20 Understanding the Utility of Print Media for Dissemination of Insect Pest Management Tactics to Rice Farmers at Hooghly, West Bengal, India

Eureka Mondal and Kaushik Chakraborty

Abstract

Information on crop protection in print media as a conception that incarcerates how can be flawlessly put the advice on agroecology to the service of crop production after adopting integrated pest management (IPM) as the prime motto in rice eco-ecosystem has been debated for a long time. Print media plays an important role in communicating agricultural information among literate farmers on improved agricultural practices and informing the public in general. The role of newspapers in disseminating agricultural knowledge among the farmers to adopt better crop management strategies is essential in the present scenario. Depending on the habit of reading agriculture-related information in newspapers, 120 selected farmers in the block Tarakeswar covering two adjacent villages of the district Hooghly, West Bengal, India, were broadly categorized into two groups, viz. contact farmers-CF (read newspapers 2–3 h/day) and non-contact farmers-NCF (no habit of newspaper reading). Depending on the age of the farmers, each group was again subdivided into three sub-groups (3 sub-groups for CF + 3 sub-groups for NCF), viz. CF-1 and NCF-1 (20–29 years), CF-2 and NCF-2 (30–39 years), and CF-3 and NCF-3 (40–49 years), respectively. Each sub-group comprised 60 heads. A questionnaire having 20 questions, each with two alternative options, was prepared. Questions encompass prior knowledge and outline information on rice insect and pest management practices. Then, farmers were interrogated independently to the prepared questionnaire and they responded and were categorized accordingly. Grossly, contact farmers (CF) responded more accurately to the actual rice insect pest infestation level. The maximum percentage of identification of adult yellow stem borer (YSB) was successfully made by 90% of CF-B male farmers and 77.5% of CF-B female farmers, whereas maximum identification of YSB larva was made by 75% of male respondents of CF-B and 69.2% female respondents of CF-A. Identification of rice crop damage due to YSB larva was also made successfully by 95% of CF-B male farmers and 85% of CF-B female farmers. Thus, the habit of reading agriculture-related news on a regular basis was found indispensable to maximize the benefit of the integrated pest management program for rice crops.

Keywords

Sustainable agriculture · Newspaper · Farmers · Article · Data responses · Age group · Yellow stem borer · Insect pest management

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20.1 Introduction

Sustainable agriculture ropes sufficiently safe healthy food production (Das 1991). Agricultural information is the main apprehension of agricultural extension agencies to culminate sustainable agriculture. Agro-information is the accumulation of all the necessary components responsible for changing the farmers' outlook (Bentley et al. 2015). Such education concerns to give them the latest knowledge of crop cultivation and protection. Different agencies work to catalyze agricultural innovation and subsequent diffusion to the farmers. However, agricultural publications in daily newspapers are considered an effective tool for disseminating agricultural information among the farming community (Anderson 1985). The achievement of agencies for agricultural output in developing countries largely depends on the type and dimension of the use of mass media to mobilize farm people for development (Marek 2012). Meanwhile, radio and television have been acclaimed as the most effective media for diffusing scientific knowledge to the masses but have proven cost-effective (Gill and Sandhu 1986). In this context, the print media gains momentum. Newspapers mainly address the main factors influencing agricultural production, technology, information regarding crop varieties, and insect pest management (IPM) which are also faintly covered. Print media can cope with future agricultural problems and lend them a hand in the solution of their problems (Ananta and Tauffiqu 2016).

Investing agro-information in extension services is recommended to increase awareness and adoption of IPM. Moreover, modifying the current cultivation approach by targeting not just the primary farmers but also the members of their families can help in the adoption of rice-IPM (Mengech et al. 1995). Effective monitoring of insect pests as a part of IPM is a prerequisite for any successful plant protection program. The decision on whether and when to follow control measures is based on the information available on the pest population at a particular time. Mass media can be classified as print media and electronic media (Zijp 2002). Print media include words, pictures, publications, brochures, posters, and other types of printed materials that are physical items. Identifying the determinants of IPM and disseminating information by mass media at the grass root level is crucial for promoting the use of more ecologically benign pest control tactics in the agricultural sector (Levy and Windahl 1984). Among the mass media, newspapers are vital in communicating agricultural information among literate farmers. In contrast, the escalating rate of literacy in the country offers new promises and projections for pertaining print media as a means of communication. The print media broaden the range of communication. It is cheap, and people can afford to buy and read them at their expediency Shuwa et al. (2014). It is a permanent medium as the messages are imprinted permanently with high storage value, which makes them suitable for reference and research.

The success of agricultural development programs and successful implementation of rice-IPM in developing countries like India largely depends on the nature and extent of effective use of mass media to mobilize people and disseminate newly evolved agricultural technologies (Birkenholtz and Maricle 1991). Among the mass media, newspapers and farm magazines are very important. Print media is low in cost and has widened the scope of visual communication (Olowu and Oyedokun 2000). Farm magazines and newspapers with agro-techniques are commonly used to teach farmers about rice-IPM. It offers agricultural information to literate farmers to improve their knowledge level (Purushothaman 2003). Multi-stage sampling methods were used to select study participants. In the first phase, two villages were chosen. In the final phase, 120 rice growers from three distinct age groups and from two villages who directly participated in agricultural activities were selected for interview against the prepared questionnaire, which was made with appropriate information.

Agricultural publications play a very pivotal role in the diffusion of innovation. These publications help to change the primitive agricultural

methods in the land forming. The present chapter will ascertain why the farmers are disposed to agricultural information in newspapers. The chapter will also reveal that the age, gender, and educational level of the farmers influence the perception of agricultural information in newspapers. The role of the newspaper as a forerunner for awareness creation and dissemination of agricultural information to improve wider reach within and outside the farming population will also be evaluated.

20.2 Material and Methods

20.2.1 Study Area

The place of study was Tarakeswar, Hooghly, West Bengal. Tarakeswar is located at 22.89°N 88.02°E. It has an average elevation of 18 m (59 feet). It is under the Chandannagore subdivision of the Burdwan Division in West Bengal (Fig. 20.1).

The town is 48 km from Chinsurah, the district headquarters and 45 km from Chandannagore. The district Hooghly encompasses 239,500 agricultural families, 88,536 small-range farmers, 135,827 marginal farmers, and 242,564 agricultural laborers (District Annual plan on Agriculture, Hooghly, Govt of West Bengal, 2002–2003). The present work contemplates farmers' perception of rice-IPM and the importance of newspapers distributing agricultural-related information among the farmers to check rice insect pests, especially rice yellow stem borer (YSB).

