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Gender differences in rice value chain participation and career preferences of rural youth in India

Prakashan Chellattan Veettil , Prabhakaran Raghu, Bidhan Mohapatra and Samarendu Mohanty

ABSTRACT

Ageing farming communities and youth abandoning agriculture are serious issues, with attracting and retaining youth in agriculture a key challenge. This article reports on a gender-sensitive study of rural youth conducted in eastern India. The willingness to be involved in agriculture varies across region and gender, with the high readiness of female youths signalling a feminisation in agriculture. Involvement in value chain activities has a significant and positive impact on career choice. Youth policy needs to address the different preferences and facilitation requirements of male and female youth, in order to change youth's aspiration and be inclusive of both genders.

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Gender and diversity – Youth; Environment (built and natural) – Agriculture; South Asia

Introduction

Ageing farming communities and youth abandoning agriculture as a profession are worldwide phenomena (FAO 2014) that are increasingly prominent in developing countries. The future trajectories of the agri-food sector in the developing world depend on the involvement of youth and encouraging them to stay in agriculture by making the profession intellectually stimulating and economically rewarding. This article uses a gendered approach to analyse three dimensions of rural youth in agriculture: their involvement in the rice cultivation and its value chain activities; the career preferences of male and female youth in agriculture; and the systematic differences between male and female youths in their perceptions on institutional and policy support for agriculture as a viable career choice.

Youth between 10 and 24 years old constitute around 25% of the world's population, with 90% living in low-income countries (UNFPA 2014). India, with both the largest youth population and rural population, can play a vital role in transforming agriculture to enhance the nation's food security and reduce poverty. Farming has lost its sheen due to frequent farmer suicides, growing debt burdens, and extremely poor agricultural growth (Sharma 2007). Consequently, disenchantment is growing in the rural sector, resulting in the accelerated withdrawal of youth from agriculture (White 2012; Sanghi 2017). Sumberg et al. (2017) reveal that young (secondary school students) people in Ghana see farming as involving hard work and a lack of respect to farmers, low-returns, and are attracted to urban cities, so prefer modern jobs with better education rather than farming. In this youth policy discourse, female youths are largely neglected. Agriculture is no longer an attractive proposition for rural youths, either as a profession (Bhat, Bhat, and Shayana 2015) or as a status symbol. It is clear that large numbers of farmers stay in agriculture only because of a lack of non-farm employment opportunities (Agarwal and Agrawal 2017).

CONTACT Prakashan Chellattan Veettil  prakashanieg@gmail.com

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Structural transformation in agriculture can attract and create aspirations among youth. However, developing countries are facing an exodus of youths from farming to non-farm employment in the urban or semi-urban sectors. This further reduces the number of people with innovative and entrepreneurial skills to work in agriculture and bring structural transformation. Young people are moving away from agriculture because of low incomes resulting in insufficient financial gain, high risk, perceived low status, market fluctuations, and lack of credit (Sharma 2007; Singh and Kahlon 2016). Rural out-migration of men could push women and children into the labour market under unfavourable conditions such as upward pressure on wages and household livelihood strategies. With the absence of male farmers, women are becoming the virtual custodians of their agricultural land and contributing significantly to the feminisation of Indian agriculture.

Acknowledging the importance of young people in bringing structural and pragmatic changes to agriculture, the Government of India encouraged and engaged dynamically with youth in its twelfth five-year plan, 2012–2017, by implementing a youth-centric approach that targets areas of agricultural research that can be converted into viable economic enterprises and build capacities to attract rural youth to agriculture. Developing business and employment opportunities in agriculture, including creating more lucrative and attractive jobs in agribusiness activities (Acharya 2007), is central in a youth-centric agriculture. Young farmers in such a policy framework can play an important role in addressing food security and poverty.

In this context, this article considers whether male and female youths are currently involved in agriculture; if perceptions of agriculture as a possible career vary across gender; and how youth can be attracted to agriculture, and if different approaches are needed for male and female youths. The study focuses on eastern India, where agriculture is the primary source of livelihood and rice is cultivated extensively (98% of the total cultivated land in the study region). Youth involvement is hypothesised to vary across different agro-ecological regions and irrigation methods.

Youth and agriculture

The United Nations defines “youth” as persons between 15 and 24 years old, whereas the African Union and most African countries use an age range between 15 and 35 years. In 2003, the national youth policy of India defined youth as between 15 and 35 years old; however, in 2014, the upper age was reduced to 29 years (Government of India 2014). This age range is based on three parameters: that individuals have completed compulsory formal education, are about to decide their career path, and are ready for their first regular employment. The national youth policy aims is “to empower youth of the country to achieve their full potential, and through them enable India to find its rightful place in the community of nations.” In India, spending on youth amounted to US\$12.83 billion in 2012–2013, encompassing both targeted and non-targeted expenditures. Targeted expenditures (US \$5.28 billion) are mainly allocated to education, skill development, employment, health and engagement. Non-targeted expenditures include food subsidies, employment programmes such as MGNREGA, and health programmes related to infrastructure development, disease control and family welfare.¹ The per capita spending on youth is about US\$38.66, of which US\$15.69 is targeted and US\$22.97 non-targeted (Government of India 2014).

The deagrarianisation or depeasantisation of rural areas is more visible in developing countries and has been widely reported (Rigg 2006; Bryceson 1996). To attract the young, agricultural activities must be profitable, competitive and dynamic. Kristensen and Birch-Thomsen (2013) report that entrepreneurial training, infrastructure investments and credit assistance are key areas that the government need to promote agri-based entrepreneurship among youth in rural areas of Uganda and Zambia. Ahaibwe, Mbowa, and Lwanga (2013) suggest that, to retain youth in Uganda on farms, farm revenues and rural capacities must be increased. Youth can be kept in agriculture by supporting entrepreneurs for agribusiness, input markets, storage and processing. Emphasis should be put on knowing where employment opportunities are along the agricultural value chains. Acharya (2007) highlighted that there needs to be a shift from production to innovation, for entrepreneurship to

flourish. Hedge and Venkattakumar (2015) point out that, to revitalise Indian agriculture, there is a need to bring in profitability through better livelihood options and promoting entrepreneurship, which eventually attract the next generation. Daum (2018) argues that proposed policy briefs on the aspirations and perceptions of young people about farming are not based on empirical evidence. Daum suggests that policymakers and development practitioners pay more attention on the actual aspirations of rural youth to avoid well-intended but misguided policies.

Methods

Youth involvement and willingness to be involved

Here, involvement of youth is taken as their participation in rice production or any other value chain activity in a managerial or decision-making role, where the activity is either performed by the youth and/or they are managing it in the field. This accounts for their direct involvement, which probably leads to a career choice, and any indirect involvement such as supporting the household to collect information on markets and services. The willingness to be involved in the rice value chain was elicited by asking them to order activities from a list of rice value chain activities according to their preferences. In this exercise, budget support was offered in the form of institutional credit (with a cap of twice the land/asset value). Youths were exhibited a series of binary choices and were free not to choose or to choose outside of rice value chain activities.

