

**CONSTRUCTION OF A LOCAL MACHINE
FOR CHOPPING RESIDUES OF
BANANA PLANTS**

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CONTENTS

	No.
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	3
2.1. Different Utilization of Crops Residues.....	3
2.2. Chopping Machines for Crop Residues	9
2.3. Effect of different parameters on chopping machines performance.....	11
2.4. Power and energy requirements.....	19
2.5. Cost calculations for operating chopping machines...	24
3. MATERIAL AND METHODS	26
3.1. Materials	26
3.1.1. Banana plant.....	26
3.1.2. Constructed chopping machine.....	27
3.1.2.1. Feeding unit.....	27
3.1.2.2. Cutting unit.....	27
3.1.2.3. Electric motor.....	32
3.1.2.4. Frame.....	32
3.1.3. Measuring instruments.....	33
3.2. Methods.....	34
3.2.1. Experimental conditions.....	34
3.2.2. Measurements and determinations.....	34
3.2.2.1. Theoretical chopper capacity.....	35
3.2.2.2. Chopping machine productivity.....	35
3.2.2.3. Chopper efficiency.....	35
3.2.2.4. Power and specific energy requirements	36
3.2.2.5. Costs calculations	36

4. RESULTS AND DISCUSSION	38
4.1. Chopper productivity.....	38
4.2. Chopper efficiency	40
4.3. Required power.....	43
4.4. Specific energy	46
4.5. Chopping operational cost	48
5. SUMMARY AND CONCLUSION	52
6. REFERENCES	59
7. APPENDIX	67
ARABIC SUMMARY	

LIST OF TABLES

No.	Title	No.
1	Some physical and chemical characteristics of the pseudo stem Maghrabi banana plant	26
2	Effect of feeding rate, chopping drum speed and moisture content under different knife shapes on chopping machine productivity.....	67
3	Effect of feeding rate, chopping drum speed and moisture content under different knife shapes on chopping efficiency	68
4	Effect of feeding rate, chopping drum speed and moisture content under different knife shapes on the required chopping power	69
5	Effect of feeding rate, chopping drum speed and moisture content under different knife shapes on the specific energy requirements	70
6	Effect of feeding rate, chopping drum speed and moisture content under different knife shapes on chopping operational cost	71

LIST OF FIGURES

No.	Title	No.
1	Parts of constructed chopping machine.....	28
2	Elevation, plan and side view of banana chopping machine.....	29
3	Elevation and plan of cutting drum knives.....	30
4	Elevation, plan and side view of cutting knives.....	31
5	Effect of feeding rate, chopping drum speed and different moisture content under two knife edge shapes on chopper productivity.....	39
6	Effect of feeding rate, chopping drum speed and different moisture content under two knife edge shapes on chopper efficiency.....	41
7	Effect of feeding rate, chopping drum speed and different moisture content under two knife edge shapes on required power.....	44
8	Effect of feeding rate, chopping drum speed and different moisture content under two knife edge shapes on specific energy requirement.....	47
9	Effect of feeding rate, chopping drum speed and different moisture content under two knife edge shapes on chopping operational cost.....	49

ABSTRACT

Experiments were carried out during two seasons of 2015/2016 and 2016/2017 in El-Kassasin Horticultural Res. Station, Ismailia Governorate, Egypt to determine the proper conditions of the constructed banana chopper.

The objectives of the present research may be summarized as follows:

1. Construct a local machine for chopping apparent trunk of banana plants.
2. Study some operating parameters (feeding rate, chopping drum speed, shapes of knife edge and moisture content of pseudo stem) affecting the performance of the constructed machine.
3. Evaluate the constructed machine from the economic point of view.

Experiments were conducted under the following variables: chopping drum speeds of 16.74, 19.88, 23.02 and 26.16 m/s (800, 950, 1100 and 1250 rpm), feeding rates of 600, 700, 800 and 900 kg/h and moisture contents (w.b.) of banana pseudo stem (93, 91.4, 88 and 86%) and two types of knife (smooth and serrated chopping knife edges). in order to obtain high productivity, reduce in specific energy and cost values. Evaluation of the constructed chopping machine performance was achieved taking into consideration the following indicators: machine productivity, chopping efficiency, power and specific energy requirements and chopping operational costs.

Experimental results revealed that productivity, chopping

efficiency, power, specific energy and operational costs were in the optimum region by using of the constructed banana chopper under the following recommended conditions:

- Operate the chopper at drum speed of 26.16 m/s (1250 rpm).
- Feeding rate should be ranged from 700 to 800 kg/h.
- Moisture content of banana pseudo stem was 86%.
- Use serrated knife edge was better than smooth edge for chopping banana pseudo stem to obtain highest productivity, least specific energy and cost values.