Differences on the Wheat Trait Preferences Between Women and Men from the Same Household

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ABSTRACT

Public breeding programs rarely consider farmers' needs and preferences, especially gender-based preferences, in developing improved varieties for farmers.

Our research examined how personal, household, agronomic and ecological characteristics of wheat-growers in Bihar, India, affect female and male farmers' wheat trait choices. A total of 1,003 households with both male and female from the same household were interviewed.

The results imply that gender influences the preferences for wheat traits. Some traits are favored by both men and women, however in other instances there are striking disparities. Men chose wheat varieties that are well adapted to extreme climate conditions, have a higher grain yield, and produce chapatis with a superior taste, while women preferred wheat types with superior chapati making quality, higher grain yield, and high market prices. Other socioeconomic, agronomic, cultural, and geolocation factors also had a considerable impact on trait preferences.

These human dimensions of traits preferred by women and men farmers may be considered when selecting combinations of traits to develop breeding product profiles for certain market segments.

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Sex-disaggregated survey.

KEYWORDS

wheat traits, gender, trait preferences, logistic regression, Bihar

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INTRODUCTION

- Public breeding programs traditionally follow a supply-driven approach, which is based on the predefined trait criteria set by governmental agencies and are expected to enhance grain yield, disease resistance, climate resilience and market acceptability.

- This approach has a good intention of providing the best crop varieties to farmers; however, it often fails to consider their needs and preferences.

- There is almost non-existence of a mechanism that connects the farmers' (especially the women and marginal farmers) needs and preferences to feed them in the target product profiles (Suri and Gartaula, 2023).

- Borrowing the approach from the private sector, public-sector breeding has started collecting farmers' demands and requirements to feed into their breeding pipelines (Teeken et al., 2021), to have a better understanding of the needs and preferences of the end-users (DLB, 2022).

- This paper examines how personal, household, agronomic and ecological attributes of the sample households in Bihar influence wheat trait preferences among women and men farmers.
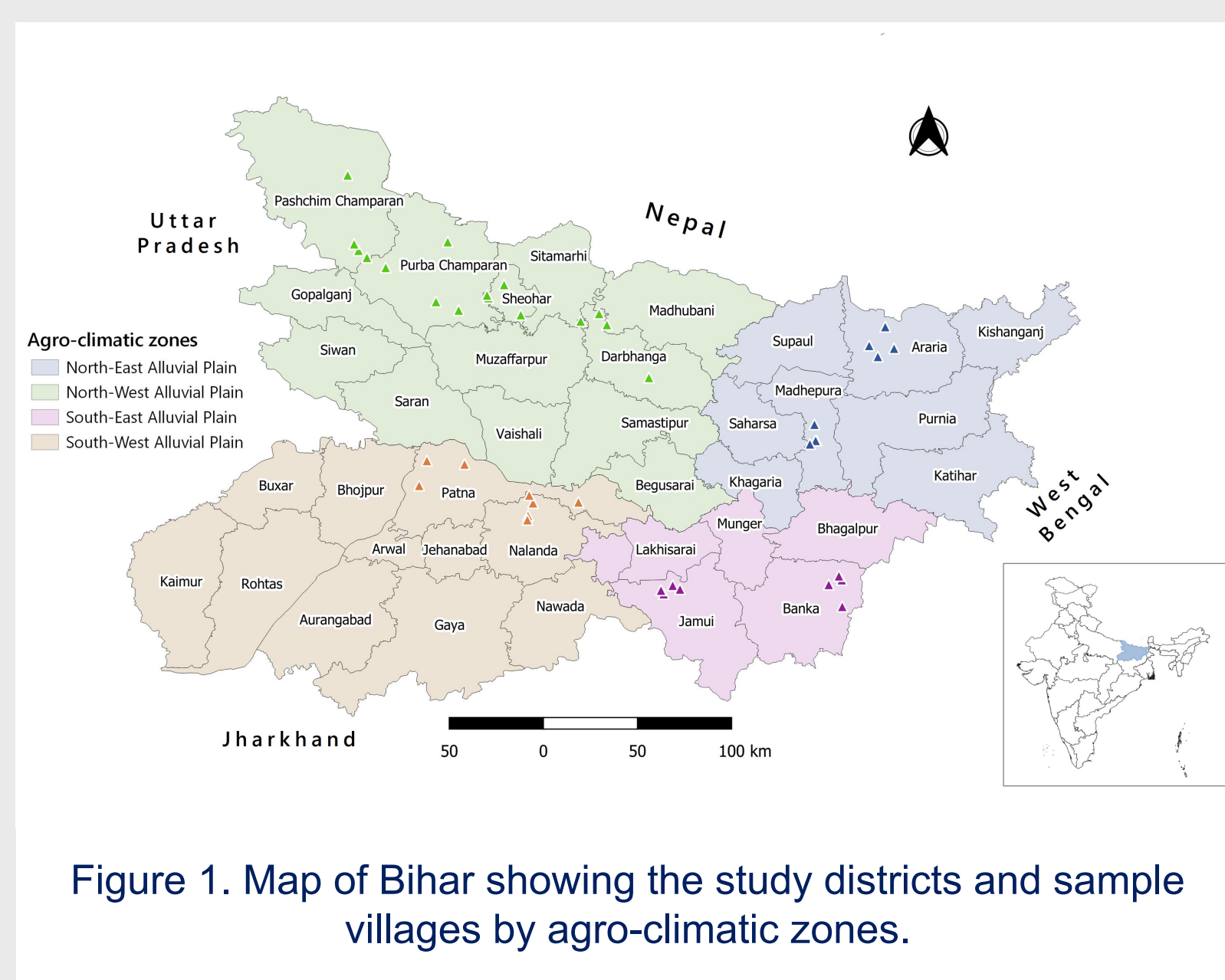

