



Environmental radio soap opera for rural Vietnam¹

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Abstract

“Chuyen Que Minh” (My Homeland), a soap opera series designed to communicate integrated pest management (IPM) principles and practices to rice farmers in Vietnam was launched in Vinh Long on 7 July 2004. The story was about a rice farming family in Vinh Long province, the daily chaos, problems, conflicts, and happiness they face. Interwoven in the drama are the IPM education contents, such as biological control, plant compensation, effects of pesticides on natural enemies, human health, and aquatic species. Broadcast over the Voice of Ho Chi Minh City (VOH) and Radio Vinh Long twice a week, the serial aired 105 episodes, of which 29 were devoted to encouraging farmers to reduce seed rate, fertilizer and pesticide use. The drama series was also broadcast in four other provincial radio stations. In support of the radio drama, the provincial extension established 14 radio clubs that met monthly to discuss both the storylines and educational content of previous episodes. The radio clubs helped build social and information networks in the villages. Evaluation results showed statistically significant changes in farmers’ beliefs and input practices in seed, nitrogenous fertilizer and insecticides before and after the broadcasts.

The success of this Rockefeller Foundation-funded pilot project prompted the development of the Environmental Radio Soap Opera which won a World Bank Development Marketplace Award 2005. Launched on World Environment Day 2006, the new radio soap opera called, “Que Minh Xanh Mai” (Forever Green My Homeland) started broadcasting twice a week since June 2006, through the Voice of Ho Ch Minh City www.voh.org.vn and Voice of Can Tho. “Que Minh Xanh Mai” aims to educate rice farmers on environmental conservation principles, methods to reduce environmental impacts from farm chemicals, straw burning and water use, so as to protect ecosystem services. Complimentary on-the-ground extension support has reinforced the drama serial through activities such as “meet the actors” day, local competitions, radio clubs, and printed materials.

Introduction

In most developing countries, radio is the principal medium for nonformal education. The attractiveness of radio stems from its ready availability and relative inexpensiveness in the light of the proliferation of technically advanced, highly portable, and economical-to-operate sets, and its ability to allow for personalized touch in the delivery of the message. Because of its affordable access and low production costs, radio is the medium that can fill the information needs of many farm families, especially those in inaccessible areas beyond the main road. Even in very poor communities, radio penetration is vast. There are more than 800 million radios in developing countries which translates to an average of one in ten people with access to radio (Bennett 2001).

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Besides extending the reach of the extension network, radio can play a wide range of roles in the development process. Their ability to penetrate remote rural areas and transcend the illiteracy barrier has made radio a primary and potent vehicle for bringing new ideas and knowledge, events in government and the outside world, and possibilities for improvement to the people in the countryside (Escalada 1985). It can convey information about government services and can act as a watchdog on the government (Schramm 1964). Literacy campaigns and mass mobilization drives have been successfully launched and sustained by a proper use of radio. New agricultural production ideas and techniques, nutrition and health care, opportunities for self-employment and other beneficial information have been brought effectively by radio to the consciousness of people (Hornik 1988; Manoff 1985; McAnany 1973). By bringing information to everyone even in hard-to-reach areas, radio gives a voice to the poor and marginalized people (Nakabugu, 2001).

In an extensive review of literature on radio's role in development, McAnany (1973) and Jamison and McAnany (1978) classify the major utilization schemes into open broadcasts, radio campaigns, regular listening groups, and telecommunication/two-way strategy. Within each scheme, the radio format may be drama, straight talk, features, documentaries, interviews, panel discussion, and magazine. A rural radio forum, for instance, can center on a 30-minute drama on a particular development topic such as environment, health and nutrition.