Estimation and model specifications

Bivariate probit regression was used to analyse the factors affecting youth involvement in rice production and value chain activities. Y_{ij} denotes the binary response 0/1 representing whether the youth i ($i = 1, 2, \dots, n$), was involved in the category j crop value chain activity, $j = \{\text{crop production, value chain}\}$, and $\text{YouthInv}_i = (Y_{i1}, Y_{i2})'$ ($1 \leq i \leq n$) denotes the collection of youth involvement. The bivariate probit model for youth involvement is specified as:

$$\text{YouthInv}_{ij}^* = \text{Gender}_i \delta_j + \text{Youth}_i \theta_j + \text{HH}_i \varphi_j + H_i \gamma_j + L_i \tau_j + \epsilon_{ij}$$

where $\text{YouthInv}_{ij} = \begin{cases} 1 & \text{if } Y_{ij}^* > 0 \\ 0 & \text{otherwise} \end{cases}$ and $\epsilon_i \sim \text{BN}(0, \Sigma)$. Here Gender_i denotes the sex of youth (male or female) i , Youth_i denotes k_Y -vector youth-specific characteristics (age, education, marital status, primary occupation and migration status); HH_i denotes k_{HH} -vector household head-specific characteristics (sex, age, education, primary occupation, etc. of the household head where the youth i belongs); H_i denotes k_H -vector household and social attributes (size of household, primary income source of household, number of adults involved in farming, number of salaried adults in the household, caste and credit status of the household where the youth i belongs); L_i the k_L -vector farm, location and other exogenous covariates, ϵ_i are assumed to be *iid* independent across i but correlated across j for any i and the error term is assumed to follow standard bivariate normal distribution. The involvement of youth in agriculture is derived from a utility-maximising model of an individual's career preference.

Data

The study was conducted in 2015 in three major states of eastern India – Bihar, Odisha and West Bengal. Rice is the major crop in these states and hence our sampling framework is based on rice cultivation characteristics. Five districts were chosen in each state based on the intensity of rice cultivation and irrigation status. From each agro-ecological zones, at least one irrigated and one rainfed district was selected randomly from a list of districts with more than 50% intensity of rice cultivation. In each district, the top two rice cultivating blocks were chosen, totalling 30

Table 1. Details of respondents by gender.

State	Sample		Pooled
	Male	Female	
Bihar	316	328	644
Odisha	500	328	828
West Bengal	500	266	766
Total	1316	922	2238

blocks. In each block, five villages were selected randomly. A census of all 150 villages was undertaken prior to selecting the sample. A list of agriculture households having at least one young person between 15 and 29 years of age was prepared. From this list, around 10 males and 7 females were selected randomly from each village. Data were collected using CAPI (computer-assisted personal interview) software *Surveybe* with the youth available during the survey and willing to participate. Data from 2,238 young people (1,316 males and 922 females) were collected (Table 1). To improve the data quality during collection, a gender-sensitive approach was used, acknowledging the cultural and social norms in the region. Female enumerators were engaged to interview female respondents and male enumerators interviewed the males. The quantitative results were validated through focus group discussions in a few randomly chosen districts. Fifty FGDs were conducted, with 10–15 youths in each. Discussions were led by a moderator and centred around their career choices, business opportunities, constraints (monetary and non-monetary), and policy support.

Results

Characteristics of rural youth

We defined “youth” as people between 15 and 29 years old, following the national youth policy (Government of India 2014), and who primarily reside or work in rural areas. We categorised our sample into three groups to better understand their involvement and willingness to choose agriculture as a career: Group 1, from 15 to 20 years old (those yet to decide on a career); Group 2, from 21 to 25 years (those in the process of choosing a career path); and Group 3, over 25–29 years (those close to choosing a career). Bihar has the most youths in group 1 (nearly half males and slightly lower females) compared to other states, with a slight edge in West Bengal and almost equal distribution in Odisha (Table A1). Overall education status showed a significantly lower level of schooling for females (Table 2). Illiteracy among Bihar females was more than one third, but was substantially lower in Odisha and West Bengal. A majority have either primary or secondary schooling. One-third of males and two-thirds of females were married (Census of India’s Annual Health Survey for 2012–2013). The average ages at marriage in Odisha for rural youths were 26.5 years for males and 22.2 years for females (Government of Odisha 2014). Only a negligible proportion of females had migrated individually or with family, whereas one-fifth of males had migrated, with the highest proportion in Group 3.

The sample is representative of social classes (caste system) prevailing in the region. Bihar is dominated by Other Backward Classes, with a more even spread across different castes in Odisha; the general (or forward) caste dominates in West Bengal. Similar proportions of males and females were reported across the different caste categories and regions. Nearly 70% of households belonged to the marginal land class; 11% were landless. The number of marginal farms in West Bengal (76%) was higher than both Odisha and Bihar (60%). There are few large (>10 ha) and medium (4–10 ha) farms (0.1% and 1.4%, respectively). The three major income sources of sampled households are agriculture (39.7% for males and 52.5% for females), non-agricultural labour (24.5% for males and 15.0% for females) and self-employment (15.1% for males and 13.7% for females). In West Bengal, for male

Table 2. Variables used in the regression.

Variables	Mean (std dev.)		Pooled
	Male	Female	
Youth characteristics			
<i>Age in years (dummy)</i>			
15–20 – reference variable	38.9	39.5	39.1
21–25	28.6	29.3	28.9
26–29	32.5	31.2	31.9
Marital status (dummy: married – 1)	32.8	64.6***	45.9
<i>Education (levels completed)</i>			
Non-literate	6.8	20.2***	12.3
Primary schooling (classes 1–4)	5.9	6.5	6.1
Secondary schooling (classes 5–10)	53.6	48.7**	51.6
Higher secondary schooling (classes 11–12)	21.0	16.1***	18.9
Graduate and above	12.8	8.6***	11.0
<i>Primary occupation (Dummy)</i>			
Farming	27.9	5.9***	18.9
Labour (reference variable)	20.3	1.6***	12.6
Salaried	5.5	0.7***	3.5
Self-employed	11.8	0.5***	7.2
Student	31.2	23.9***	26.9
Homemaker	0.0	65.3 ^{na}	28.2
Other occupation	3.3	2.1*	2.8
Migration status (migrated – 1)	22.3	1.9***	13.9
Household head characteristics			
Gender (male – 1)	94.1	91.3**	92.9
Age (years)	50.71 (12.2)	48.22 (13.8)***	49.68 (12.97)
Senior citizen (dummy: >60 yrs old – 1)	25.6	25.8	25.7
<i>Education of household head (levels completed)</i>			
Non-literate	34.3	35.6	34.8
Primary schooling (classes 1–4)	36.3	32.9*	34.9
Secondary schooling (classes 5–10)	19.8	17.4	18.8
Higher secondary schooling (class 11–12)	5.2	8.4***	6.5
Graduate and above	4.3	5.9	4.9
<i>Primary occupation (dummy)</i>			
Farming	60.7	68.8***	64.0
Labour (reference variable)	18.8	12.5***	16.2
Self-employed	9.4	8.2	8.9
Other occupation	11.0	10.5	10.8
Household and social attributes			
<i>Caste group</i>			
General caste (reference variable)	33.2	30.1	31.9
Other Backward Classes (OBC)	31.1	37.3***	33.6
Scheduled Caste (SC)	23.5	22.3	23.0
Scheduled Tribe (ST)	12.2	10.2	11.4
Size of household (number)	5.30 (2.24)	5.55 (2.40)***	5.40 (2.31)
Share of food expenditure (%)	59.35 (16.56)	60.26 (15.37)	59.7 (16.08)
<i>Primary income source of household (HH)</i>			
Farming	39.7	52.5***	46.1
Labour (reference variable)	30.0	20.7***	25.4
Self-employed	15.1	13.7	14.4
Other occupation	15.2	13.1	14.2
No. of adults in the HH involved in farming	1.14 (1.07)	1.27 (1.07)***	1.19 (1.07)
No. of salaried adults in the HH	0.09 (0.34)	0.07 (0.30)	0.08 (0.33)
Credit status of HH (if loan taken last year – 1)	34.8	12.7***	25.7
Farm and location characteristics			
Cultivated land area (acres)	1.65 (2.34)	1.66 (2.62)	1.66 (1.66)
<i>Location dummies</i>			
Bihar	24.0	35.6***	28.8
Odisha	38.0	35.5	36.9
West Bengal (reference variable)	38.0	28.9***	34.2

Notes: Independent *t*-test was performed for continuous variable; Wilcoxon-Mann-Whitney test was performed for binary variable; Chi-square test was performed for categorical variable. *, **, ***: statistically significant at 10%, 5% and 1% levels of significance, respectively.