20.2.2 Methodology

Because of the increased national literacy level of 52.11% during 1991, print media has acquired greater momentum in disseminating information relating to improved agricultural practices to farming communities. Grossly, 558 registered newspapers in India, at about 35% of the total,

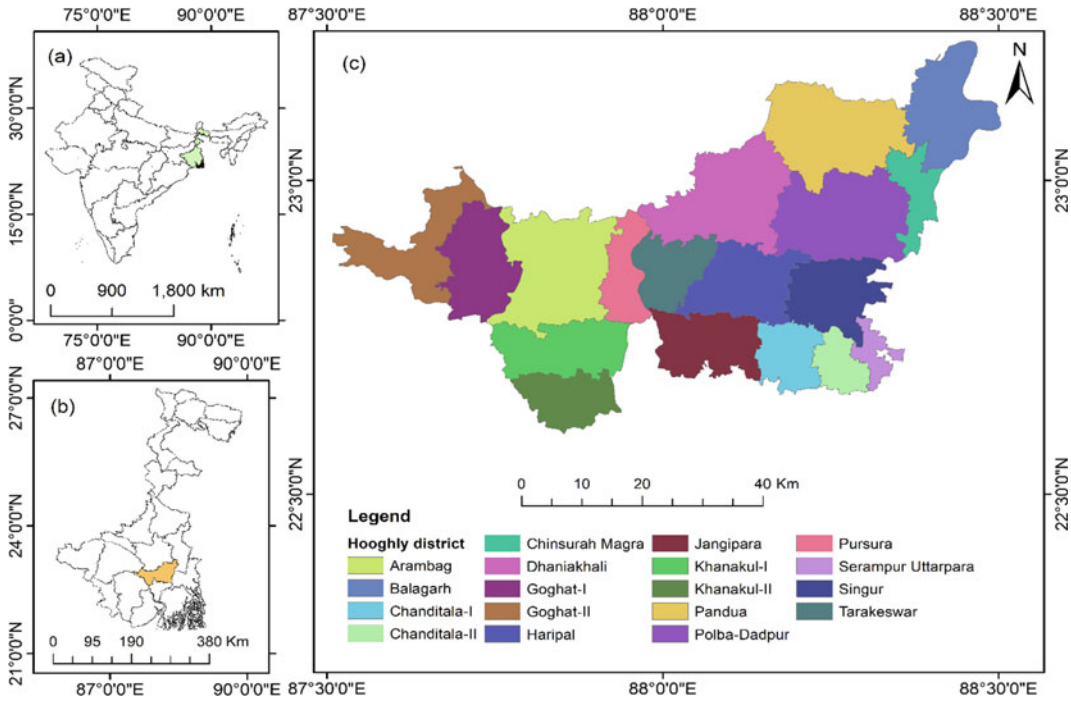

Fig. 20.1 Location of the study area (marked by *) at Hooghly, West Bengal, India

are being circulated in the district Hooghly, which is available in West Bengal. Further, about 11 weekly, 12 fortnightly, two monthly, and four other newspapers circulated in this region (district information and culture office, Hooghly, West Bengal, 2002–2003). The issues of the available daily newspaper in regional languages, especially in Bengali, published between 2020 and 2021 and had agricultural-related information, were purposively selected for the study. The selected papers analyze the cover page, content, format, and illustration components. Those articles were purposively selected for the study and were related to agricultural production, especially insect pest control encompassing scientific and cultural practices, proper insecticide application, field management, etc.

In general, farmers of the Hooghly district cultivate a fairly large area with only a small number of workers. They cannot spend all their time farming. Sometimes, they cannot sow all their crop properly; other times, they weed some crops poorly or too late; often, they have very little information about rice insect pests. Farmers use only huge quantities of insecticides and fertilizer, if any at all, at regular intervals to check pest menace. Grossly, the farmers that are selected for the study have the criteria: (i) the majority of the farmers were literate and were acquainted with farm literature; (ii) all were progressive farmers undertaking agriculture, livestock production and other allied enterprises; (iii) farmers were aware of the basic norms of farm journalism.

The interview schedule consisted of structural and open-ended questions in the Bengali language for data collection, and the respondents were individually interviewed. The questionnaire consisted of mainly three parts: (i) demographic characteristics of farmers, (ii) questions about identification, damage, economic threshold level (ETL), and non-target pest outbreaks in the rice fields, and (iii) farmers' knowledge and perception about the management of insect pests in rice fields (Table 20.1).

Adopted a bunch of varietal techniques for collecting data (Damalas and Khan 2016). Two adjacent villages (Bhanjipur and Dhalyan, respectively) were primarily chosen randomly from the administrative block Tarakeswar, West Bengal, for the survey. At the same time, a group of 120 farmers (60 male and 60 female) with a regular habit of reading newspapers from three distinct age groups mostly related to rice farming from each of the two villages were selected. Farmers were successfully interviewed against the prepared questionnaire. Farm magazine effectiveness index (FMEI) was assessed against nine major components as developed by Nataraju and Perumal (1995). Information obtained with questionnaires was enlisted, and the data was checked through SPSS to correct entry errors, including typographical, and transcriptional errors. The statistical analysis was mainly descriptive. The Chi-square tests were adopted to assess the linearity between the ability of farmers to identify insects and the selected socioeconomic variables of farmers correctly. Similarly, the independent t-test was used to assess whether significant differences existed between farmers who correctly identified the rice insect pests.

Table 20.1 Components and the description of the questionnaire to assess the importance of agro-information to the farmers

Types	Components	Description of questions
Structural	Farmer's bio-data and farm details	Marital status, age, educational level, land tenure, farm holding size
Functional	About newspaper reading	Language of newspapers they preferred, regularity, causes of choice, the information they collected
	About integrated pest management	Identification of the yellow stem borer in the field or by pictorial representation, damage symptoms, and economic threshold levels
	Commonly adopted pest management through pesticides	Dose of insecticide, time of application, times, dose, mode of application, insecticide trends, effectiveness

20.2.3 Data Source

The data during the survey was obtained in two different ways, primarily by observing what was going on in the fields or by interviewing the farmers. Information gathered by interviewing is likely less accurate than that collected by observation because the farmers may need to remember or wish to tell. On the other hand, the quantity of information gathered by interviews is much greater, so interviewing is much cheaper per item of information obtained. During the study, data obtained from interviews was combined with observations and accordingly tabulated. As per the work requirement, we set up a regular interview schedule with the farmers. If there is an unnecessary delay, a farmer is more likely to forget some information or make a mistake (Fig. 20.2).

20.3 Results and Discussion

20.3.1 Component-Wise Discussions

Item 1: Farmer and Farm Characteristics

The majority of the respondents (83%) were males. Among male farmers, 50% had no formal education, 38% had basic education, 9% had secondary education, and 3% had only tertiary education. In contrast, among female respondents, 57% had no formal education, 34% had basic education, 7% had secondary education, and 1% had only tertiary education, respectively. Depending on the habit of newspaper reading, randomly selected 120 farmers from 2 nearby villages of Tarakeswar block under district Hooghly, West Bengal, were broadly categorized into two groups, such as contact farmers (CF) and non-contact farmers (NCF). CF reads newspapers 3–4 h a day, while NCF has no such habit. Depending on the age of the farmers, each group was again subdivided into three subgroups, viz. CF-A and NCF-A (18–27 years), CF-B and NCF-B (28–37 years), and CF- C and NCF-C (38–47 years). So collectively, six subgroups were formed, each sub-group comprised 20 heads (Fig. 20.3).

Item 2: Observation on Farmers' Habit of Newspaper Reading

Farm publications offer new agricultural practices and proper techniques for new crops, which is a blessing for farming families to acquaint them with the new cultivation strategy.