Parallel to the growing popularity in the use of radio dramas for development was the rise in entertainment-education. Entertainment-education (E-E) comes in many forms including serial dramas broadcast on TV and radio, interactive "talk" shows and folk media. Originally developed in Mexico in the mid-1970s, E-E has been used in 75 countries, including India, Nigeria, the Philippines, Turkey, Gambia, and Pakistan (Singhal & Rogers 1999). Notable examples of this approach have been soap operas in Latin America (telenovelas) and in India which aimed to convey information about family planning, sexual behavior, and health issues. Literacy and agricultural development have also been addressed in several entertainment education efforts.

Literature review

Radio in development

The potential of radio to motivate listeners to improve their behavior has been widely noted in the literature. However, the use of radio as a mass medium is not without limitations. Poor signals, limited reach in certain areas, top-down approach, limited airtime and inappropriate programming and uncertainty about radio's ability to effectively bring about changes in attitudes and practice had been raised (Nakabugu 2001). The seeming lack of evidence on radio's impact was noted to have been due to the use of self-reported action by respondents in some evaluation studies, rather than by independent observation. Nonetheless, there is some evidence about change spurred by radio in developing countries. For example, the Guatemalan "Basic Village Education" project carried out in two geographic areas of Guatemala in 1973 carried agricultural information which was precisely geared to the crop cycle schedule. There was evidence of high learning gains and adoption of innovations even among unorganized audiences (Academy for Educational Development 1977).

A comprehensive review of broadcast studies conducted in the Philippines in the late 70s (EDPITAF 1977) pointed out that radio alone does not directly cause change, innovations or adoption of new patterns of behavior and the amount of attitudinal and behavioral change is more marked where other forms of communication are utilized. Some reports have suggested that radio alone can bring about results (Ray 1978, Cooke & Romweber 1977). Other reports have examined the results of radio when used in conjunction with some form of interpersonal support

such as discussion or study groups, printed materials or contact with extension workers (Cerqueira *et al.* 1979, Bordenave 1977), and found them to be very efficient and effective.

Radio in education and communication

In the field of formal education, radio has been used extensively in developing countries. Nwaerodu and Thompson (1987) reported the use of educational radio in developing countries and cited some notable applications: Teaching mathematics to school children in Thailand (Galda 1984), and for teacher training and other curricula (Faulder 1984); literacy training and other programs in Mexico (Ginsburg & Arias-Goding 1984); health and education in Nicaragua (Cooke & Romweder 1977); changes in farming practices and to improve production in Guatemala (Ray 1978); nutrition education in the Philippines and Indonesia (Manoff 1985); and family planning and health in Sri Lanka (Academy for Educational Development 1980).

Evaluation of communication programs, projects and experiments have repeatedly shown that radio can teach and it can present new concepts and information (Galda & Searle 1980, White 1976, 1977, Leslie 1978, Jamison & McAnany, 1978, Byram, Kaute & Matenge 1980, Hall & Dodds 1977, McAnany 1976). In this regard, Sweeney and Parlato (1982) concluded that radio plays an effective educational role both as the sole medium or in conjunction with print and group support. Nicaragua's Radio Mathematics project reported that students who were taught through radio lessons achieved significantly higher scores in the final evaluation than those taught through regular, face-to-face, classroom instruction. Rural students, tested against rural control groups, benefited more than urban students tested against urban control groups (Galda & Searle 1980). The project evaluators hypothesized that radio lessons were particularly effective in raising the level of knowledge of those who knew least, which in this case were the rural students.

To promote integrated pest management (IPM) in the Philippines radio plugs and dramas were developed and broadcast with support from the Philippines-German Crop Protection Programme (Pfuhr 1988). A total of 48 radio plugs and 36 radio dramas were broadcast nationwide.

Entertainment-education

Entertainment-education (E-E) is the process of designing and implementing a program to both entertain and educate so as to increase audience members' knowledge, create favorable attitudes, shift norms and change behaviour (Singhal and Rogers 2002). Entertainment-education is not a theory but a strategy to maximize the reach and effectiveness of health messages through the combination of entertainment and education. Like social marketing and health promotion, E-E is concerned with social change at individual and community levels. Its focus is on how entertainment media such as soap operas, songs, and theater can be used to transmit information that can result in pro-social behavior. The use of entertainment for social purposes is an old concept. What is new is the systematic research and implementation of educational, pro-social messages in entertainment media.