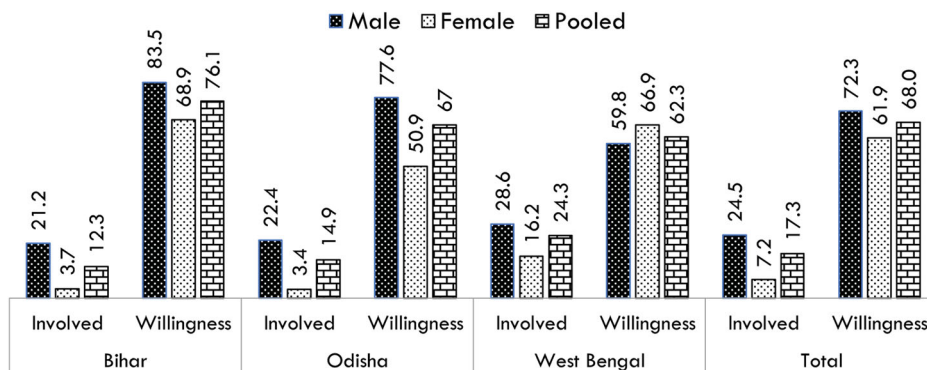


Figure 1. Youth involvement and willingness to choose agriculture as a career.

youth households, the primary income source was non-agricultural labour; for female youth households, agriculture was the primary income source.

Youths' role in agriculture and value chain activities

Crop production

On average, 17.3% of the youths were involved in rice production (Figure 1), with higher involvement by males (24.5%) than females (7.2%). Bihar and Odisha showed similar trends, with very low participation by females (about 3.5%); in West Bengal, female involvement was 16.2%. Males showed similar trends in managing rice production activities across the three states, with West Bengal top.

Young peoples' willingness to choose agriculture as a career was very high (68%). In West Bengal, females expressed higher willingness (66.9%) than males (59.8%); in the other two states, females' willingness was significantly lower than males' (68.9 versus 83.5% in Bihar and 50.9 versus 77.6% in Odisha). This is in contrast to the mounting evidence that young people are turning away from agricultural or rural futures (White 2012; Proctor and Lucchesi 2012).

The 26- to 29-year-old youths are mostly involved in rice production (males 39.5%; females 13.5%) (Table 3). Most are married and have family responsibilities, and choose rice production as their main occupation; 40% of married males and 9% of females are involved in rice production. Youths in the lowest age group (15–20 years) are mostly continuing their education and so are less involved in rice production (11.9%). Abandoning agriculture is widespread when alternative livelihood opportunities exist. Hence, one would expect more-educated youths to be unwilling to take up rice production; hardly any college graduates pursued agriculture as a profession, compared to 42.9% and 18.3%, respectively, of primary school-educated males and females choosing agriculture. Female university graduates were less willing to choose rice farming: 32% compared with 60% of male graduates. Salaried youths were less involved and less willing to rice farm compared to youths with other primary occupations, such as wage labour, self-employment and homemaking (females). Involvement in farming was higher for males and lower for females who had migrated at least once in their lives. Seasonal and/or long-term migration is common in several rural areas of eastern India. Young people who have poor education, skills or capital are largely confined to agriculture due to a lack of opportunities in other sectors (Sharma 2007; Sharma and Bhaduri 2009).

Within caste groups, one-third of the males in the Scheduled Tribes (STs, one of the lowest strata in the caste hierarchy) are involved in rice production, whereas one-fifth in the general or forward category are rice farmers. Females in Scheduled Castes (SCs, another low stratum) are more involved in rice production than females in other castes. ST youths showed the highest willingness to choose agriculture compared to other groups.

Table 3. Youth involvement and willingness towards rice farming.

Indicators	Involvement in rice farming (%)		Willingness to rice farm (%)		Total sample (number)	
	Male	Female	Male	Female	Male	Female
Household – Social group						
General caste	20.4	5	61	48.3	421	261
Other Backward Caste	24	4.4	76.8	63.7	409	344
Scheduled Caste (SC)	27.2	14.1	77	68	309	206
Scheduled Tribe (ST)	31.1	7.4	80.1	80.9	161	94
Household – Landholding						
Landless	32.3	9	76.9	73	186	100
Marginal (<1 hectare (ha.))	23.4	8	71.5	65	882	648
Small (1–2 ha.)	24	4.2	74.9	53.3	175	120
Semi-medium (2–4 ha.)	17.5	0	61.4	23.3	57	43
Medium (4–10 ha.)	26.7	0	66.7	20	15	10
Large (>10 ha.)	0	0	100	0	1	1
Household size						
4 and below	26.8	11.7	66.1	64.5	564	341
5 and above	22.7	4.5	76.9	60.2	752	581
Household – Social network participation						
Yes	18.9	8.7	76	63.2	434	334
No	27.2	6.3	70.4	61.1	882	588
Household – Borrowing						
Yes	21.2	7.7	77.7	53	458	117
No	26.2	7.1	69.3	63.1	858	805
Head – Age						
29 and below	67.6	12.7	85.9	79.7	142	79
30–59 years	17.6	8.1	68.3	60.3	837	605
60 and above	23.4	2.9	76.3	59.7	337	238
Head – Educational status						
No schooling	29.9	7.3	81.2	69.5	452	328
Primary schooling	21.5	7.9	74.1	59.1	478	303
Secondary schooling	22.3	7.5	61.9	62.5	260	160
Higher secondary schooling	21.7	6.5	59.4	50.6	69	77
Graduate and above	19.3	1.9	49.1	44.4	57	54
Head – Primary occupation						
Farming	22	5.7	75.3	61.7	799	634
Labour (agri. and non-agri.)	25	10.4	71	72.2	248	115
Salaried	24.3	13	48.6	39.1	37	23
Self-employment	25.8	6.6	58.9	51.3	124	76
Housework	36.8	22.5	81.6	62.5	38	40
Other	41.4	2.9	72.9	67.6	70	34
Total	24.5	7.2	72.3	61.8	1316	922
Youth – Age group						
15–20 years	11.9	3	61.7	50.3	512	364
21–25 years	24.5	5.9	74.7	63.7	376	270
26–29 years	39.5	13.5	82.7	74.7	428	288
Youth – Marital status						
Married	39.6	9.1	84.7	70.3	432	596
Single	16.8	3.1	66.1	46.3	880	320
Youth – Education status						
No schooling	40	10.2	87.8	81.2	90	186
Primary schooling	42.9	18.3	85.7	83.3	77	60
Secondary schooling	26.1	5.8	77	60.4	705	449
Higher secondary schooling	14.9	6.1	59.1	49.3	276	148
Graduate and above	16.7	1.3	59.5	31.6	168	79
Youth – Primary occupation						
Farming	35.4	21.8	89.6	90.9	367	55
Labour (agri. and non-agri.)	35.6	6.7	82	93.3	267	15
Salaried	16.7	16.7	51.4	16.7	72	6
Self-employment	28.2	60	77.6	40	156	5
House-maker	0	7.3	0	65.9	0	601
Student	7.3	2.3	53.8	42.1	411	221
Other	25.6	0	55.8	73.7	43	19

(Continued)

Table 3. Continued.