Figure 1. Map of Bihar showing the study districts and sample villages by agro-climatic zones.

METHODOLOGY

- Analyzed intra-household gender dynamics using sex-disaggregated data → data collected from woman and man from the same household.

- Data was collected from 4 out of 38 districts of Bihar, India, 4 villages per district, 48-54 respondents per village. Sample size – 1,003 households – 1,001 women and 1,003 men respondents (Figure 1).

- In the analysis, we included 23 traits as dependent variables and the personal, household, agronomic, and ecological attributes the respondents were living with were used as 15 independent variables.

- Personal attributes → age, education (edu), marriage, and household headship (head).

- Household attributes → caste (sc1, obc1), religion, new variety introduced in recent years (newvar), household asset endowment (amenity), and food insufficiency at the household (lessfood).

- Agronomic attributes → area, wheat production constraints (wpcons - based on 26 self-reported problems), water logging problem reported (wrlog), and soil salinity problem reported (soilsal).

- Ecological attributes → flood hazard categories (NRSC-ISRO, 2016) and four agro-climatic zones available in the literature (Thakur, 2020).

- Descriptive statistics and binomial logistic regression were used for identifying factors associated with women's and men's trait preferences.

RESULTS

- Traits related to climate resilience, grain yield, chapati taste, grain size, tillering, market demand, straw yield, grain processing quality, threshability, and disease resistance are among the top 10 traits preferred by men

- Chapati taste, grain yield, market demand, grain size, tillering, grain processing quality, chapati-making quality, disease resistance, lodging tolerance, and climate-smart are among the top 10 traits preferred by women

- Threshability and straw yield are among the top 10 men's traits, but not on women's list, whereas chapati-making quality in grain and lodging tolerance do not make it to the men's top 10 list.

- The other eight traits are the same for both women and men, with some differences in priority sequence (Figure 2).

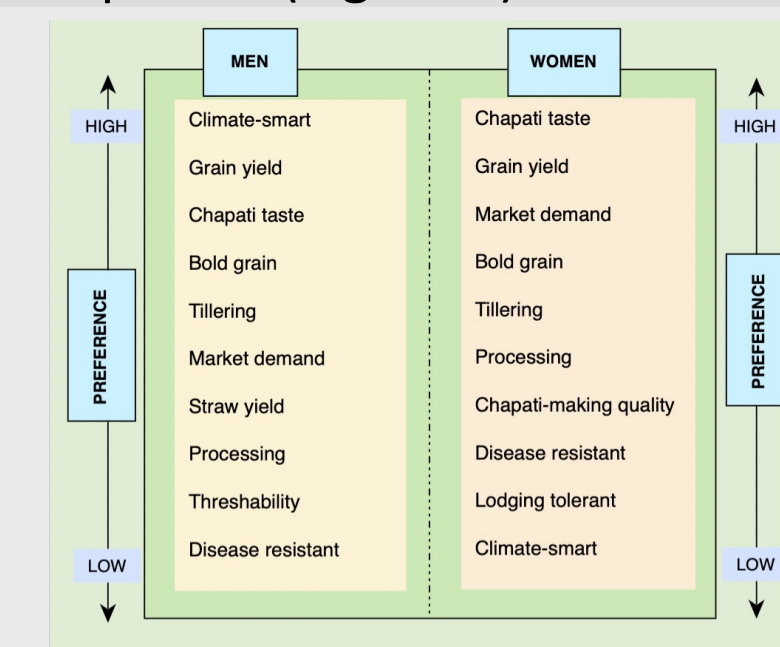Informal interview for contextual understanding.