E-E has been successfully used in public health such as HIV-AIDS prevention programs (Singhal and Rogers 2003), introducing oral dehydration therapy to reduce infant mortality (Abdulla 2004) and improving maternal health (Singhal *et al.*, 2004) and social behavioural changes, such as reducing domestic violence (Usdin *et al.*, 2000). In agriculture, "The Lawsons" (later called "Blue Hills") in Australia and "The Archers" in the United Kingdom were the earliest E-E programs developed (Singhal and Rogers 2004). The Lawsons, started broadcast in 1944 by the Australian Broadcasting Corporation, was designed to promote the diffusion of agricultural innovation and was on air for 27 years for more than 6,000 episodes. Similarly, the Archers which started broadcast by the British Broadcasting Corporation, was also developed to promote agriculture. After 15,000 episodes, the Archers now with more entertainment content are still on the air in BBC Radio 4 (<http://www.bbc.co.uk/radio4/archers/>). These two radio soap opera series had

made early contributions on agricultural development in Australia and the UK. Numerous other uses of E-E have been documented by Dagron (2001), Singhal and Rogers (1999, 2004).

Some studies have concluded that entertainment-education strategies succeeded in attracting large audiences, triggering interpersonal communication about issues and lessons from interventions, and in engaging and motivating individuals to change behavior and support changes among their peers. Rogers et al. (1999) concluded that a soap-opera radio broadcast in Tanzania played an important role in fertility changes. The broadcast increased listeners' sense of self-efficacy, ideal age at marriage of women, approval of contraceptive use, interspousal communication about family planning, and current practice of family planning. Similarly, Piotrow et al. (1992) report that the "Male Motivation Project" in Zimbabwe, which involved a radio drama intended to influence men's decisions in opting for different reproductive choices, led to changes in beliefs and attitudes. Likewise, Valente et al (1994) found that individuals who listened to a radio drama in the Gambia have better knowledge, attitudes and practices than the control group. The study also concluded that substantial changes in use of contraceptive methods existed after the broadcast. Both studies concluded that audiences incorporate language presented in the programming, talk to others, and introduce behavior changes.

In the media campaign that reduced rice farmers' insecticide use by 53% in Vietnam, the radio drama was the source of campaign information for 72% of surveyed farmers (Heong et al 1998). Earlier works have shown that farmers' pest management decisions are influenced more by perceptions (Waibel 1986, Heong and Escalada 1997). As mass media have proven to be the most rapid, efficient and effective means to modify beliefs and practices (Rogers 1995, Escalada, et al 1999), we developed two radio soap opera series using the E-E process and evaluated its effect on farmers' attitudes and practices in managing pests, fertilizers and seeds in Vinh Long province, Vietnam.

I. MY HOMELAND

The first soap opera, called "Chuyen Que Minh" (My Homeland), designed to communicate integrated pest management (IPM) principles and practices to rice farmers in the Mekong Basin and evaluate its impact as a means to enhance social change in agriculture, environmental protection, and health attitudes and practices.

Methods

Pilot site

The pilot site was Vinh Long province situated about 150 km south of Ho Chi Minh City (Table 1). Agriculture is the main economic activity with rice as the main crop supplemented by fruits and vegetables.