In Village-1 (Bhanjipur), 40.83% of male and 25.83% of female farmers read articles with a duration of 30–59 min daily, whereas 42.50% of male and 17.50% of female farmers utilized 60–89 min. About 8.33% of male and 3.33% of

Fig. 20.2 **a** Collection of data at field level, **b** interaction with the farmers

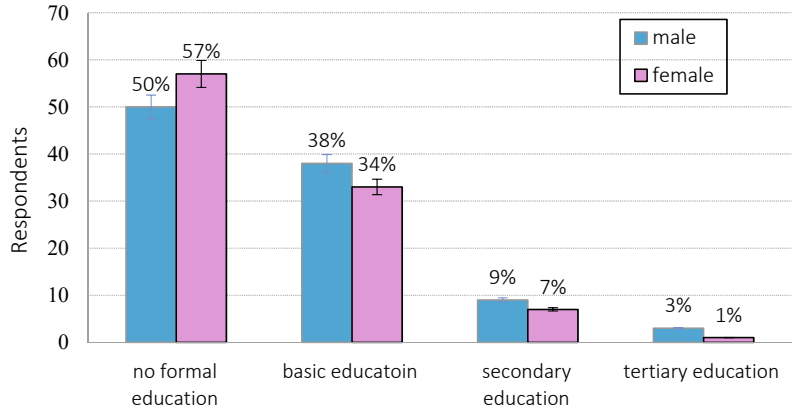

Fig. 20.3 Demographic representation of the educational status of the respondents depending on the gender of the farmers

female farmers had an average of 90–119 min of reading habits. Only 5.83% of male and 2.50% of female farmers showed daily 120–149 min of reading habits. On the other hand, the scenario was almost the same in Village-2 (Dhalyan), 22.50% of male and 15% of female farmers used to read the articles for a duration of 30–59 min daily, 7.50% of male and 17.50% of female farmers showed 60–89 min of reading habit, 4.17% of male and 3.33% of female farmers showed 90–119 min of reading habit, and 3.33% of male and 1.67% of female farmers showed 120–149 min daily reading habit, respectively (Fig. 20.4).

Item 3: Title of the Newspaper

The title is the most imperative part of a newspaper to give agro-information which should be agreeable to read. The title must be descriptive, direct, accurate, appropriate, interesting, concise, precise, and unique. The newspaper title was perceived to be satisfactory by 100% CF-A, 75% CF-B, and 65% CF-C among the male farmers. For 85% of female respondents of the CF-A group, it was perceived to be more satisfactory. Whereas 55% of female respondents of CF-B had opined that the title of the newspaper was important to disseminate the view. For 60% of female farmers of the CF-C group, the

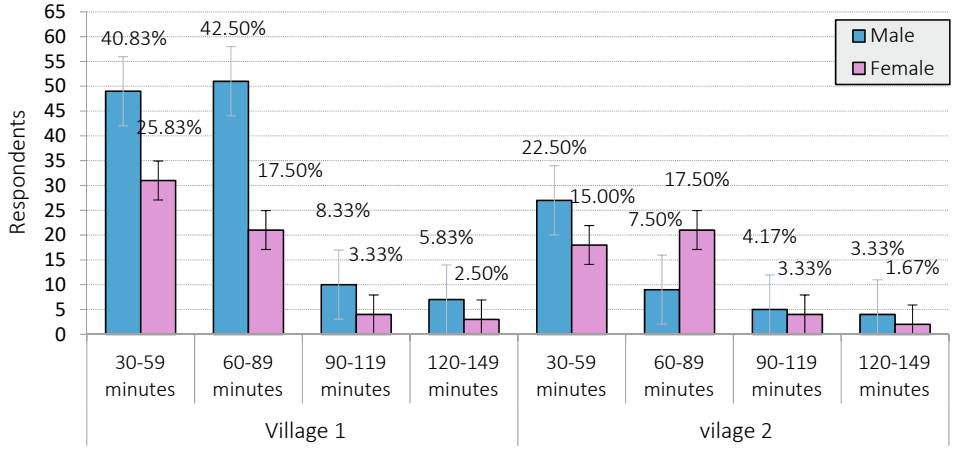

Fig. 20.4 Demographic representation of the number of farmers with a habit of newspaper reading in Village-1 (Bhanjipur) and Village-2 (Dhalyan), respectively

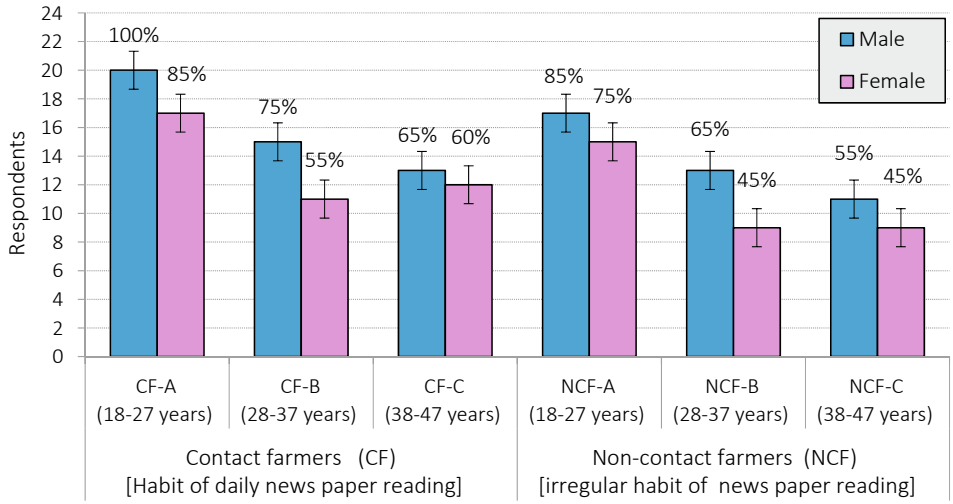

Fig. 20.5 Acceptance of farm-related information in newspapers depending on the title of the newspaper, the habit of the newspaper reading, age, and gender of the farmers

importance of the title of the newspaper is crucial. In contrast, 85% of the NCF-A male farmers perceived the newspaper title to be satisfactory. Additionally, it was satisfactory to 65% of NCF-B and 55% of NCF-C among the male farmers or 75% of female respondents of the NCF-A group. It was perceived to be more satisfactory. 45% of female respondents of both NCF-B and NCF-C groups had opined that the newspaper's title is important to disseminate the view (Fig. 20.5).

Item 4: Readability of the Cover Page Write-Up

The way a text looks matters to a reader, so it should matter to a writer. Letters and reports are more than words on a page or a screen. Low or inferior ideas are arranged and delivered in physical form, whether electronically or on paper, making reading seem intimidating, confusing, or downright unfriendly, even if the content itself is perfect. Simultaneously, the cover page write-up's readability was perceived to be satisfactory by 90% of CF-A male farmers. Additionally, it was satisfactory to the 65% CF-B and 65% CF-C male farmers. For 75% of female respondents of the CF-A group, it was perceived to be more satisfactory. 50% of female respondents of CF-B had opined that the readability of the cover page write-up was important to disseminate the view. For 5% of female farmers of the CF-C group, the importance of the magazine's title was crucial. The readability of the cover page write-up was perceived to be satisfactory by 85% of NCF-A male farmers. Additionally, it was satisfactory to 60% NCF-B and 50% NCF-C male farmers, respectively. It was professed to be more satisfactory for 75% of the NCF-A group female respondents. 45% of female respondents of NCF-B had opined that the readability of the cover page write-up was important to disseminate the view. For 40% of female respondents of the NCF-C group, the importance of readability of the cover page write-up was crucial (Fig. 20.6).