Indicators	Involvement in rice farming (%)		Willingness to rice farm (%)		Total sample (number)	
	Male	Female	Male	Female	Male	Female
Youth – Migration						
Yes	29.9	5.6	77.9	50	294	18
No	22.9	7.2	70.6	62.1	1022	904

Higher caste youths were the least involved and least willing to take up rice production as a career, compared to STs and SCs, confirming the findings of Mamgain and Tiwari (2016) and Sharma (2007). Landless people are more involved in rice production (rented) as well as most willing to choose rice production, with youths from households with large farms the least willing to choose agriculture. Ampadu (2012) reported that youth’s career choice in agriculture is significantly influenced by their access to land. Females moved out of rice production in those households that had larger land holdings. Culturally and socially, involvement in agricultural activities was viewed to be lower in status, especially for women. Youths belonging to households with more than four members were less involved in agriculture than those from smaller households. Interestingly, females participating in different social gatherings, such as self-help groups, were more involved in rice production than those participating in fewer social networks.

Occupation and education of the household head also played key roles in youths’ involvement and willingness to choose farming as a profession. Youths in households where the head had a higher education preferred to move out of agriculture. Similarly, there were low preferences for agriculture among youths where the household head’s primary occupation was farming.

Value chain and allied activities

The value chain is broadly classified into three categories: paddy, seed, and agri-services. The paddy value chain includes paddy trading, rice milling and wholesale marketing. The seed value chain comprises seed production and marketing. Agri-services include agri-input dealerships, custom services (e.g. harvesting machines, tilling) and rice by-product-related businesses. If a youth respondent is not participating/not willing to choose any of the activities within each of these categories, then we specify that they are not involved in/willing to choose that specific value chain category. For example, if a respondent states that they are not involved in paddy trading, rice milling or rice wholesale selling, they are categorised as a non-participant.

The results show that, on average, the involvement of youths in the rice value chain and allied activities is 6.3%, which comprises 2.5% of females and 8.9% of males (Figure 2). While 38% of the youths are willing to choose the rice value chain, if some support mechanism is provided, willingness

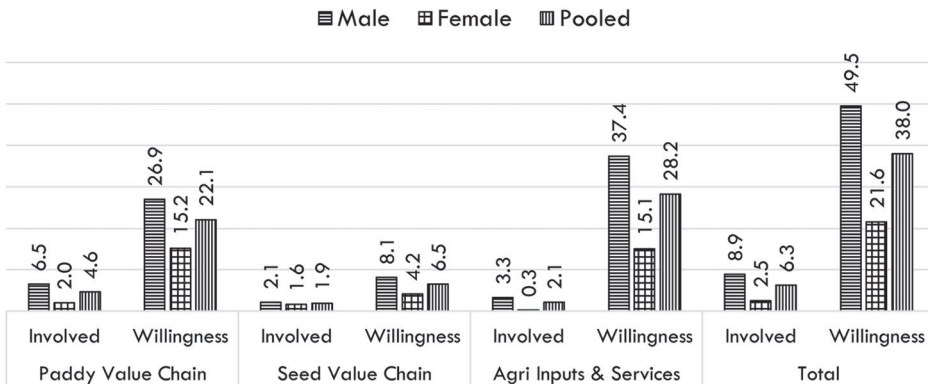


Figure 2. Youth involvement and willingness (by gender) for the rice value chain as a career.

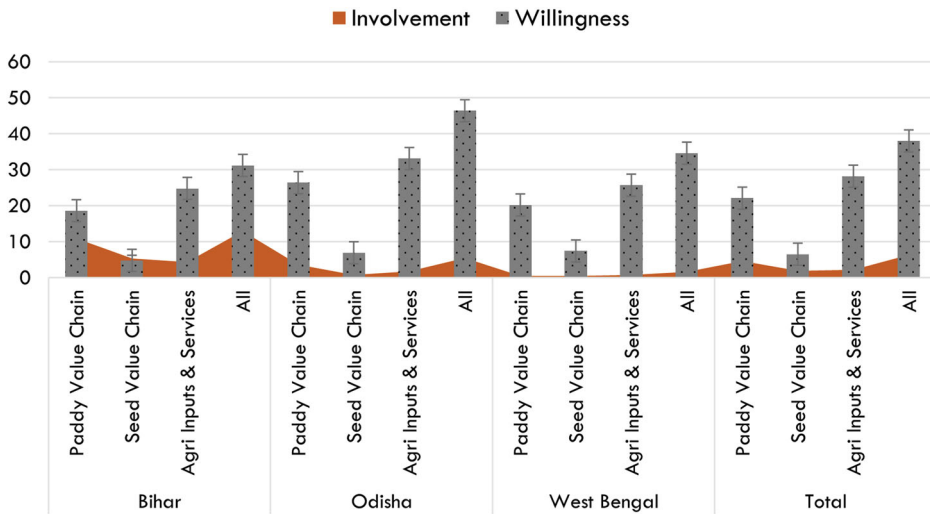


Figure 3. Youth involvement and willingness (by state) for the rice value chain as a profession.

varies significantly between females (21.6%) and males (49.5%). Current involvement in the rice value chain ranges from the highest involvement in the paddy value chain (6.5% of males and 2% of females) to the lowest participation in the seed value chain (2.1% of males) and agri-services (0.3% of females). The seed value chain and agri-business are two potential opportunities for rural youth. The willingness (both males and females) to participate in the rice value chain is highest in agribusiness activities and lowest in the seed value chain.

Apart from gender differences in involvement and willingness to choose the rice value chain for a livelihood, regional differences also played vital roles (Figure 3). Males from Bihar were comparatively more involved in businesses along the chain: 17.4%, 7%, and 8.25% were involved in the paddy value chain, seed value chain and agribusiness, respectively. Overall male involvement in the rice value chain in Bihar was 20.9% whereas it was only 8.2% in Odisha and 2% in West Bengal. Except in Bihar (5.2%), female involvement was negligible. After understanding youth involvement in the rice value chain, information on the willingness to choose some link in it as a profession was gathered from those youths who were not involved. The results reveal that the willingness to start a rice value chain activity is higher in Odisha (46.4%) followed by West Bengal (34.6%) and Bihar (22.1%). Although youth involvement in Odisha and West Bengal is low, the young people expressed interest in choosing an activity in the chain for their future career. In the states with high youth involvement in the chain, the willingness of other youths to opt for rice value chain as their preferred career was found to be low, most likely due to comparatively fewer opportunities as several youths have already established businesses in those sectors.

Youth involvement in rice value chain: results of bivariate probit model

The estimates of the covariance between the two equations (youth involvement in rice production and the rice value chain) in the bivariate probit models (Table 4) gave a value of 0.128, which is statistically significant at the 10% confidence level. This positive covariance implies that youths who are more involved in rice production are (on average) also more involved in the rice value chain activities than the model predicts. The significance level is not very high, indicating that involvement in rice production facilitates the rice value chain activities, but is not a prerequisite. Not accounting for this positive bivariate correlation could bias the parameter estimates and hence a bivariate probit model is desirable.

Table 4. Bivariate probit regression and its marginal effects on factors affecting youth involvement across rice production and value chain activities ($n = 2238$).