Table 1. Profile of Vinh Long province (Statistical Publishing House, 2005)

Total land area (ha)	147,500
Total population	1,036,100
Total rice area (ha) / year	207,000
Total rural population (no data for farmer households)	883,000
Annual rice production (tons)	933,200

Soap opera development

A multi stakeholder participatory process (Figure 1) was adopted in formative research, designing and developing the soap opera series, launching the program, implementing on-the-ground

support and monitoring progress. The stakeholders involved were from research, extension, radio stations, mass media and local government. To facilitate educational content accurately and seamlessly weaved into drama collaborating team comprising technical experts and scriptwriters called the “turtles and peacocks” (Bouman 2002) was established. An audience analysis of 605 randomly selected farmers in two districts in Vinh Long was initially conducted. In addition, a typical farm family was identified to serve as the model for the drama series and a “creative document” with descriptions of the family, home surroundings, common activities and a map was developed. The “turtles and peacocks” paid regular visits to this family, staying overnight at times to learn about activities, behaviors and common local words used to be able to develop the stories. Results of the audience analysis, creative document and experiences of the farm visits were used as resource materials in the drama design workshop where stakeholders developed the title of the soap opera, drama characters and story lines, frequency and broadcast schedule. The soap opera was named “Chuyen Que Minh” or Homeland Story. Two techniques from the Sabido soap opera development methodology (Singhal and Rogers 1999), the “character map” (Figure 1) and “values grid” (Figure 2) were used to develop the characters and educational messages to be incorporated into the drama scripts.

The soap opera was launched in Vinh Long town hall on 7 July 2004 by the Vice Minister for Agriculture and Rural Development. Between July 2004 and July 2005, a total of 104 episodes were broadcast over the Voice of Ho Chi Minh City and Voice of Vinh Long. The soap featured three sets of characters, those that were positive towards IPM practices, those that were negative and a transitional group. Drama conversations were developed between these three sets of characters, discussing the pros and cons of agricultural inputs. The main character was transitional who eventually changed beliefs and practices in the series.

Figure 1. Steps in the multi stakeholder process adopted in developing the soap opera

Steps	Purposes
Multi stakeholder meeting	To establish team with stakeholders from research, extension, broadcasting and local government
Audience analysis	To understand target audience for storyline and content development, broadcast scheduling
Baseline survey	To determine current status of audience attitudes and practices towards seed, fertilizer and pesticide use
Script writing workshop	To develop the drama series framework, character map, values grid and drama series title.
Message design workshop	To develop prototype print and broadcast materials to popularize the drama series
Pretesting of materials	To pretest the prototype materials, make adjustments
Materials mass production	To finalize the materials and mass produce
Launching	To select an auspicious day, invite dignitaries and hold a high profile launching ceremony
Materials distributions	To distribute, broadcast promotional materials widely
Monitoring management	Conducted 2 months after launching to determine materials distributions, drama listening so as to make adjustments to increase listener-ship
Post test survey	Conducted 12 months after the launch to determine the effects of the drama on audiences' behaviour and practices.
Review workshop	To review results of the project.

On-the-ground support

A message design workshop was held to develop the strategy, materials and activities to promote the drama series. A poster, a leaflet, advertising plugs for TV and radio, and a launching ceremony were also developed. All the support materials were pretested before they were

finalized and mass produced. In parallel with the drama broadcasts, three additional on-the-ground activities were organized. Radio clubs, where farmers gather together once a month to listen to previous episodes and discuss the stories and educational issues, were organized. Quiz competitions were organized weekly and a “meet the actors” day was held in the Vinh Long town hall.

Data collection

Three surveys were conducted to prepare the drama, monitor its progress and evaluate its effects: the audience analysis, the baseline or pre test survey and the post test survey. Details of the surveys are shown in Table 2. The pretest-posttest evaluation design was used to assess the effects of the drama as the drama broadcasts were far reaching and we were unable to maintain a control where the radio broadcasts had not reached. Prior to developing the questionnaire for each of these surveys, the authors conducted focus group discussions to gather materials to structure and frame the questionnaires. The questionnaires were prepared in English, translated into Vietnamese and pre tested before they are finalized. Each survey was conducted under direct supervision of three of our project partners. A group of final year agricultural science students from the local college was trained to use the questionnaire to collect the data. The completed questionnaires were then coded using the spreadsheet program, Excel and the data analyzed using SPSS version 11.5 (SPSS 2002).