Item 5: Design of the Magazine

One of the important basics of news is the design of the magazine. The most esthetically pleasing magazines always have great covers. An attention-grabbing magazine cover design is vital for selling news to readers and inviting them to delve deeper into the publication. 60% of CF-A male farmers perceived the magazine design to be satisfactory. Additionally, it was satisfactory to 55% CF-B and 55% CF-C male group of farmers. For 50% of female respondents of the CF-A group, it was perceived to be more satisfactory. 45% of female respondents of CF-B had

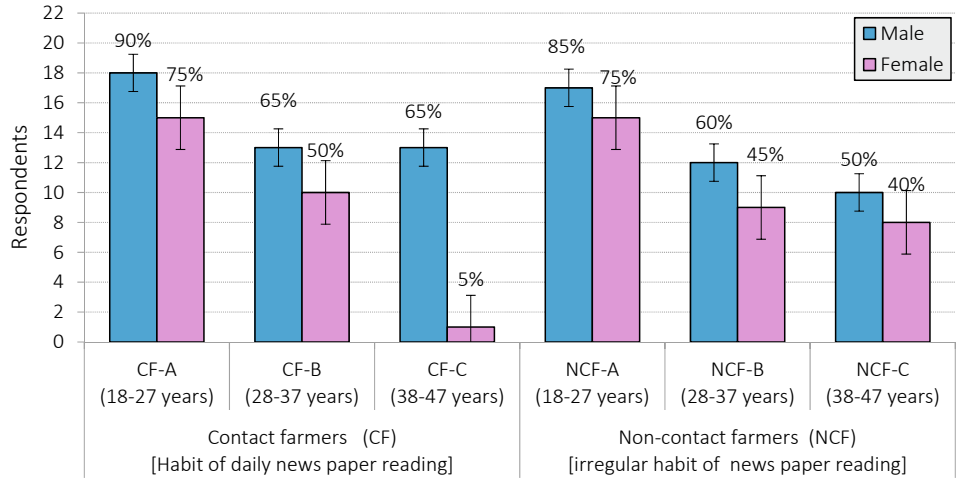

Fig. 20.6 Acceptance of farm-related information in newspapers depending on the readability of the cover page write-up of the magazine, the habit of the newspaper reading, age, and gender of the farmers

opined that the magazine's design was important to disseminate the view. For 45% of female farmers of the CF-C group, the importance of the magazine's design was crucial. In contrast, the magazine design was perceived to be satisfactory by 45% of NCF-A, 45% of NCF-B, and 40% of NCF-C of male farmers. Whereas 35% of female respondents of the NCF-A group, 35% of female respondents of NCF-B and 35% of female farmers of the NCF-C group had opined that the magazine's design was important to disseminate the view (Fig. 20.7).

Item 6: Length of the Article

Subject-specific and elimination of unnecessary sentences and inclusion of very basic information are obvious to the target audience. In a text, there should be statements, especially at the beginning of the introduction and discussion, which will be catchy, give the audience very obvious

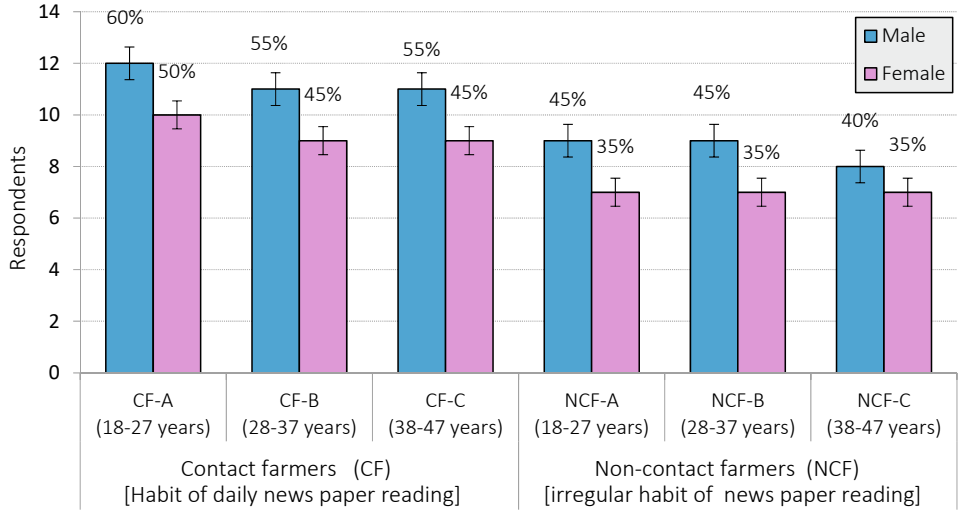

Fig. 20.7 Acceptance of farm-related information in newspapers depending on the design of the magazine, the habit of the newspaper reading, age, and gender of the farmers

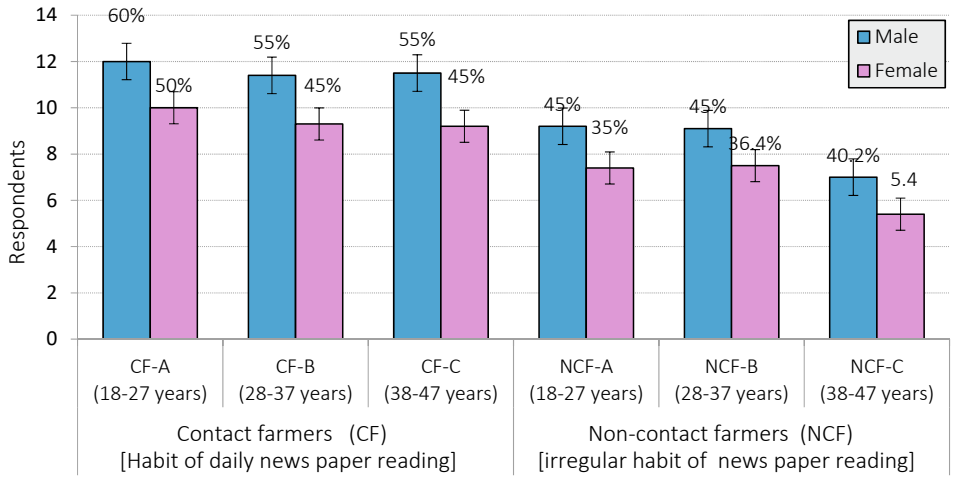

Fig. 20.8 Acceptance of farm-related information in newspapers depending on the length of the article of the magazine, the habit of the newspaper reading, age, and gender of the farmers

information, and patronize the text. The perceived length of the chapter was to be satisfactory to 60% of CF-A male farmers. Additionally, it was satisfactory to 55% of CF-B and 55% CF-C male group of farmers. For 50% of female respondents of the CF-A group, it was perceived to be more satisfactory. 45% of female respondents of CF-B had opined that the article's length was important to disseminate the view, and 45% of female farmers of the CF-C group the importance of the chapter's length was crucial. In contrast, the chapter's length was satisfactory by 45% of NCF-A, 45% of NCF-B, and 40.2% of NCF-C of male farmers. For 35% of female respondents of the NCF-A group, it was perceived to be more satisfactory. Whereas 36.4% of female respondents of the NCF-B and 5.4% of female farmers of the NCF-C group had opined that the length of the article was crucial to disseminate the view (Fig. 20.8).

Item 7: Timeliness of the Article

To create timeliness in scientific work, information should be regular. The abovesaid situation increases the chance that results from the research are included in policymaking. The timeliness of research is important for evidence-based policymaking. In order to create timeliness in research, the interaction between researchers and policymakers is important. The timeliness of the article was perceived to be satisfactory by 75% of CF-A male farmers. Additionally, it was satisfactory to 70% of CF-B and 85% of the CF-C male group of farmers or 65% of female respondents of the CF-A group. It was perceived to be more satisfactory. 60% of female respondents of CF-B had opined that the timeliness of the article was important to disseminate the view. In contrast, for 80% of female farmers of the CF-C group, the importance of timeliness of the article is crucial. In contrast, the timeliness of the article was perceived to be satisfactory by 45% of NCF-A, 45% of NCF-B, and 65% of NCF-C among the male farmers. Whereas 35% of female respondents of the NCF-A group, 37.5% of female respondents of the NCF-B group, and 15% of female farmers of the NCF-C group had opined that the timeliness of the article was important to disseminate the view (Fig. 20.9).