Variables	Bivariate probit		Marginal effects			
	Rice production (RP)	Rice value chain (RVC)	RP and RVC	RP only	RVC only	No involvement
	Coef. (S.E.)	Coef. (S.E.)	dy/dx (S.E.)	dy/dx (S.E.)	dy/dx (S.E.)	dy/dx (S.E.)
<i>Youth characteristics</i>						
Gender (dummy: Male – 1)	0.616*** (0.127)	0.620*** (0.166)	0.012*** (0.003)	0.100*** (0.021)	0.030*** (0.009)	-0.143*** (0.023)
Age in years (dummy)						
21–25	0.131 (0.112)	0.157 (0.147)	0.003 (0.003)	0.023 (0.022)	0.009 (0.010)	-0.035 (0.024)
26–29	0.518*** (0.122)	0.287* (0.166)	0.010** (0.004)	0.102*** (0.028)	0.013 (0.011)	-0.125*** (0.030)
Marital status (dummy: Married – 1)	0.070 (0.102)	-0.032 (0.141)	0.000 (0.002)	0.013 (0.019)	-0.003 (0.008)	-0.011 (0.021)
Education (years completed)	-0.017 (0.043)	0.042 (0.056)	0.000 (0.001)	-0.004 (0.008)	0.003 (0.003)	0.001 (0.009)
Primary occupation (dummy)						
Farming	0.283** (0.139)	0.142 (0.221)	0.005 (0.005)	0.056* (0.031)	0.006 (0.015)	-0.067* (0.035)
Salaried	-0.537*** (0.215)	0.444 (0.278)	0.000 (0.003)	-0.075*** (0.019)	0.047 (0.037)	0.029 (0.042)
Self-employed	0.080 (0.166)	0.306 (0.246)	0.006 (0.006)	0.010 (0.032)	0.022 (0.023)	-0.039 (0.041)
Student	-0.676*** (0.156)	0.102 (0.234)	-0.004* (0.002)	-0.106*** (0.020)	0.012 (0.016)	0.098*** (0.027)
Other	-0.511*** (0.164)	-0.084 (0.263)	-0.005* (0.003)	-0.083*** (0.024)	-0.001 (0.016)	0.089*** (0.029)
Migration status	0.011 (0.097)	-0.045 (0.130)	0.000 (0.002)	0.003 (0.018)	-0.003 (0.007)	0.001 (0.020)
<i>Household head characteristics</i>						
Gender (male – 1)	-0.190 (0.143)	-0.217 (0.201)	-0.006 (0.005)	-0.035 (0.031)	-0.013 (0.016)	0.054 (0.036)
Age (years)	-0.019*** (0.004)	0.002 (0.006)	0.000 (0.000)	-0.004*** (0.001)	0.000 (0.000)	0.003*** (0.001)
Senior citizen (dummy: >60 – 1)	0.129 (0.122)	-0.041 (0.156)	0.001 (0.002)	0.025 (0.024)	-0.003 (0.009)	-0.022 (0.026)
Education	-0.062 (0.042)	-0.035 (0.051)	-0.001 (0.001)	-0.011 (0.008)	-0.002 (0.003)	0.013 (0.009)
Primary occupation (dummy)						
Farming	0.253* (0.139)	0.006 (0.216)	0.002 (0.003)	0.045* (0.024)	-0.002 (0.013)	-0.045* (0.028)
Self-employed	0.261 (0.189)	0.035 (0.275)	0.003 (0.005)	0.054 (0.044)	0.000 (0.016)	-0.057 (0.048)
Other	0.485*** (0.157)	-0.110 (0.265)	0.003 (0.005)	0.113*** (0.043)	-0.010 (0.012)	-0.106** (0.045)
<i>Household and social attributes</i>						
Caste group						
OBC	0.218** (0.101)	0.196 (0.125)	0.005* (0.002)	0.039* (0.020)	0.010 (0.008)	-0.054** (0.022)
SC	0.251*** (0.100)	0.194 (0.146)	0.005* (0.003)	0.047** (0.022)	0.010 (0.010)	-0.063*** (0.024)
ST	0.255** (0.124)	-0.075 (0.225)	0.001 (0.003)	0.054* (0.029)	-0.006 (0.011)	-0.049 (0.031)
Size (number)	-0.030 (0.021)	-0.028 (0.024)	-0.001 (0.000)	-0.005 (0.004)	-0.001 (0.001)	0.007* (0.004)
Share of food expenditure (%)	-0.005** (0.002)	-0.008*** (0.003)	0.000*** (0.000)	-0.001** (0.000)	0.000*** (0.000)	0.001*** (0.000)

(Continued)

Table 4. Continued.

Variables	Bivariate probit		Marginal effects			
	Rice production (RP)	Rice value chain (RVC)	RP and RVC	RP only	RVC only	No involvement
	Coef. (S.E.)	Coef. (S.E.)	dy/dx (S.E.)	dy/dx (S.E.)	dy/dx (S.E.)	dy/dx (S.E.)
Primary income source						
Farming	0.085 (0.113)	0.434*** (0.162)	0.006** (0.003)	0.010 (0.021)	0.027** (0.011)	-0.044* (0.024)
Self-employed	-0.090 (0.163)	0.288 (0.222)	0.003 (0.004)	-0.020 (0.027)	0.022 (0.020)	-0.006 (0.034)
Other	0.253* (0.136)	0.235 (0.190)	0.007 (0.005)	0.048 (0.030)	0.013 (0.015)	-0.068** (0.034)
No. of adults involved in farming	-0.128** (0.063)	0.029 (0.074)	-0.001 (0.001)	-0.024** (0.012)	0.003 (0.004)	0.022* (0.013)
No. of salaried adults	0.156 (0.104)	-0.042 (0.149)	0.001 (0.002)	0.029 (0.019)	-0.004 (0.009)	-0.026 (0.022)
Credit status (if loan taken last year - 1)	-0.052 (0.084)	0.068 (0.106)	0.000 (0.002)	-0.010 (0.015)	0.005 (0.007)	0.005 (0.017)
<i>Farm and location characteristics</i>						
Cultivated land area (acres)	-0.026 (0.020)	0.023 (0.017)	0.000 (0.000)	-0.005 (0.004)	0.002 (0.001)	0.003 (0.004)
Location dummies						
Bihar	-0.439*** (0.117)	0.944*** (0.163)	0.008** (0.003)	-0.084*** (0.016)	0.095*** (0.022)	-0.019 (0.028)
Odisha	-0.424*** (0.093)	0.280* (0.156)	0.000 (0.002)	-0.077*** (0.015)	0.022** (0.011)	0.055*** (0.019)
Constant	0.282 (0.340)	-2.529*** (0.497)	-	-	-	-
Estimated covariance, $\rho(\epsilon_{RP}, \epsilon_{RVC})$	0.128* (0.068)					

Notes: *, **, ***: statistically significant at 10%, 5% and 1% levels of significance, respectively.

The coefficients of the bivariate probit model on youth involvement in rice production and the four types of activities related to it in the multivariate probit model provide similar results: the former gives an overall estimate of factors influencing involvement in rice production, whereas the latter provides detailed activity-based estimates of the factors influencing that involvement. These factors provide interesting insights. Gender is one of the most critical factors that impact on involvement. On average, females were less involved (14.3%) than males belonging to similar households within the same village. The differences in involvement (male versus female) varied between rice production activities (10% higher) and rice value chain activities (3% higher), or when both activities were taken together (1.2% higher). Other important youth characteristics influencing their involvement were age and primary occupation. As expected, those aged 26–29 were significantly more involved than the lower age groups. Youth involvement in rice production was also significantly influenced by their current profession. Students, salaried workers and those involved in occupations were less likely to be involved in agricultural activities. Sharma (2007) also reported “part-time farming” as a more popular choice among youth and more for small and marginal land holding. Unusually, education status did not significantly influence youth involvement in agriculture and value chain activities. We observed low variability in education, with a majority of the youths having similar education at the secondary level.

Agriculture as a career choice

Attracting and retaining young people in agriculture is challenging. Young people (both male and female) increasingly wanted to move out of agriculture. Among males, only 20% of those 15–20 years old and 44% of those 26–29 years old were willing to choose agriculture as their future profession: among females, only 16% of those 15–20 years old and 34% of those 26–29 years old were

Table 5. Impact of youth involvement in rice farming and rice value chain activities on career choice (average treatment effect).

