

Extended Abstract

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Paper	Economic situation and wellbeing of agricultural households in Andhra Pradesh, India
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Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.

Abstract	200 words max
<p>Famers in India face rising costs of cultivation and stagnating yields, compounded by increasing uncertainty due to three Cs: climate change, COVID-19, and conflicts. Our objective was to evaluate the economic situation and wellbeing of agricultural households in Andhra Pradesh, a state in south India. We specifically explored sources of income; income diversification using the Simpson Diversification Index; wealth profile using principal component analysis (PCA); cultivation expenditure; outstanding debt; and the association of debt with depressive symptoms using Tobit regression. Data were collected from 1,956 households in 2022/23. Crop cultivation and salary were the largest contributors to agricultural households' income accounting for 21% and 20% of total income, respectively. Labour accounted for 40% of cultivation expenditures, pesticides 17%, fertiliser 16%, seed 8%, and tractor and other machinery rental 7%. Two-thirds of households had unpaid debt. The mean (SD) PHQ-9 score was 0.37 (1.32) out of a maximum score of 27, reflecting a low prevalence of depressive symptoms. The amount of debt was not significantly associated with depressive symptoms in this sample. Our findings confirm the continued diversification of agricultural household incomes in India, and the significant proportion of crop cultivation expenditures on labour and synthetic chemical inputs. More research is needed to understand factors associated with wellbeing in this population.</p>	
Keywords	Farm Household, Farmers, On Farm, Peasant
JEL Code	Q120 Micro Analysis of Farm Firms, Farm Households, and Farm Input Markets see: www.aeaweb.org/jel/guide/jel.php?class=Q
Introduction	100 – 250 words
<p>Agriculture is a vital sector of the Indian economy, providing livelihood to nearly half of the population (Ministry of Agriculture and Farmers Welfare, 2020). However, the economic situation and wellbeing of farmers have been compromised over the past decade due to rising costs of cultivation and stagnating yields, compounded by increasing uncertainty. After 2007/08, the cost-output ratio for most of the major crops in India sharply increased, mainly due to a rise in input prices, including human labour, and stagnating crop yields (Srivastava <i>et al.</i>, 2017). Furthermore, the Russia-Ukraine conflict and resulting supply chain disruption led to a rise in fertiliser prices by nearly 30% since 2022, though most of this price rise is being absorbed by the federal government in terms of fertiliser subsidies. At the same time, the slowdown in the economy due to COVID-19 badly affected the crop output market, with only marginal increases in prices, thus negatively affecting the net income of agricultural households.</p>	

Our objective was to evaluate the economic situation of agricultural households in Andhra Pradesh, a state in south India with a population of 49 million including approximately 6 million farmers. We specifically explored sources of income; income diversification using the Simpson's Diversity Index (SDI); wealth profile using principal component analysis (PCA); cultivation expenditure; outstanding debt; and the association of debt with depressive symptoms using Tobit regression. We hope that our study will provide useful insights for policymakers and researchers to address the challenges faced by agricultural households in India.

Methodology

100 – 250 words

Data were from the BLOOM study (co-Benefits of Largescale Organic farming On huMan health), which collected data from 1,956 households across 4 districts in Andhra Pradesh in 2022/23 (Jaacks *et al.*, 2023). We conducted a complete-case analysis: 89% of households had complete income data and 81% had complete expenditure data. Ten sources of income assessed included: crop cultivation, livestock, other agriculture (e.g., fodder and fisheries), non-agricultural enterprises, wages, salaried employment, pensions, remittances, government schemes, and rental. SDI was used to evaluate income diversification with values ranging from 0 (only 1 income source) to 1.

A wealth index was derived from a PCA of 12 assets: land for agriculture; other land, not for agriculture; livestock; non-mechanised farm equipment; mechanised farm equipment; non-farm business equipment; house characteristics; large consumer durables; small consumer durables; cell phone; and transport (e.g., bicycle, motorbike/scooter). Wealth scores were extracted from the first component and categorised into quintiles.

Cultivation expenditure referred to commercial cultivation during the monsoon season of 2022/23. Expenditure on the following were assessed: seed, soil, fertiliser, manure, pesticides, biopesticides, mechanical pest control, diesel, electricity, human labour, animal labour, irrigation water, repair and maintenance of equipment, tractor and other machinery rental, and land lease.

The amount of debt outstanding at the time of the survey was collected. Tobit regression was used to analyse the effect of debt on depressive symptoms, adjusting for wealth index, caste, income, farm size, and occupation. Depressive symptoms were assessed using the Patient Health Questionnaire (PHQ-9) (Patel *et al.*, 2008).

Results

100 – 250 words

Most households cultivated only 1 or 2 crops during the monsoon season, primarily paddy and cotton. Half (54%) of participants had secondary school or higher education and 60% self-reported being 'other backward caste'.

Mean (Standard Deviation (SD)) total annual income was USD 2,181 (2,589). Households had, on average, 3.6 sources of income (ranging from 1 to 8 sources out of 10). Mean (SD) SDI was 0.37 (0.26). Income from crop cultivation made up 21% of total income, income from salaried employment 20%, wages 18%, government schemes 13%, pensions 6%, livestock 6%, non-agricultural enterprises 5%, and other agricultural activities, remittances and rent were all <1% each.

Mean (SD) total cultivation expenditure was USD 1,248 (2,173). Labour accounted for 40% of cultivation expenditures, pesticides 17%, fertiliser 16%, seed 8%, and tractor and other machinery rental 7%.

Two-thirds of households had unpaid debt; mean (SD) total outstanding debt was USD 2,499 (3,793). The mean (SD) PHQ-9 score was 0.37 (1.32) out of a maximum score of 27, reflecting a low prevalence of depressive symptoms. The prevalence of depression (mild, moderate or severe) was 1.6% with no difference between men and women or households with and without debt. The adjusted Tobit regression found that the amount of debt was also not significantly associated with depressive symptoms in this sample. However, only caste, wealth quintile, and occupation had significant effects on depressive symptoms.

Discussion and Conclusion

100 – 250 words

The study on the economic situation and wellbeing of agricultural households in Andhra Pradesh reveals a community engaged in monoculture, primarily dependent on paddy and cotton cultivation. Financially, the average annual income is modest at USD 2,181, with a significant standard deviation suggesting income disparity. Crop cultivation in these agricultural households accounted for only 21% of total income, highlighting the use of alternative income-generating activities to ensure financial stability.

On expenditure for cultivation, labour being the largest expense, indicates the labour-intensive nature of agriculture in the region. The high cost of pesticides and fertilisers also reflects that households spend a lot on chemical inputs, which could have long-term environmental and health implications.

Debt is a common issue, with two-thirds of households having unpaid debt. However, the low mean PHQ-9 score suggests that depressive symptoms are not prevalent among households, and debt levels do not significantly correlate with mental health outcomes.

The study portrays a scenario where income diversification is crucial but insufficient to alleviate financial burdens. The reliance on chemical inputs for cultivation underscores the need for sustainable agricultural practices, but with careful consideration of labour costs. Despite the widespread debt, agricultural households' mental wellbeing appears resilient. Future policies should focus on reducing cultivation costs, and addressing social inequalities to improve the overall quality of life for these households.