

## TABLE OF CONTENTS

|   | Page        |
|---|-------------|
| <b>PERNYATAAN BEBAS PLAGIASI.....</b>   | <b>ii</b>   |
| <b>PREFACE .....</b>  | <b>iv</b>   |
| <b>TABLE OF CONTENTS .....</b>  | <b>vi</b>   |
| <b>LIST OF TABLES.....</b>  | <b>viii</b> |
| <b>LIST OF FIGURES .....</b>  | <b>x</b>    |
| <b>ABSTRACT .....</b>   | <b>xi</b>   |
| <b>I. INTRODUCTION .....</b>  | <b>1</b>    |
| 1.1 Background.....   | 1           |
| 1.2 Research purposes .....   | 4           |
| 1.3 Research Advantages.....  | 4           |
| 1.4 Novelty.....  | 4           |
| <b>II. LITERATURE REVIEW .....</b>  | <b>10</b>   |
| 2.1 Rainfed Rice .....  | 10          |
| 2.2 Controlled Released Fertilizer .....  | 12          |
| 2.3 The Characteristics of Biochar .....  | 14          |
| 2.4 Greenhouse gasses (GHG).....  | 18          |
| 2.5 Hypothesis .....  | 19          |
| <b>III. METHODOLOGY .....</b>   | <b>20</b>   |
| 3.1 Material and tools.....   | 20          |
| 3.2 Research procedures.....  | 21          |
| 3.3 Research implementation.....  | 23          |
| 3.4 Observation and data collecting .....   | 24          |
| 3.5 Data Analysis .....   | 29          |
| <b>IV. RESULT AND DISCUSSION.....</b>   | <b>30</b>   |
| 4.1 Result.....   | 30          |
| 4.1.1 Green House Gasses (GHG) emission in Gogo Rancah and Walik Jerami system..... | 33          |
| 4.1.2 Global Warming Potential (GWP) in Gogo Rancah and Walik Jerami system.....    | 36          |
| 4.1.3 Environment condition.....  | 30          |

|                   |   |           |
|-------------------|---|-----------|
| 4.1.4             | Soil pH on Gogo rancah and Walik jerami system .....  | 40        |
| 4.1.5             | Biochar status .....  | 32        |
| 4.1.6             | RHB and CRF application on some soil properties in gogo rancah and walik jerami system.....           | 42        |
| 4.1.7             | Nitrogen available in soil .....  | 47        |
| 4.1.8             | Total in Soil (ppm).....  | 49        |
| 4.1.9             | K total in Soil (ppm) .....   | 51        |
| 4.1.10            | Plant height (cm) in Gogo Rancah and Walik Jerami system.....   | 53        |
| 4.1.11            | Tiller number in Gogo Rancah and Walik Jerami system .....  | 55        |
| 4.1.12            | Leaf greenness based on SPAD measurement on Gogo Rancah and Walik Jerami system.....                  | 56        |
| 4.1.13            | Root Systems in Vegetative stage of Gogo Rancah and Walik Jerami System using washed soil cores ..... | 58        |
| 4.1.14            | The dried weight of plant (gram) .....  | 63        |
| 4.1.15            | Plant Nutrient Total Uptake (gram) at Gogo Rancah and Walik Jerami system.....                        | 66        |
| 4.1.16            | Agronomy Efficiency of Nitrogen (AEN) at Gogo Rancah and Walik Jerami system.....                     | 68        |
| 4.1.17            | Yield and yield components in Gogo Rancah and Walik Jerami system                                     | 70        |
| 4.2               | Discussion.....   | 73        |
| <b>V.</b>         | <b>CONCLUSION.....</b>  | <b>78</b> |
| 5.1               | Conclutions .....   | 78        |
| 5.2               | Suggestion .....  | 78        |
| <b>REFERENCES</b> | <b>.....</b>  | <b>79</b> |
| <b>APPENDIXES</b> | <b>.....</b>  | <b>90</b> |