Item 8: Relevancy of the Message to the Season and Region

The article should be addressed to the audience. The chapter will give more information on the type of audience. Focus on the main message will keep the attention of the readers. Subject-specific writing helps in effective communication. Perceived relevance of the message to the season and region to be satisfactory by 80% of CF-A male farmers. Additionally, it was satisfactory to the 70% CF-B and 60% CF-C male

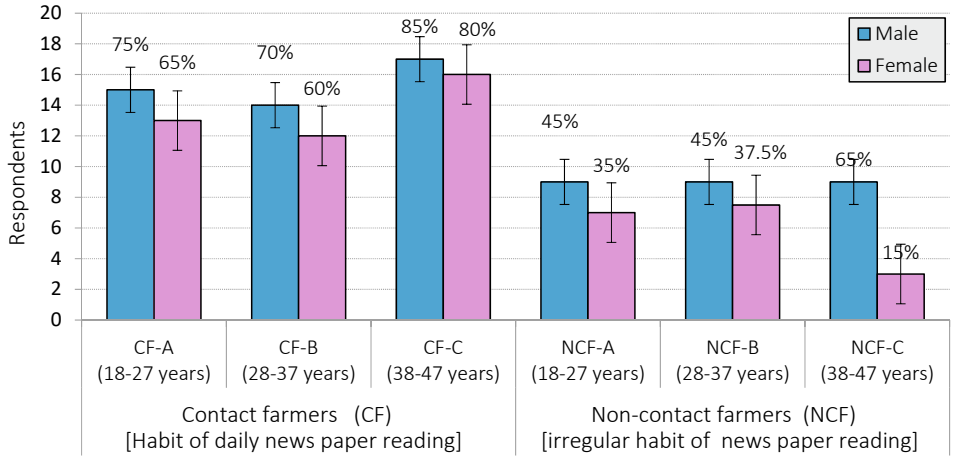

Fig. 20.9 Acceptance of farm-related information in newspapers depending on the timeliness of the article in the magazine, the habit of the newspaper reading, the age and gender of the farmers

group of farmers. For 60% female respondents of CF-A group, it was perceived to be more satisfactory. It was perceived to be more satisfactory. 60% of female respondents of CF-B had opined that the relevancy of the message to the season and region was important to disseminate the view. For 55% of female farmers of the CF-C group, the importance relevancy of the message to the season and region is crucial. Perceived relevancy of the message to the season and region was to be satisfactory by 35% of CF-A male farmers. Additionally, it was satisfactory to the 40% CF-B and 45% CF-C male group of farmers. For 30% female respondents of the CF-A group, it was perceived to be more satisfactory. 37.5% of female respondents of CF-B had opined that the magazine's title was important to disseminate the view and for 15% of female farmers of the CF-C group, the importance of the relevancy of the message to the season and region was crucial (Fig. 20.10).

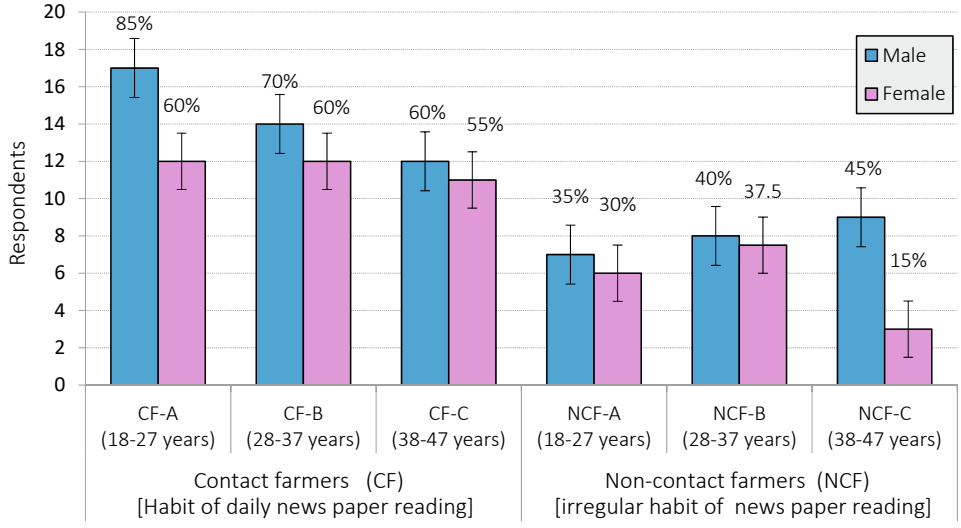

Fig. 20.10 Acceptance of farm-related information in newspapers depending on the relevancy of the message to the season and region, the habit of the newspaper reading, age, and gender of the farmers

Item 9: Number of Pages per Article

A limited page number of an article is essential to deliberate information specifically. The number of pages per article was perceived to be satisfactory by 90% of CF-A male farmers. Additionally, it was satisfactory to the 90% CF-B and 80% CF-C male group of farmers, or 85% female respondents of the CF-A group; it was perceived to be more satisfactory. 75% of female respondents of CF-B had opined that the numbers of pages are important to disseminate the view. For 80% of female farmers of the CF-C group, the importance of the number of pages per article was crucial. In contrast, the number of pages per article was perceived to be satisfactory by 45% of NCF-A, 45% of NCF-B, and 45% of NCF-C male farmers. It was perceived to be more satisfactory for 35% of female respondents of the NCF-A group. 37.5% of female respondents of NCF-B had opined that the magazine title is important to disseminate the view and for 15% of female farmers of the NCF-C group, the importance of the number of pages per article was crucial (Fig. 20.11).

Item 10: Quality and Clarity of Illustrations

An illustration can explain an idea without the text nearby. The illustration is a very interesting area that simultaneously contains a lot of creativity. The quality and clarity of illustrations were perceived to be satisfactory by 90% of CF-A male farmers. Additionally, it was satisfactory to 85% CF-B and 70% CF-C male group of farmers. For 75% female respondents of the CF-A group. It was perceived to be more satisfactory. 60% of female respondents of CF-B had opined that the title of the quality and clarity of illustrations disseminate the view. For 55% of female farmers of the CF-C group, the importance of quality and clarity of illustrations was crucial. In contrast, the quality and clarity of illustrations were perceived to be satisfactory by 35% of NCF-A male farmers. It is also satisfactory to 40% NCF-B and 40% NCF-C male farmers. It was perceived to be more satisfactory for 30% of female respondents of the NCF-A group. 37.5% of female respondents of NCF-B and 25% of female farmers of the NCF-C had opined that quality and clarity of illustrations are important to disseminate the view (Fig. 20.12).