Figure 2. Order of the top 10 preferred wheat traits for women and men respondents.

Figure 3. Factors affecting gendered trait preferences.

DISCUSSION

- Gender matters with trait preferences, but beyond just being a woman or a man.

- It intersects with the social, economic, technological and ecological factors/ contexts where they pursue their livelihoods.

- They differ by how they are exposed to the production constraints, intra-household labour division, involvement in alternate livelihood activities, and gendered role in the production and post-harvest activities, as also supported by the previous studies (Teeken et al., 2021; Weltzien et al., 2019).

- The diversity of trait preferences that are influenced by the personal, household, agronomic and ecological attributes of the men's and women's livelihood system is important for the breeders to take these critical insights when developing target product profiles and market segmentation, including the development of regional parameters.

- The main policy implication of this study is the dynamic interface between women's trait preferences, their involvement in agriculture and wheat production, and their limited access to agricultural extension and training services.
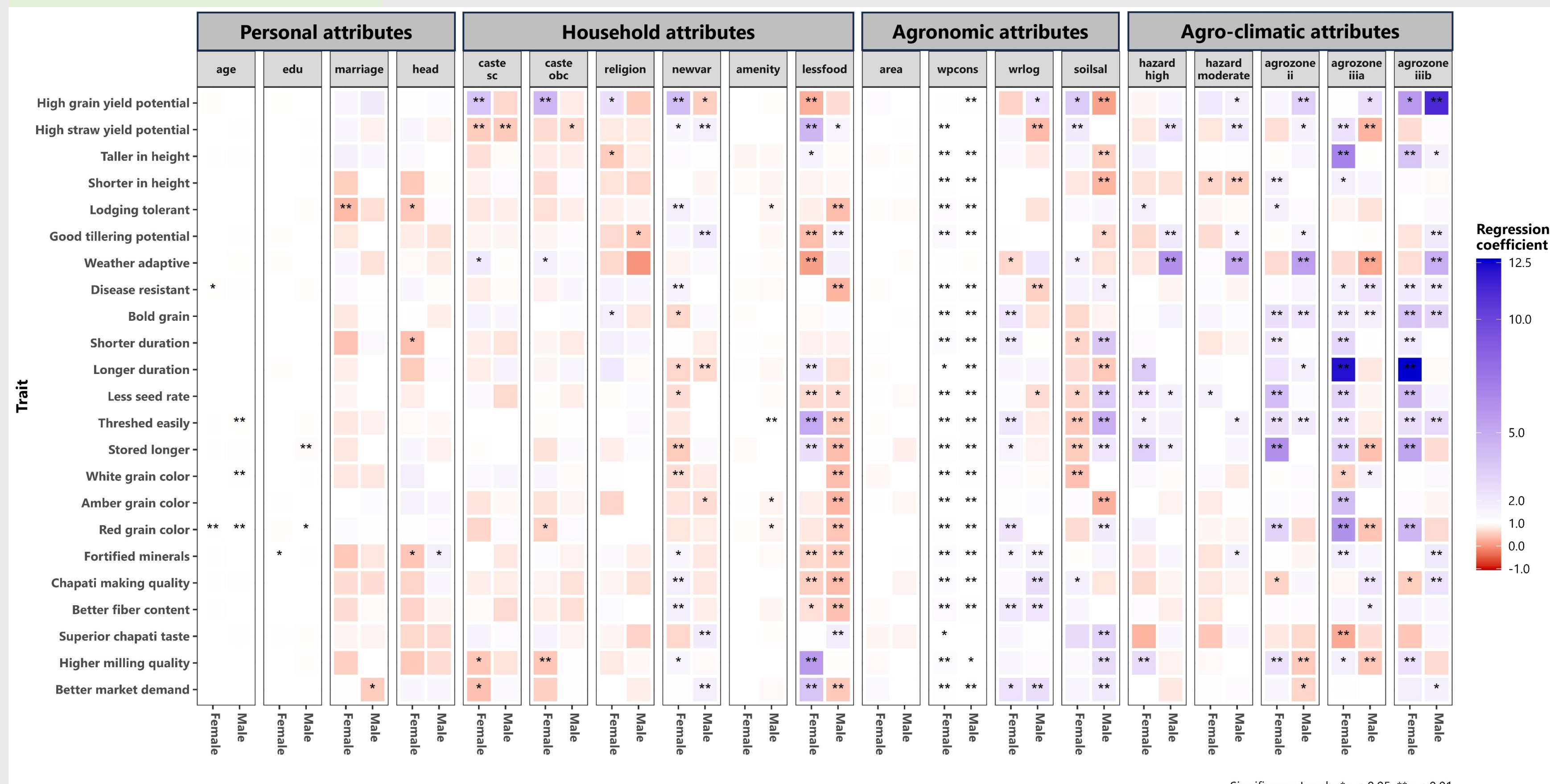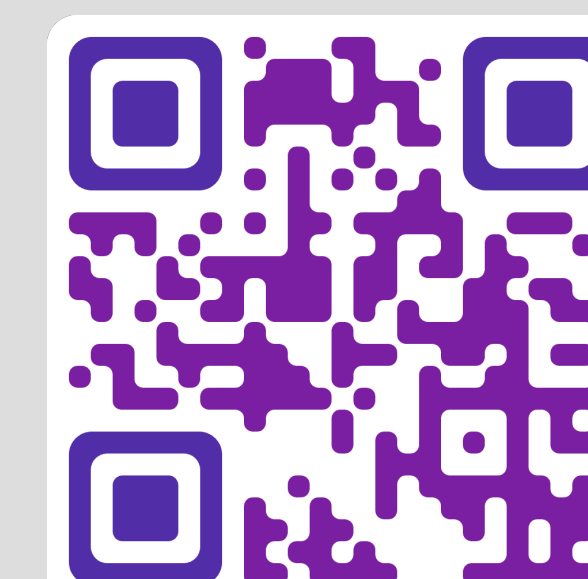
RESULTS (continued)