Youth involvement	Responses	Preferred career choice			
		Agriculture	Salaried	Business	Not decided
Rice farming	Male	0.089*** (0.026)	-0.163*** (0.022)	0.076*** (0.028)	0.008 (0.044)
	Female	0.041* (0.021)	-0.062*** (0.015)	0.029 (0.027)	0.017 (0.020)
	Pooled	0.081*** (0.018)	-0.114*** (0.015)	0.091*** (0.021)	-0.046** (0.020)
Rice value chain	Male	0.054*** (0.018)	0.015 (0.017)	-0.065*** (0.014)	-0.025** (0.025)
	Female	0.021 (0.014)	-0.018** (0.009)	-0.003 (0.014)	0.004 (0.012)
	Pooled	0.045*** (0.012)	0.004 (0.011)	-0.034*** (0.010)	-0.028** (0.012)

Notes: *, **, *** statistically significant at 10%, 5% and 1% levels of significance, respectively; figures in parentheses are standard error.

willing to do the same (Table A2). Hari, Chabder, and Sharma (2013) reported a lower aspiration for agriculture among youth in Kerala and Rajasthan, and Elias et al. (2018) found that agriculture was the third preferred job among youth in north-east India. The impact of youth involvement in rice farming on career preference was found to be statistically significant ($p < .01$) (Table 5). The average treatment effect was 8.1%, that is, youths involved in rice farming were 8.1% more likely to choose agriculture as their career than those who were not involved. The effect on career preference varied significantly between males and females (8.9 versus 4.1%, respectively). There were a similar positive and significant effects on business options (in agriculture) as well (9.1%, $p < .01$), but the difference was significant only for males (7.6%, $p < .01$). Those who were involved in rice farming were found not to choose salaried jobs (-11.4%, $p < .01$), more so for males (-16.3%, $p < .01$). Youths who were involved in agriculture were more likely to have already decided on their career (4.6%, $p < .01$).

The impact of involvement in rice value chain activities showed a different effect on career choice. As expected, there was a significant and negative effect on choice of non-agricultural business as a future profession (-3.4%, $p < .01$ for the pooled sample, -6.5%, $p < .01$ for males and -0.3%, $p > .10$ for females). Most rice value chain activities involved agribusiness-oriented positions and so choosing a non-agricultural business may not be desirable for youth. Interestingly, there was a significant and positive effect of involvement in the rice value chain on a career choice in agriculture (5.4%, $p < .01$). There was a structural difference between males and females in the impact of involvement in the rice value chain on career choices. This had a significant positive impact on males' career choices in agriculture and business, whereas such involvement had a significant negative impact on females' choice of a salaried profession.

Understanding the challenges that youths face to make a sensible career choice in agriculture and determining the availability of institutional and non-institutional support are prerequisites for designing a viable youth policy. Often, the challenges faced differ across gender as well as regions, and hence support structures need to be finetuned to address these variations. Next, we discuss the challenges faced by youths in eastern India and what support they require to enhance their careers in either rice production or rice value chain activities.

Crop production

According to the youth (Figure 4), three major types of support are essential for them to take up rice production: (1) credit support (29.8% male and 24.1% female); (2) irrigation infrastructure (about 20% each, male and female); and (3) innovative training in rice farming (14.8% male and 17.0% female).

In focus group discussions, it was found that farmers are constrained by a lack of credit and so they cannot afford the costs of rice-farming activities without appropriate available credit. Proper credit

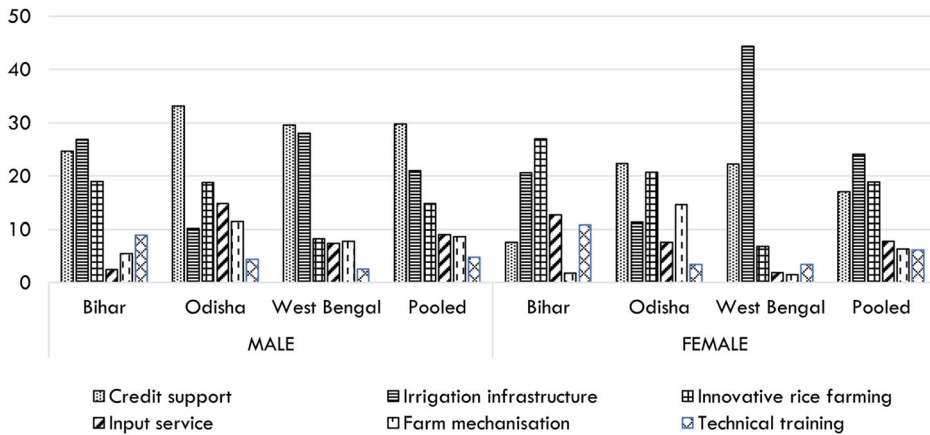


Figure 4. Support required by youth to choose rice farming as a career.

support from financial institutions (probably at lower interest rates) will allow farmers to secure funds for purchasing inputs and services including labour and machines during the crop season.

Another serious constraint is very poor irrigation infrastructure. This, coupled with an erratic monsoon that includes long dry spells within the wet season in eastern India, makes predominantly rainfed rice farming very risky and subject to poor returns. The sampled young people expressed their concerns on the need to invest in irrigation infrastructure, which is among the top priorities for agricultural development in eastern India. They are not interested in conventional farming with incremental mechanisation; they want training on state-of-the-art innovative farming techniques and business opportunities. Only this will allow smallholder farm families to have a decent livelihood. Youths' perceptions on agriculture are positive, when the farming is done under irrigated conditions (Giuliani et al. 2017). Two other issues that influenced young people's opinions on choosing agriculture as a career were: lack of a timely supply of quality inputs (8–9% of both males and females); and small-farm mechanisation (8.6% of males and 6.6% of females).

Regional and gender differences were also observed in terms of support mechanisms required if youths are to choose agriculture as a career. Top priorities were: (1) credit (30% for males and 44% for females) in West Bengal; (2) irrigation facilities (27% for both males and females) in Bihar; and (3) credit for males (33%) and innovations in rice farming for females (22%) in Odisha. The quality of timely input services was a second priority for males in Odisha and females in Bihar. Similar types of constraints were reported by youths in east Africa (Proctor and Lucchesi 2012).

Agricultural value chain and allied activities

The young people identified the challenges they faced and support mechanisms needed if they were to choose one or more rice value chain or allied activities as future livelihood endeavours.

Paddy value chain

Males expressed that profitability, market fluctuations, and competition were the most important factors to consider when choosing a career in any of the paddy value chain activities such as paddy trading, rice milling or rice marketing (Figure 5). For males, market fluctuations significantly influenced the choice of rice marketing and paddy trading but were less of a constraint for rice milling. For females, the constraints remained the same except that they perceived market fluctuations to be a less serious constraint than competition. According to males, climatic risks must be included among the top constraints for rice milling, even more so than for market fluctuations; climatic risks also posed fewer hurdles for paddy trading. Females did not consider any climatic risks when looking at any paddy value chain activity as a possible career.

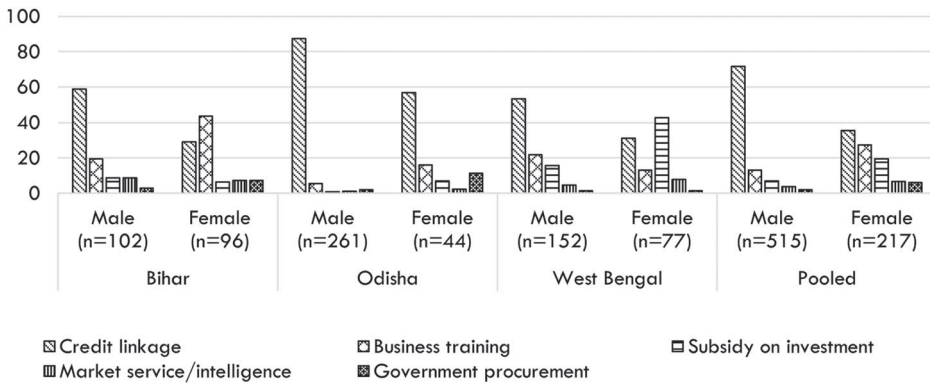


Figure 5. Support required to attract youths to working in the paddy value chain.