20.3.2 Observation on the Identification of Major Pests of Paddy

20.3.2.1 Identification of Major Insect Pest Problem

One hundred twenty farmers, irrespective of age and gender, were shown pictures of rice insect pests and then asked to identify the insect pests

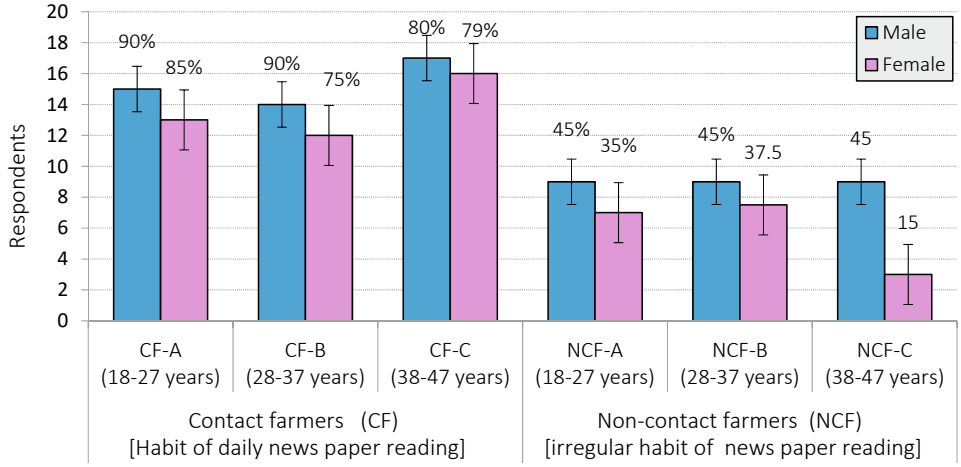

Fig. 20.11 Acceptance of farm-related information in newspapers depending on the number of pages per article, the habit of the newspaper reading, age, and gender of the farmers

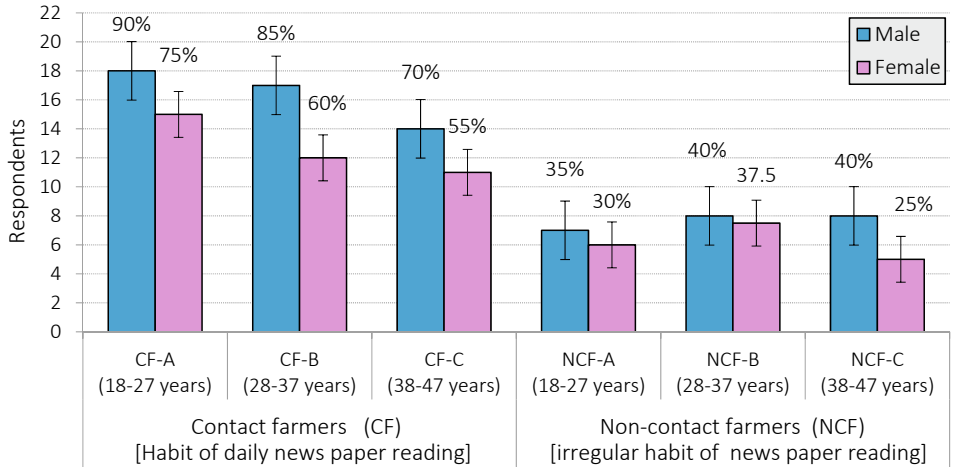

Fig. 20.12 Acceptance of farm-related information in newspapers depending on the quality and clarity of illustrations of the article, the habit of the newspaper reading, age, and gender of the farmers

and to correlate the pest with damage symptoms. The responses in percentage were taken into consideration for this executive research. Farmers' knowledge and perception of rice insect pests were assessed accordingly. Brown plant hopper (51.96%) and yellow stem borer (41.36%) ranked first and second as economically important insect pests. Then, it was followed by rice grasshoppers (34.7%), mole cricket (18.3%), Gandhi bug (15.86%), rice hispa (10.33%), rice caseworm (8.3%), gall midge (8.2%), and white fly (5.53%) in decreasing order as per the opinion of the farmers. Non-contact farmers who have little accustomed to newspaper reading have similar opinions about enlisting the important insect pests in the rice field. However, in such a case, probably due to a low knowledge level, a comparatively low number of farmers can recognize the insect pests correctly (Figs. 20.13 and 20.14).

20.3.2.2 Identification of Adult Yellow Stem Borer

The adult insect is usually a yellowish moth with a black dot on each wing and a pointed apex. he adults visit the fields in the evening. Identification of adult yellow stem borer was successfully made by 75% CF-A and 45% NCF-A, 90% CF-B and 35% NCF-B, 80% CF-C, and 35% NCF-C of male farmers. In contrast, the same identification was successfully made by 60% CF-A and 30% NCF-A, 77.5% CF-B and 37.5% NCF-B, and 60% CF-C and 25% NCF-C of female farmers (Figs. 20.15 and 20.16).

20.3.2.3 Identification of YSB Larva

The young larvae are found inside the stem and are off-white with a red head and no visible legs. Identification of YSB larva after splitting the rice stem was satisfactorily made by 65% CF-A, 75% CF-B, and 70% CF-C male group of farmers. At the same time, 69.2% of female respondents of the CF-A group and 35% of the CF-B group and CF-C group had identified the yellow stem borer larvae. The same identification was made successfully by 25% of male and 15% of female NCF-A, 30% of male and 15% of female NCF-B, 20% of male and 14.5% of male NCF-C group of farmers (Fig. 20.17).

20.3.2.4 Identification of Rice Crop Damage Due to YSB Larva

Infestation by YSB causes the drying of the central panicle of the growing plant and results in the characteristic symptoms of a dead heart (DH) at the early growth stage and a white head (WH) at the late growth stages.