Table 2. Details of the surveys conducted

Surveys	Dates conducted	Sample sizes
Audience analysis	January 2004	605
Pre test survey	May 2004	600
Post test survey	July 2005	609

Results

Audience analysis

The average age of the respondents was 47 years old with 6 to 7 years of education. A large proportion (93%) owned television, while about half had radio as well. News was the favorite program of respondents (44%), followed by agricultural programs (32%), music (12%) and drama (12%). Respondents generally spend about 3 hours a day listening to the radio and their preferred times of listening were evening (6 to 10 pm) (37%), early morning (4 to 7 am) (25%) and noon (12 – 1 pm) (22%). Agricultural radio programs were mainly informative presentations with highly technical content. No soap operas with agricultural content had been tried before in the area. Focus group discussions revealed that farmers found that radio programs are useful because they can listen to them while performing other chores. As to the types of radio dramas preferred, 53% said comedy, 28% crimes and 8% love stories.

Pre and post test surveys

Table 3 shows the profiles of the two samples of respondents in the pre and post test surveys. Between the samples there were small but significant differences in age, education, farming experience and farm sizes reported.

Table 3. Farmer respondents' profiles in pre and post test surveys

	Pretest	Posttest	F
Sample size	600	609	
Age in years	49.4	47.4	9.24 **
Education in years	6.2	7.1	29.4 **
Farm size cultivated in ha	0.77	0.85	5.1 *
Farming experience in years	25.3	24.3	7.2 **

Changes in seed, fertilizer and pest management practices

Table 4 shows changes in inputs reported by the pre and post test samples. Farmers reported about 31% reduction in insecticide sprays in the wet season from a mean of 1.89 to 1.30 sprays per season. Farmers also reported about 9% reduction in seed rates used, from a mean of 210.3 to 191.8 kg/ha and about 7% reduction in nitrogen used, from 95.6 to 88.6 kg/ha. There were also slight reductions in the use of potassium and phosphorus but were not significant. Yields reported were significantly different, mean of 4.75 to 5.12 t/ha in the pre and post test, respectively. More farmers in the posttest (30.3%) reported not using any insecticides at all than in the pretest (17.5%).

Table 4. Changes in farmers' input practices and yields between pre and post test surveys

Farmers' input practices	Pretest	Posttest	F
Seed rates (kg/ha)	210.3	191.8	32.2 **
Fertilizer (kg/ha) Nitrogen	95.6	88.6	16.0 **
Phosphorus	49.5	49.0	0.1 ns
Potassium	32.6	31.0	1.5 ns
Insecticide sprays (number in wet season)	1.89	1.30	5.7 **
Rice yields t/ha	4.75	5.12	42.5**
% farmers who did not spray insecticides	17.5	30.3	

Changes in attitudes

Table 5 shows the changes in farmers' beliefs between pre and post test surveys favoring their observed practices of reducing insecticides and nitrogen. Fewer farmers (63.5%) believed that "all insects are bad" in the post test than in the pre test (79.1%). There were also significantly reductions in farmers believing that insecticide sprays had to be applied in the first 40 days after sowing (from 79.8% to 47.6%) and that leaf damages would mean loss in yields (from 59.2% to 38.3%). On the other hand more farmers believe that pesticides can affect their health, from 61.6% to 86.1%. More farmers in the posttest believed that reducing seed rates from 150- 200 kg/ha to 80 – 100 kg/ha would result in the same yields and farmers also modified their beliefs that nitrogen would produce healthier crops.

