

**DESIGN, FABRICATION AND PERFORMANCE EVALUATION OF A
BED FORMING ATTACHMENT TO MINI-TILLERS**

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ACCEPTANCE SHEET

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BIOGRAPHICAL SKETCH

The author, Melody U. Balot was born on December 17, 1996 at San Mateo, Isabela, the eldest daughter among the three children of Mr. Melencio P. Balot Jr, and Mrs. Gladys O. Balot, both residents of San Mateo, Isabela.

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As the author stays in the University, she joined the Arnis Varsity Team, an athletic association for the Arnis Players who compete in various events inside and outside of the campus, joined four SCUAA meets. A gold medalist SCUAA'14 in the category Synchronize Solo Baston, gold medalist SCUAA'16 and been qualified to National SCUAA '16, silver medalist last SCUAA '17 in the category Synchronize Doble Baston and gold medalist SCUAA '18 in the category Synchronize Doble Baston and Spada Y Daga.

The author was also a proud member of the organization Christian Brotherhood International, Vice President for two years. Attended various seminar that could help the author in her needs especially in the field that she has entered.

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TABLE OF CONTENTS

	PAGE
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF APPENDICES TABLES	xi
LIST OF APPENDICES FIGURES	xii
ABSTRACT	xiii
INTRODUCTION	1
Background of the study	1
Statement of the Problem	2
Objectives of the Study	3
Significance of the Study	4
Scope and Limitation of the Study	4
Time and Place of the Study	5
REVIEW OF LITERATURE	6
Land Preparation	6
Raised Beds	6
Crops Planted on Beds	7
Use of Human and Animal Power	8
Bed Former Machines	9
Power Tiller in the Philippines	10
Technology	11
Design and Fabrication Principle	12
Design Considerations	13
Structural Design	14
Selection of Materials	15
Draft Requirements	16
Field Capacity	16

Machine Performance Testing and Evaluation	16
Operating Speed	17
Cost Determination	18
METHODOLOGY	20
Conceptualization of the Study	20
Design of the Machine	21
Design Consideration	21
Design Concept and Principle of Operation	22
Selection of Materials	23
Drawbar Power	24
Draft Requirements	25
Design Components	27
Side Guards	27
Bed Top Leveler	28
Main Frame Assembly	28
Fabrication of the Machine	29
Testing Instruments and Materials	30
Performance Evaluation	30
Preliminary and Functional Testing	30
Final Testing of the Machine	31
Experimental Field Area	31
Data Gathering	32
Total Operating Time	32
Turning Time	32
Time Loss Due to Are	33
Time Loss Due to Non-Area	33
Mean Height	33
Field Capacity	33
Field Efficiency	34
Fuel Consumption Rate	35
Unit Cost of the Machine	35

Fixed Cost	36
Variable Cost	36
Cost of using the Machine	37
Statistical Analysis	37
RESULTS AND DISCUSSION	39
Description of the Bed Forming Attachment	39
Main Frame Assembly	40
Side Guard	40
Bed Top Leveler	41
Preliminary and Functional Testing	43
Performance of the Machine	45
Field Capacity	46
Field Efficiency	47
Fuel Consumption Rate	47
Bed Top Width	48
Average Bed Height	49
Bed Bottom Width	50
Unit Cost of Operation of the Machine	52
SUMMARY, CONCLUSION AND RECOMMENDATION	54
Summary	54
Conclusions	55
Recommendation	55
LITERATURE CITED	57
APPENDICES	62

LIST OF TABLES

TABLE		PAGE
1	Corresponding fabrication activities for each machine component	29
2	Instruments and materials to be used during the evaluation of the bed former attachment	30
3	Specifications of the tilling machine model K950	39
4	Average forward speed at different gear shift combination	45
5	Field capacity of the bed forming attachment as affected by different forward speed	46
6	Field efficiency of the bed forming attachment as affected by different forward speed	47
7	Fuel consumption rate of the bed forming attachment as affected by the different forwards speed	48
8	Bed top width of the bed formed of the bed forming attachment as affected by the different forwards speeds	49
9	Bed mean height of the bed formed of the bed forming attachment as affected by the different forward speeds	50
10	Bed bottom width of the bed formed of the bed forming attachment as affected by the different forward speeds	51
11	Assumptions for cost calculations	52

