas Emissions. The implementation of these practices can be monitored using the Greenhouse Scorecard.

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