Table 5. Changes in farmers' beliefs between pre and post test surveys (% farmers who believed in the statements)

Belief statements	Pretest	Posttest	z
All insects in rice fields are bad	79.1	63.5	4.2 **
Farmers should spray in the first 40 days after sowing	79.8	47.6	11.9 **
Leaf damages means yield loss	59.2	38.3	9.1 **
Pesticides can affect human health	61.6	86.1	13.6 **

Yields from fields using 80-100 kg/ha and 150-200 kg/ha are the same	44.2	50.2	3.8 **
More nitrogen inputs will produce healthier plants	88.2	81.0	4.5 **

Discussion

Our data showed that the entertainment-education soap opera, “Chuyen Que Minh”, contributed positively to changes in farmers’ beliefs and practices. This is evident from the statistically significant changes in farmers’ beliefs and input practices in seed, nitrogen fertilizer and insecticides between pre and post test surveys. The main weakness to this conclusion may arise from the pretest-posttest no control group experimental design that we used. Our attempt to maintain a control area was unsuccessful because of the extensive reach of the broadcast. This lack of control has prevented us from directly attributing the changes in beliefs and practices mainly to the soap opera. The 1500 letters expressing their interest in the soap opera content reinforced the reach and influence of the soap opera. Coupled with the focus group discussions the authors had had with farmers in Vinh Long and that there were no other initiative on resource management in the province, it was evident that the soap opera had contributed to the changes.

II. FOREVER GREEN MY HOMELAND

The success of this Rockefeller Foundation-funded pilot project prompted the development of the Environmental Radio Soap Opera which won a World Bank Development Marketplace Award 2005 in May. DM 2005 and continued as “Environmental Soap Opera for Rural Vietnam” .

The new Environmental Radio Soap Opera, “Que Minh Xanh Mai” (Forever Green My Homeland) was launched on June 2, 2006 in Hanoi by Vice Minister Dr Bui Ba Bong, World Bank Country Director, Mr Klaus Rohland and IRRI Director General, Dr Robert Zeigler to mark World Environment Day 2006. On June 5, 2006, another launching was carried out in Can Tho City. The new series started broadcasting twice a week from June 2006, through the Voice of Ho Ch Minh City www.voh.org.vn and Voice of Can Tho. In October 2006, a focus group discussion was conducted in the districts of Vinh Thanh and Phong Bien and this was followed by a monitoring management survey (MMS).

The new environmental radio soap opera aims to educate rice farmers in environmental conservation principles, methods to reduce environmental impacts from farm chemicals, straw burning and water use, so as to protect ecosystem services. It aims to modify farmers’ attitudes towards pesticides, fertilizers, straw burning, pollution, water saving, wildlife, soil health and natural biological control.

The 105 episodes of the soap opera are based on rural settings and feature the daily struggles, joys and loves in rural life. Environmental issues are carefully integrated into the conversations between characters. E-E principles and methodology are adopted in the drama development involving technical specialists and the creative writers. Following the launch, the drama series has been aired twice a week over the Voice of Ho Chi Minh City and Voice of Can Tho City. The drama series can also be followed through the website <http://www.voh.org.vn/>.

An audience analysis conducted last year showed that TV and radio remain the main sources of technical information in rural Vietnam. Communicating environmental education through drama will make learning fun, entertaining, persuasive and motivating.

Lessons Learned

- On-the-ground extension support is valuable in building and sustaining listenership. While the radio drama can inform and motivate, it lacks the face-to-face discussions, visuals and written descriptions that are essential to improve practice that the extension support can provide.
- The establishment of the technical-creative group linkage is vital in an EE project. The technical group ensures the technical accuracy of the drama content while the creative group looks after the entertainment value of the drama.
- A radio listeners club provides the group reinforcement which is a prerequisite to attitude and behavior change.