LIST OF FIGURES

FIGURE		PAGE
1	Raised Beds	7
2	Conceptual framework of the study	21
3	Schematic diagram of the device	23
4	The forces acting on the bed forming attachment during operation	25
5	Soil forces acting on the bed forming attachment	26
6	Projected perpendicular area application on soil forces on sideguard	28
7	Recommended field operation pattern	32
8	Bedding capacity layout	33
9	Experimental field layout	34
10	Randomization layout of experimental unit	38
11	Bed former attached to mini-tiller	39
12	Main frame assembly of the bed forming attachment	40
13	Fabricated side guard of the bed forming attachment	41
14	Fabricated bed top cover of the bed forming attachment	42
15	Fabricated bed former attachment	42
16	The movement of the bed forming attachment during operation	43
17	Bed depth issue of the bed forming attachment	44
18	The bed forming attachment with restrained movement keeping it aligned	44
19	Break-even Point Graph	53

LIST OF APPENDIX TABLES

APPENDIX TABLE		PAGE
1	Mean table for field capacity, ha/hr	63
2	Analysis of variance for the field capacity	63
3	Mean table for the field efficiency, %	63
4	Analysis of variance for the field efficiency	63
5	Mean table for fuel consumption rate, L/hr	64
6	Analysis of variance for the fuel consumption rate	64
7	Comparison among means for fuel consumption rate	64
8	Mean table for the bed top width, cm	64
9	Analysis of variance of the bed top width	65
10	Mean table for the average bed height	65
11	Analysis of variance for the mean height	65
12	Mean table for the bed bottom width, cm	65
13	Analysis of variance for the bed bottom width	66
14	Dimensions and sectional properties of equal-leg angled bars	66
15	Bill of materials	70
16	Device cost charges	70
17	Formula used in cost analysis and their corresponding values	71

LIST OF APPENDIX FIGURES

APPENDIX FIGURE		PAGE
1	Schematic diagram of drawbar pulls and the speed characteristic of the device	67
2	Force analysis diagram on the attachment	67
3	The author during the fabrication of the bed former attachment	72
4	Adjustments of the bed forming attachment after the preliminary testing	72
5	The author during the preliminary testing and running-in test	73
6	Bed forming operation using the device	73
7	Data gathering activity	74
8	Fujihama mini-tiller	74
9	Beds formed using the bed forming attachment	75
10	Isometric view of the attachment	76
11	Front view, Top view, Side view, Rear view	77
12	Isometric view of side guard	78
13	Isometric view of the bed top leveler	79
14	Isometric view of the main frame assembly	80

ABSTRACT

BALOT, MELODY U., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines. **JUNE 2019, DESIGN, FABRICATION AND PERFORMANCE EVALUATION OF A BED FORMING ATTACHMENT TO MINI-TILLERS.**

Adviser: RUEL G. PENEYRA

Raised beds are formed by moving soil from the furrows to the area of the bed, thus raising its surface level. Bed forming attachment to mini-tillers was designed, fabricated and evaluated. To reduce the drudgery and time-consuming manual forming of raised beds especially in the highland vegetable producing regions of Northern Luzon. The attachment was conceptualized as an added feature for mini-tiller. is the problem. Fabrication was done at the College of Engineering Shop, CLSU and was evaluated at an open field at Bagong Sikat, Science City of Muñoz, Nueva Ecija.

The single factor experiment laid out in Completely Randomized Design (CRD) with three levels (0.18 m/s, 0.19 m/s, 20 m/s) and three replications was utilized. The effective working width, fuel consumption rate, mean bed height, time of operation, field capacity and field efficiency were analyzed using Analysis of Variance (ANOVA) and means were compared using Least Significant Difference (LSD).

Result of the field test showed the attachment was able to form beds the average effective width of 72.60 cm and mean bed height of 14.68 cm. Furthermore, field performance test showed that the average field efficiency and capacity obtained was 89.97% and of 0.049 ha/hr.

Cost analysis of the device showed that a total investment of Php 5,050.00, yield an annual total fixed cost of Php 1,212.00/yr. and a break-even area of 0.4 ha/yr at a custom rate of Php 5,000.00/ha.

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