- **Effects of personal attributes:** with women's increased age, preference over disease resistance and red colour traits decrease, while for men they are threshability and white colour grains.
- Men's education negatively influences the preference for storage trait and positively for red grain trait.
- Educated women prefer varieties that are biofortified for micro-nutrients.
- Marital status has less influence on varietal choice (Figure 3).

- **Effects of household attributes:** whether the respondent has introduced new wheat varieties in the last five years has an implication in understanding their trait preferences.
- The household assets seem to have a limited influence.
- Household food self-sufficiency and caste group of the respondents also seem to influence the preference over several traits significantly, but the relationship is not straightforward (Figure 3).

- **Effects of agronomic attributes:** wheat cultivated area had no significant influence on both women and men
- Exposure to the production constraints seem to have an influence on the trait preferences.
- Respondents' exposure to waterlogging and soil salinity have a mixed influence on trait preferences (Figure 3).

- **Effects of ecological attributes:** finally, the association between gendered trait preferences with flood hazards and agroecological zonation is also interesting.
- Increasing flood hazard intensity tends men to prefer weather adaptive traits, but not necessarily the situation prompts women to do so.
- The preferences for gender traits vary by agroecology. For men, agroecology did matter to prefer certain traits, while women living in all agroecological zones seem to have a similar preference for weather-adaptive traits (Figure 3).

CONCLUSIONS

- The study shows how personal, household, agronomic, and ecological factors influence the preferences of women and men farmers differently for wheat traits.

- It is revealed that gender plays an important role in determining the preferences for wheat traits.

- Men prefer wheat varieties that are well suited for extreme climate conditions, followed by higher grain yields and superior chapati taste

- Women prefer wheat varieties with excellent chapati-making quality followed by higher grain yield and higher market prices.

- Other socioeconomic, agronomic, cultural and ecological factors also have a significant effect on trait preferences.

- These differences in trait preferences between women and men within the same household can be considered when selecting traits to develop target product profiles for specific market segments.

REFERENCES

Please scan the following QR Code for the list of references.