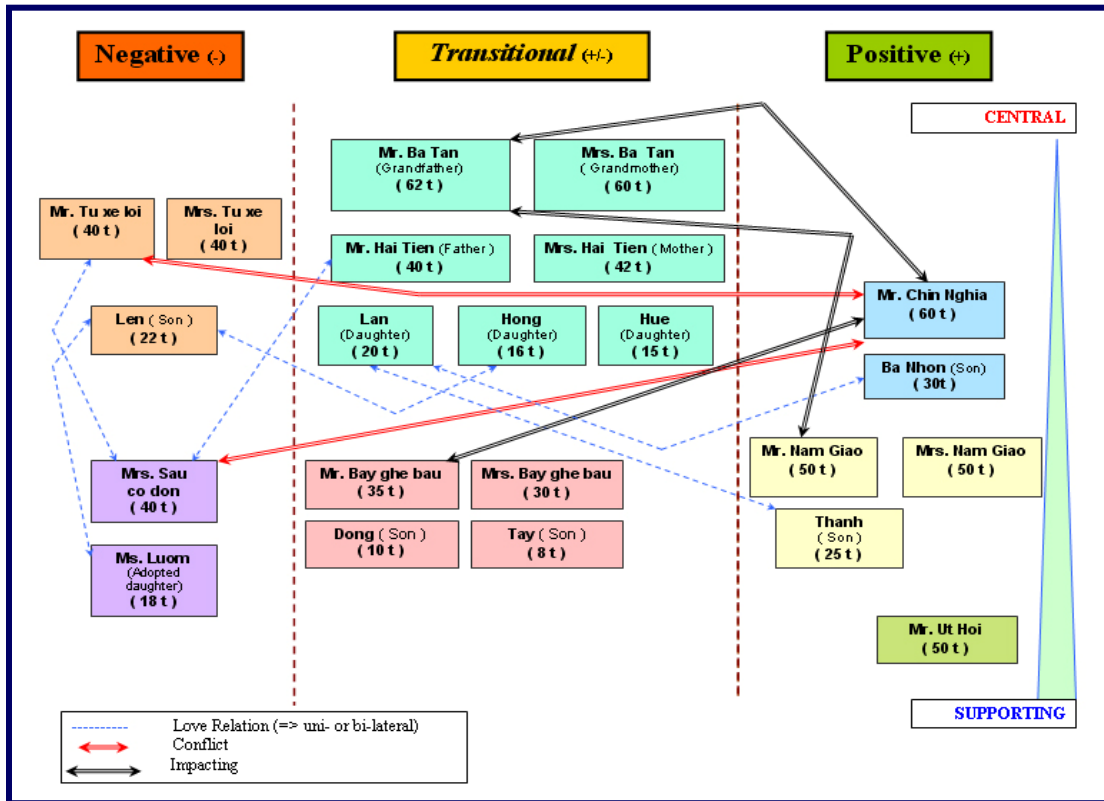
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Figure 1. Character Map



**Figure 2. Sample Values Grid
Used in developing a radio soap opera to
communicate some educational issues in biological control
to rice farmers in Vietnam.**

Educational issues	Positive values: It is good that -	Negative values: It is bad that -
Most of farmers are unable to recognize natural enemies in the field. These are important agents for natural control.	Farmers know that there are many organisms in rice fields feeding on pests that can keep the pest number from increasing. Examples of these are spiders, beetles, crickets and many tiny ones that lay eggs into the pest and growth in them, like parasites. The pests also die from diseases.	Farmers do not know that there are important organisms in the rice fields that eat pests. They think that all insects in rice crops are bad and harmful.
In the early crop season, many natural enemies arrive into the rice crop	Many of these good organisms come to the rice field early in the crop season and as the crop grows, they increase in numbers.	Farmers do not know that the good organisms arrive early in the crop season and increase in numbers as the crop grows.
Many early season pests, like the leaf folder, are attacked by parasites.	There are many types of good organisms, like the parasites of the leaf folder that lay eggs by injecting their stings into the leaf folder worm. These eggs hatch and feed inside the worm thus killing it.	Farmers do not know nor recognize parasites and the roles they play
The mirid bug <i>Cyrtorhinus</i> is an important egg predator of brown plant hopper eggs.	The brown plant hopper lays eggs by injecting them into the rice stem, but the green bug has a long proboscis that can suck the egg content and kill the egg, like using a straw to drink from a soda bottle.	Farmers think that the green bug is a pest because it uses its proboscis to probe into the rice crop.