The top three support mechanisms required to start an entrepreneurship in the paddy value chain listed by the youths were: (1) facilitation of credit access and linkages (71.7% of males and 35.5% of females); (2) training on business/entrepreneurship skill development (13% of males and 27.2% of females), and (3) financial support as a subsidy for investment (6.8% of males and 19.42% of females). Males mainly wanted support on credit linkages whereas, in addition, females also wanted business and technical training and subsidies for investments. Across all locations, both males and females emphasised the importance of credit linkages in starting up agribusinesses such as input dealerships and custom services. It appears that incentives, such as subsidies for investment and efficient, dynamic market intelligence, and a policy framework to ease business operations, would attract young people to consider an agribusiness activity for a career.

Seed value chain

According to females, the major constraints in the seed value chain were: (1) competition (48%); (2) storage and warehouse infrastructure (24%); (3) market fluctuations (16%); and (4) inadequate seed production and marketing (8%). Males did not identify storage and warehousing as a constraint. A major constraint for males in the seed value chain was prevalent market fluctuations.

Figure 6 shows that the three major support mechanisms required for youths to consider seed production or seed marketing as a profession were: credit linkages (52.6% of males and 25.5% of females); training on seed production and marketing (28.8% of males and 29.4% of females); and

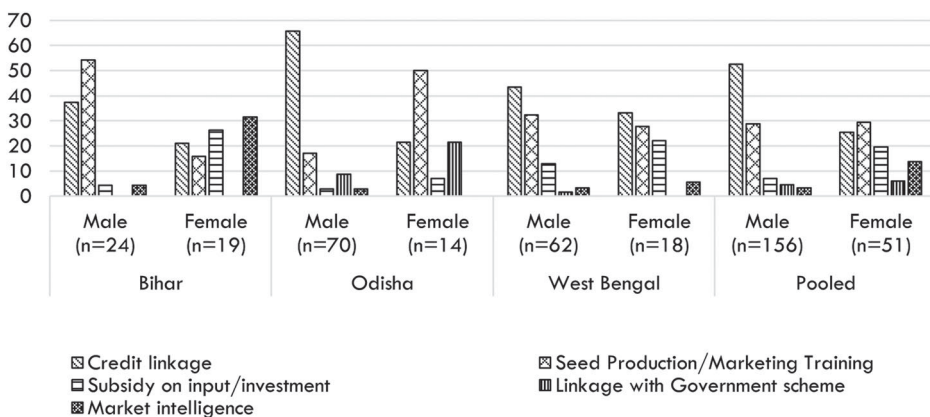


Figure 6. Support required to attract youth into the seed value chain for employment.

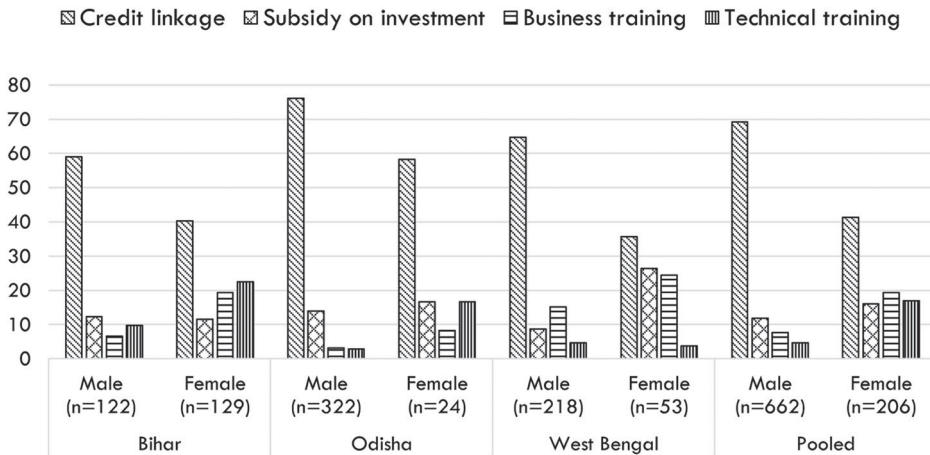


Figure 7. Support required to attract youths into the agri-services as a profession.

subsidies on inputs and investment (7.1% of males and 9.6% of females). Females also emphasised the value of market intelligence.

Agri-services

Agri-services cover agri-input dealerships, custom hiring services (farm mechanisation) and rice by-product-related businesses. Young males and females face different constraints when looking at these agri-services for a possible profession. Females identified availability of inputs or services (67%) and competition (33%), whereas males identified competition (61%) and capital availability (15%). These constraints varied significantly across regions. For example, Odisha males identified several constraints to be of equal importance including shortage of skilled manpower, whereas West Bengal males identified service network interruptions as a big constraint.

Major support mechanisms identified by the youths to set up input dealerships or custom services (Figure 7) were: credit linkages (69.2% of males and 41.3% of females); (2) subsidies for investment (11.9% of males and 16.0% of females); (3) business training (7.7% of males and 19.4% of females); and (4) technical training (4.7% of males and 17% of females). Males primarily wanted credit linkages whereas, in addition to credit linkages, females wanted business and technical training and subsidies for investments. Across all study locations, both males and females emphasised the importance of credit linkages for starting an agri-service activity.

The study has the following limitations. First, it was limited to the rice value chain. Though rice constitutes more than 75% of the farming in the study region, youths' aspirations might go beyond the rice value chain. A potential next step could be to analyse youth aspirations in terms of commercial and risky crops. Second, the sample consists of youths who were available at the time of survey. Youths who had already migrated or have jobs outside the village were not considered in the sampling. Thus, we did not account for the potential of a reverse flow of skilled youth who either seasonally or permanently moved out of the village. However, part-time farmers, increasingly the trend in the smallholder context, are included in the study.

Conclusions

This study looked at the importance of youth in bringing structural and transformative changes to agriculture, with the priority to attract and retain young people in agriculture. Any youth policies and programmes aimed at youth require evidence on who should be targeted. Youth belonging to lower caste categories showed more interest in farming. Sharma (2007) highlighted a similar

trend in rural India, where upper-caste youths moved from full-time to part-time farming. Migration and part-time farming are mostly adopted by better skilled youths, with a profound impact on agricultural transformation. With a lack of viable alternative livelihood options, many young people are “forced” to be in agriculture. For the agricultural sector to be vibrant, it is vital to facilitate an enabling environment to attract young people to agriculture or related value-chain activities. Young people in this study suggested that facilitation should be focused on: (1) securing credit for investment; (2) providing business and technical training; and (3) providing gender-targeted market intelligence to ensure that products are sold at the right time and at an appropriate price. Youths who are involved in farming activities are keen to engage in rice value chain activities, including custom machinery services. The ongoing support of the Government of India to start-ups could be targeted to create more agri-entrepreneurs with smaller scale investment.

Unless the different preferences and facilitation requirements of male and female youth are addressed, youth policies will remain male-centric. From our ranked preference survey, we observed gender differences in terms of the focus of agricultural policy. Credit and irrigation infrastructure development were the most important for male youths, whereas irrigation infrastructure and innovative agriculture were the most important for female youth. In creating a service economy in rural areas, male youth mostly required credit whereas female youth also required training on custom services. Thus, it is important to reorient the skills-based training conducted by the state extension systems and ATMA (agriculture technology management agency). Agricultural loans are mostly skewed towards supporting operational costs, with a short payback period (at the end of each crop season), and are widely viewed as consumable goods by the banking community in the study region. A cropping system-based loan would be better suited, with the crop loan available for a full crop cycle rather than for one season, to enable youths to invest pragmatically. At the same time, the facilitation environment such as machinery, supply systems, and support programmes need to be female friendly. For example, land titles are skewed towards male (Valera et al. 2018) and if support programmes attached are to land titles, female access would suffer; most machinery is not female-friendly and is difficult for them to operate; and extension functionaries are mostly men. Adequate representation of females in the extension system would facilitate gender-sensitive agriculture services. It is, therefore, critical to include a gender lens in youth policy.