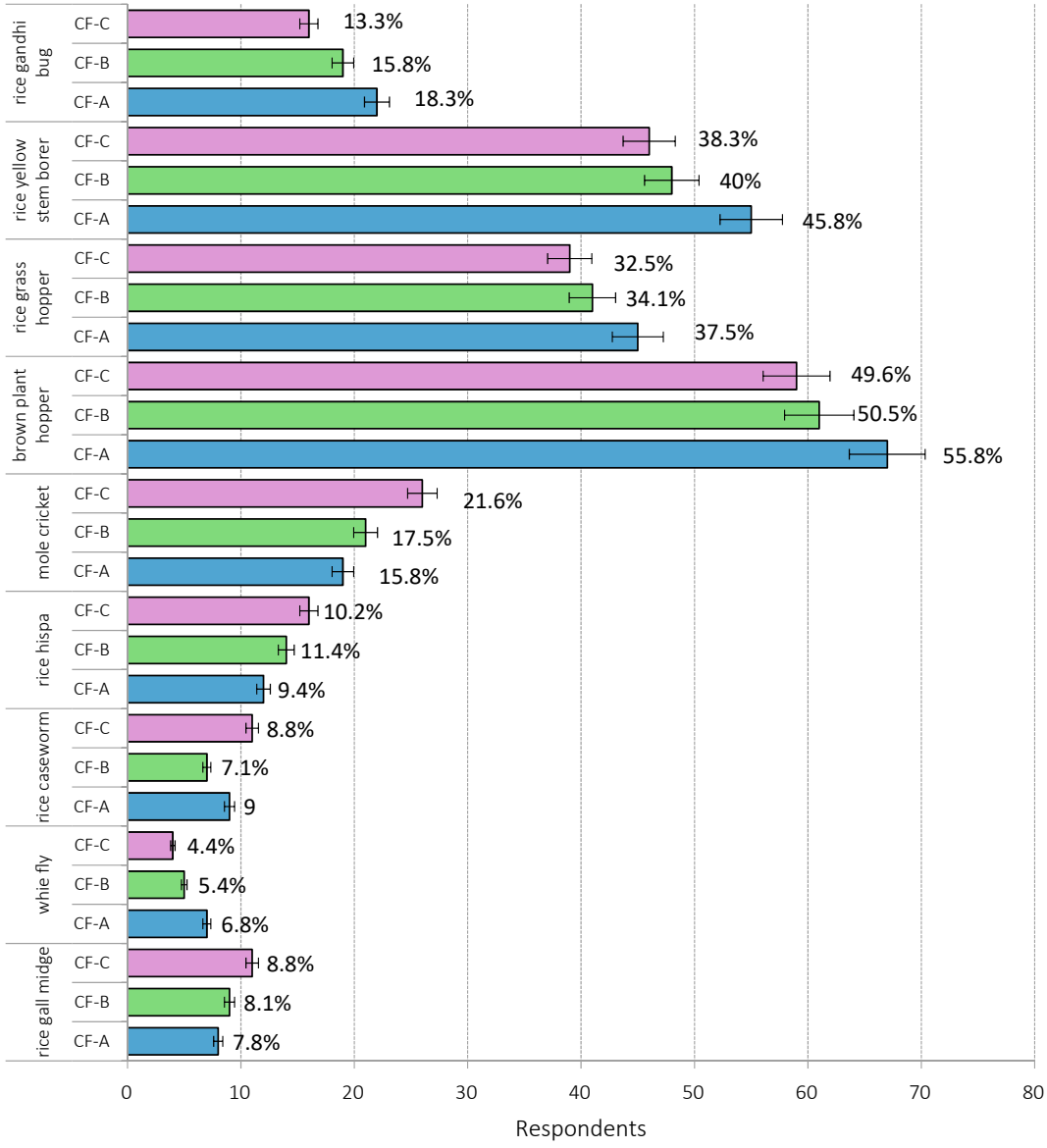

Fig. 20.13 Identification of the major insect pest in the locality by the farmers having a regular reading of newspapers with age groups

Identification of rice crop damage due to YSB larva was made successfully by 85% CF-A, 95% CF-B and 90% CF-C male group of farmers. In comparison, 75% of the CF-A group, 85% of the CF-B, and 75% of the CF-C female farmers had identified the rice crop damage due to YSB larva. On the other hand, identification of rice crop damage due to YSB larva was made successfully by 45% NCF-A, 37.5% NCF-B, and 35% NCF-C male farmers. In contrast, 30% of the CF-A group, 37.5% of the CF-B, and 27% of CF-C female farmers had identified the rice crop damage due to YSB larva (Fig. 20.18).

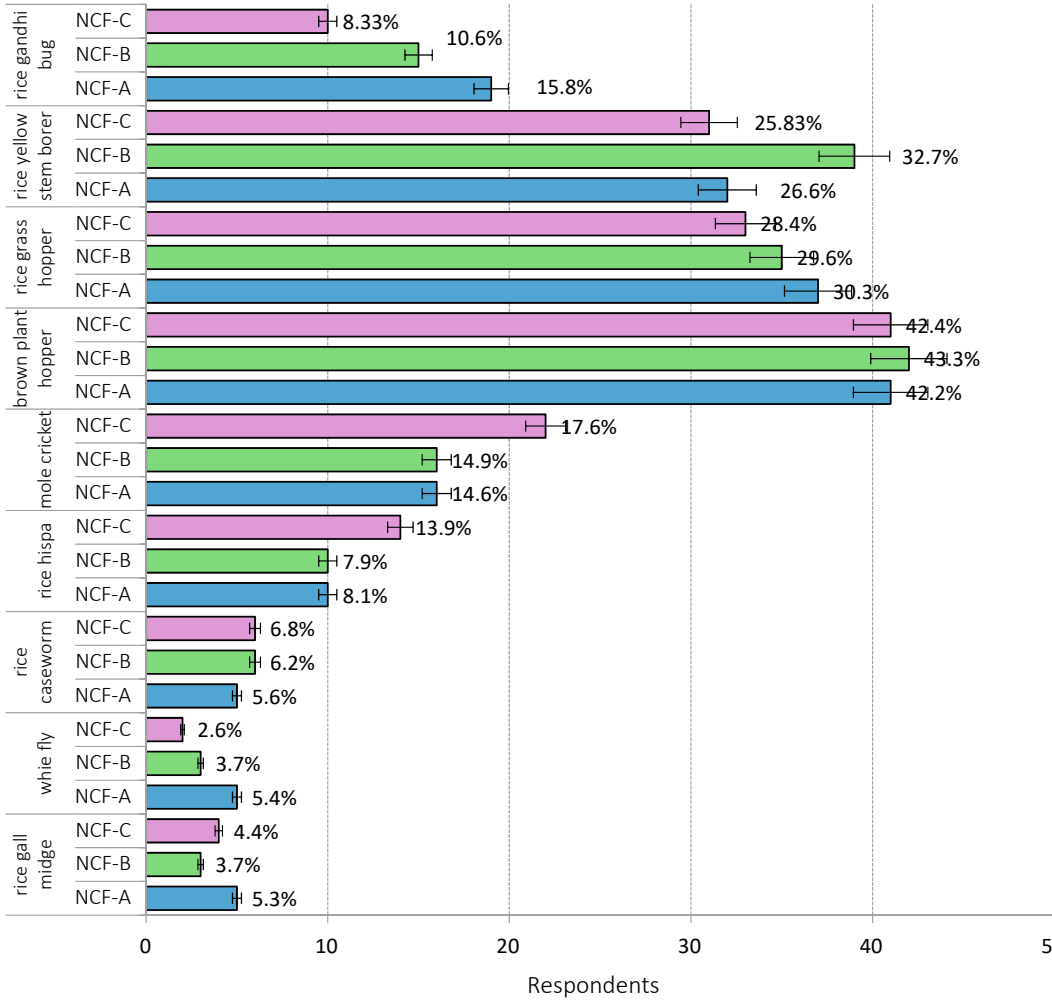

Fig. 20.14 Identification of the major insect pest in the locality by the farmers having irregular habits of reading newspapers with age groups

20.4 Policy Recommendations

Information by print media can effectively be used to address the needs and interests of the target rice growers, offer options and facilitate decision-making, encourage the adaptation of technology to a local situation, provide a more explicit treatment of sustainability concerning the technical content, and give information on the economic and financial implications of any recommended technologies, including the uncertainties and risks involved at the district Hooghly, West Bengal. Agricultural extension workers can use printed materials along with other communication channels to reinforce the learning process of farmers. Therefore, it is important to develop media policies that specifically target and design to meet the needs of agricultural communities, which will ultimately lead to the development of agro-sustainability, which farmers can guarantee by considering the local environment and favored language. The dissemination of agricultural information would be lucrative, catchy, and conversion motivated to a specific crop to ensure farmers' attraction to the news or this special attention to be given to the cover paper of the newspaper, length of the news, style of

Fig. 20.15 Yellow stem borer and consequences of damage **a** adult female yellow stem borer, **b** adult male yellow stem borer, **c** fifth instar larvae within paddy stem, **d** a solitary fifth instar larva, **e** entry point of larvae within paddy stem, **f** the dead heart (DH) with white panicle, **g** white head (WH) within paddy field, **h** farmers are identifying white heads (WH) from the field

