

Effects of credit on the adoption of drudgery-reducing crop production techniques in northern Ghana

Introduction

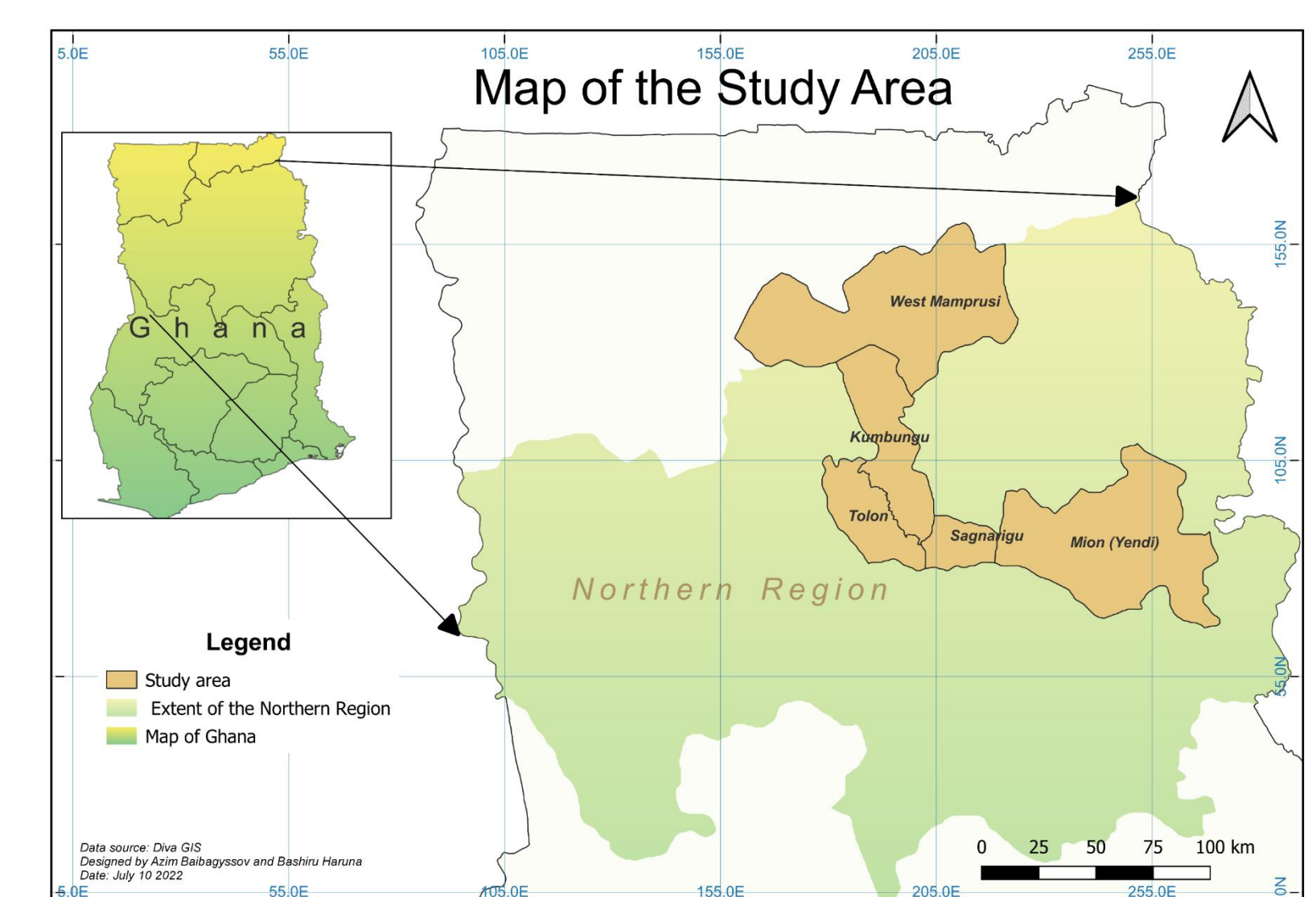
- Recent literature shows a negative association between agricultural cropping work and nutritional status, as measured by body mass index (BMI) for non-overweight individuals in developing countries.
- Drudgery-reduction in the cultivation of crops by smallholder farmers in developing countries has been identified as a potential pathway through which agriculture can improve the nutritional status of non-overweight farmworkers.
- Adopting drudgery-reducing cropping strategies come with financial costs, which is a constraint to smallholder farmers.

Research Objective

- To examine how credit-constrained farmers will adjust their cropping plans to reduce total labour energy expenditure when they are provided with a credit facility.

Materials and Methods

- Study Area: Study was conducted in northern Ghana
- Data collected: Quantitative data collected through household questionnaires
- Analytical method: Multiple objective programming (Lexicographic goal programming)
 - A base farm household model was constructed
 - Credit-access is introduced into the base model



Results

Table 1: Optimal cropping strategies for income maximization without credit access

Activities	Solution value
mz_mnul_weed(ha)	0.812
rice_mnul_weed (ha)	0.621
cowp_mnul_weed (ha)	1.014
yam_mul_weed (ha)	0.142
gnut_mnul_weed (ha)	0.579
soy_mnul_weed (ha)	0.292
mil_mnul_weed (ha)	0.105
pep_mnul_weed (ha)	0.157
Total labour effort (kcal)	286402.252

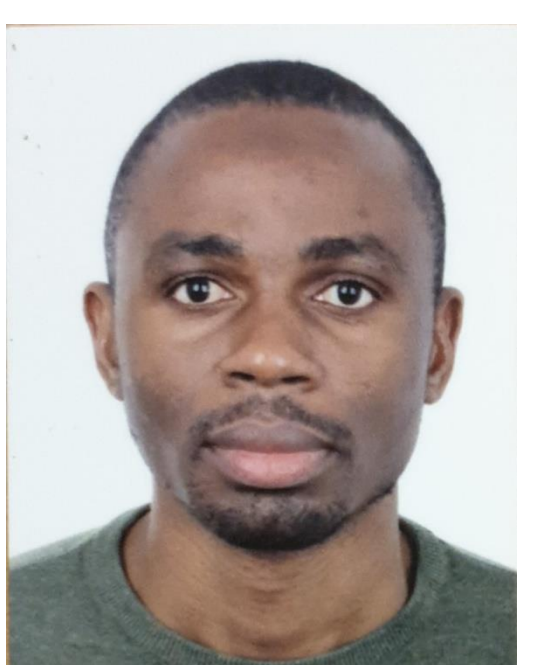
Table 2: Optimal cropping strategies for income maximization with credit access

Activities	Solution value
mz_trac_herb(ha)	0.204
mz_mnul_weed(ha)	0.608
rice_trac_herb (ha)	0.821
cowp_trac_herb (ha)	1.014
yam_mul_weed (ha)	0.142
gnut_trac_herb (ha)	0.579
soy_trac_herb (ha)	0.292
mil_trac_herb (ha)	0.105
pep_trac_herb (ha)	0.157
Total labour effort (kcal)	216826.1
Credit borrowed (GHS)	424

- ❖ Farmers substitute tractor land preparation and herbicide weed control for manual ploughing and weeding when they have access to credit
- ❖ Total energy expended is reduced when farmers have access to credit

Conclusion

- ❑ Our analysis shows that the provision of credit at a 25% interest rate per annum to credit-constrained farm households in northern Ghana enables them to adopt drudgery-reducing production techniques
- ❑ Provision of credit to farmers reduces their energy expenditure and thus leads to improved nutritional outcomes.



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