Note

1. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) 2005 aims to enhance the livelihood security of people in rural areas by guaranteeing 100 days of wage employment a year to a rural household whose adult members volunteer to do unskilled manual work.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributors

Prakashan Chellattan Veettil is an Agricultural Economist in the Agri-Food Policy Platform, International Rice Research Institute (IRRI), and leads the social science activities in India.

Prabhakaran Raghu is an Assistant Scientist in the Agri-Food Policy Platform, International Rice Research Institute (IRRI).

Bidhan Mohapatra is Senior Specialist – Agricultural Economics, in the Agri-Food Policy Platform, International Rice Research Institute (IRRI).

Samarendu Mohanty is the Regional Director for the International Potato Centre (CIP) in Asia.

ORCID

Prakashan Chellattan Veettil  <http://orcid.org/0000-0002-2125-0178>

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Appendices

Table A1. Characterisations of sampled youths and their households.

	Bihar		Odisha		West Bengal		Pooled	
	Male	Female	Male	Female	Male	Female	Male	Female
Youth characteristics								
<i>Age group (years)</i>								
15–20	49.4	45.4	34.4	35.7	36.8	36.8	38.9	39.5
21–25	23.4	28.9	29.0	31.1	31.4	27.4	28.6	29.3
26–29	27.2	25.6	36.6	33.2	31.8	35.7	32.5	31.2
<i>Education status</i>								
Literate – no formal schooling	0.9	4.6	1.4	4.3	0.0	0.8	0.8	3.4
Non-literate	10.1	30.2	1.4	7.9	8.2	11.3	6.1	16.8
Classes 1–4	4.4	4.3	2.8	3.7	9.8	12.8	5.9	6.5
Classes 5–8	17.7	14.3	19.4	13.7	29.0	24.1	22.6	16.9
Classes 9–10	27.5	23.8	38.6	40.5	25.4	30.8	30.9	31.8
Classes 11–12	25.0	16.5	20.6	15.2	18.8	16.5	21.0	16.1
Graduate and above	14.2	6.4	15.8	14.6	8.8	3.8	12.8	8.6
<i>Marital status</i>								
Single	61.4	32.0	73.0	41.8	64.2	28.2	66.9	34.4
Currently married	38.3	67.7	26.8	57.3	35.4	71.1	32.8	65.0
Divorced	0.0	0.3	0.2	0.0	0.0	0.0	0.1	0.1
Separated	0.0	0.0	0.0	0.3	0.2	0.0	0.1	0.1
Widowed	0.3	0.0	0.0	0.6	0.2	0.8	0.2	0.4
<i>Migrated before</i>								
Yes	24.7	2.1	20.4	1.5	22.8	2.3	22.3	2.0
No	75.3	97.9	79.6	98.5	77.2	97.7	77.7	98.0
Household characterisation								
<i>Social group</i>								
General caste	18.8	16.5	32.4	31.7	43.2	45.1	33.2	30.2
Other Backward Caste	64.2	63.7	30.2	31.7	11.0	11.7	31.1	37.3
Scheduled Caste	16.1	19.5	21.2	19.5	30.4	29.3	23.5	22.3
Scheduled Tribe	0.9	0.3	16.2	17.1	15.4	13.9	12.2	10.2
<i>Landholding</i>								
Landless (0 ha)	20.3	12.8	13.2	10.7	11.4	9.0	14.2	11.0
Marginal (<1 ha)	57.6	66.5	56.0	64.3	76.0	75.6	64.0	68.3
Small (1–2 ha)	16.5	12.2	19.2	14.0	9.0	13.9	14.7	13.3
Semi-medium (2–4 ha)	4.1	7.3	9.0	7.9	3.2	1.5	5.6	5.9
Medium (4–10 ha)	1.6	0.9	2.4	3.0	0.4	0.0	1.4	1.4
Large (>10 ha)	0.0	0.3	0.2	0.0	0.0	0.0	0.1	0.1
<i>Primary income source</i>								
Agriculture/cultivator	55.7	66.5	42.0	39.9	27.4	50.8	39.7	52.5
Livestock/poultry rearing	0.9	0.6	3.0	2.4	0.8	0.4	1.7	1.2
Agricultural labour	0.6	1.8	2.8	6.1	11.4	10.2	5.5	5.7
Non-agricultural labour	14.2	9.5	19.0	17.1	36.6	19.2	24.5	15.0
Salaried employment	5.1	2.7	6.2	5.2	7.8	3.4	6.5	3.8
Self-employed	6.3	6.1	22.2	20.7	13.6	14.3	15.1	13.7
Pension	0.6	0.3	0.6	2.1	0.4	0.8	0.5	1.1
Remittance	15.5	12.2	4.2	6.4	0.6	0.4	5.5	6.7
Other (specify)	0.9	0.3	0.0	0.0	1.4	0.8	0.8	0.3

Table A2. Youths' career preferences.

Types of job	Age group (years)	Youth responses (%)							
		Bihar		Odisha		West Bengal		Pooled	
		Male	Female	Male	Female	Male	Female	Male	Female
Rice farming	15–20	17.2	17.2	29.2	20.5	11.4	9.2	19.1	16.1
	21–25	34.6	21.3	41.1	34.3	20.5	20.5	31.3	26.1
	26–29	50.6	30.6	57.9	45.3	25.6	25.3	44.3	34.3
	15–29	30.1	21.8	43.2	32.9	18.8	18.0	30.8	24.7
Other crop (non-rice)	15–20	0.6	2.6	1.8	1.7	2.7	0.0	1.8	1.6
	21–25	0.0	2.1	1.4	1.9	1.9	0.0	1.3	1.5
	26–29	0.0	0.0	0.5	3.8	1.9	5.3	0.9	3.1
	15–29	0.3	1.8	1.2	2.4	2.2	1.9	1.4	2.1
Government jobs	15–20	49.7	43.0	47.4	53.8	28.8	31.6	41.4	43.4
	21–25	41.0	12.8	20.5	22.9	16.0	9.6	22.9	15.8
	26–29	18.5	8.2	7.7	5.7	10.6	10.5	10.8	8.0
	15–29	39.6	25.5	25.0	28.4	19.0	18.0	26.2	32.8
Private jobs	15–20	6.4	2.0	3.5	6.0	10.9	10.2	7.0	5.5
	21–25	6.4	4.3	3.4	1.9	8.3	2.7	6.1	2.9
	26–29	7.4	2.4	1.1	1.9	7.5	2.1	4.7	2.1
	15–29	6.6	2.7	2.6	3.4	9.0	5.3	6.0	3.7
Business/self-employment	15–20	8.9	4.6	18.1	12.0	27.2	11.2	18.6	8.7
	21–25	10.3	6.4	33.6	25.7	41.0	17.8	31.8	16.9
	26–29	16.0	4.7	32.8	36.8	44.4	14.7	34.0	19.9
	15–29	11.1	5.2	28.0	24.4	37.0	14.3	27.4	14.6
Not decided yet	15–20	17.2	30.5	0.0	1.7	18.5	34.7	11.9	22.4
	21–25	7.7	53.2	0.0	1.0	11.5	45.2	6.3	30.9
	26–29	7.4	52.9	0.0	0.0	10.0	41.1	5.2	29.4
	15–29	12.3	42.7	0.0	0.9	13.6	39.8	8.1	27.1
Other	15–20	0.0	0.0	0.0	4.3	0.5	3.1	0.2	2.2
	21–25	0.0	0.0	0.0	12.4	0.6	4.1	0.3	5.9
	26–29	0.0	1.2	0.0	6.6	0.0	1.1	0.0	3.1
	15–29	0.0	0.3	0.0	7.6	0.4	2.6	0.2	3.6