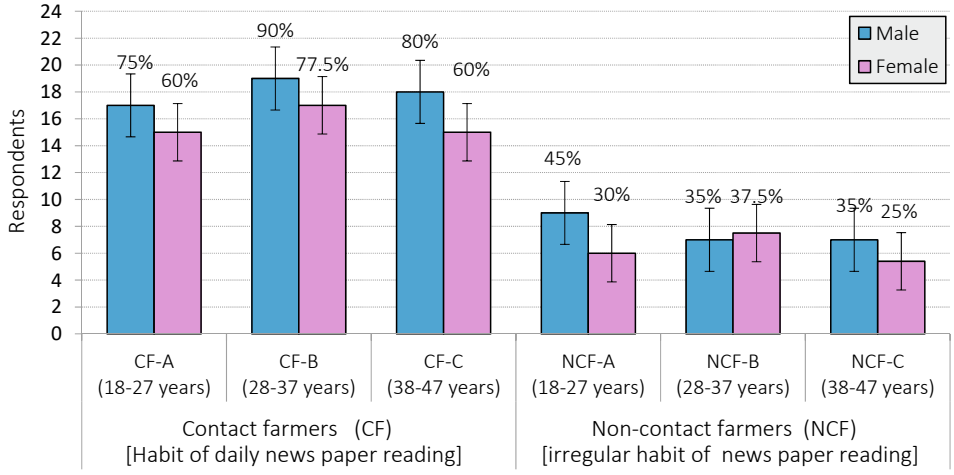

Fig. 20.16 Number of respondents who can correctly identify the adult of yellow stem borer moth depending on the habit of the newspaper reading

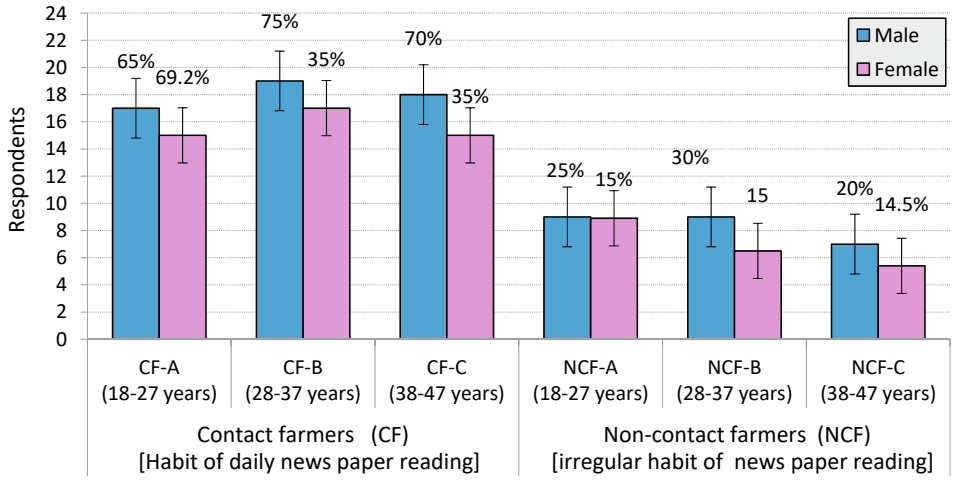

Fig. 20.17 Number of respondents who can correctly identify the larva of yellow stem borer moth depending on the habit of the newspaper reading

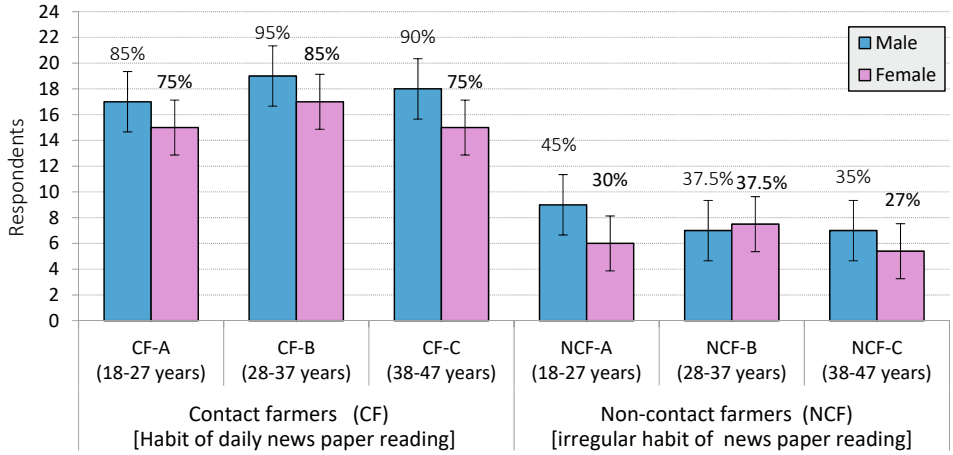

Fig. 20.18 Number of respondentswho can correctly identify the damage symptoms (DH and WH) of yellow stem borer moth depending on the habit of the newspaper reading

deliberation of the news, and lucidity of language. Further accessibility of the newspapers to the farmers is also to be addressed so they can get them easily.

20.5 Conclusion

In the current information age, communication services, particularly the print media, have been intended to sustain national development in an association for progress (Halakatti et al. 2010). Print media had premeditated to assist the community in improving its production capabilities and overall quality of life (Norton and Way 1990). Resourceful print media with attractive and gorgeous look call readers (Grist and Lever 1981). Damalas and Khan (2016) observed that it is a very difficult and complicated task to control insect pests with poor agricultural knowledge by most of the farmers. The necessity to improve agricultural output by adopting agricultural technologies using print media is very overriding in supporting agricultural invention (Shekara et al.

2016). The resource-poor farmers may need more funds to collect newspapers and therefore need to be encouraged and supported. Allahyari et al. (2017) have stated that the scarcity of information about smallholder farmers' knowledge of major crop pests is a prime limitation for effective pest management recommendations. Hashemi et al. (2009) stated that rice Gandhi bug infestation was followed by yellow stem borer in standing crops, while grain moths followed rice grain weevil to be major in storage. From an experiment, Okonya and Kroschel (2015) reported 64% and 60% of the respondents could correctly identify insect pests when they saw them in pictures. Only 48% correctly identified a yellow stem borer when by picture. Consequently, about lack of ability of farmers to identify major insect pests on their crops due to poor knowledge was also reported in Pakistan (Damalas and Khan 2016), sweet potato farmers in Tanzania (Nataraju and Perumal 1995), and beans farmers in Rwanda (Trutmaun et al. 1993). Meijer et al. (2015) reported that improving farmers' knowledge had taken paramount importance in the decision-making process for insect pest management on their farms. The above finding highlights the need for education to enable farmers to understand the biology and behavior of key insect pests and assist them in their effective pest management. In addition, a participatory research approach can increase farmers' knowledge of pests and enhance their pest control (Soniia and Christopher 2011). Educated farmers and those with many years of farming experience are expected to easily identify major pests as a reflection of their knowledge and experience (Taghdisi et al. 2018). It has been found that role of extension workers as a source of information on these matters could have been improved (Shekara 2016). Several-related information like banned pesticides, color symbols, read labeled instructions, and diagnosis symptoms are known from the print media (Smith and Haverkamp 1977).

Improved educational programs focused on pest control are observed in developing countries (Koul et al. 2004). Plant clinics designed to educate farmers about pest biology and appropriate controls have gained momentum in recent years. Accurate pest identification, reasonable estimates of potential damage, and determination of appropriate control have been given in the 'toolbox' of alternatives (CAST 2004). But its success mostly depends on the effective communication the newspapers may serve. Farmers' decisions about crop protection strategy may depend, among other factors, on their knowledge and experience with pests and the damage inflicted on cultivated plants, as well as their awareness of the existence of natural enemies (Segura et al. 2004). It is widely accepted that pest management can be more meaningful when farmers' perceptions and practices are considered (Segura et al. 2004). It is, therefore, very important to understand farmers' perceptions and knowledge of pest identity (Nurzaman et al. 2000). Thus, research on their knowledge, perceptions, and pest control practices may be useful in developing integrated pest management (IPM) programs that more farmers can quickly adopt as an alternative to broad-spectrum pesticide application.

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