MILK WITH SODA

A Minor Field Study on the Chemical Companies’ and Distributors’ Role in the Usage of Pesticides in the Rice Cultivation, Tarapoto, Peru

Tutor: Curt Scheutz

Author: Agneta Andersson
ABSTRACT

There are great problems of pesticide poisonings in the rural parts of the developing countries. Although these countries only use 25 percent of the world’s pesticide production they suffer from 99 percent of the deaths due to pesticide poisoning.

The study took place in Tarapoto, Peru, where immense quantities of pesticides are used in their extensive cultivations of rice. The highly toxic pesticides are applied with backpack sprayers without using any safeguard.

The objective of the study is to find out if the unsafe use of pesticides in Tarapoto is a result of insufficient information from the chemical companies and the distributors. It is also to study what effect the distributors’ relationship marketing has on the usage of pesticides. The purpose of the study is to help the farmers to get a deeper understanding about the problem by explaining the situation to them.

Four theories have been used as analytical tools in the study; corporate social responsibility, relationship marketing, buyer’s value chain and costumer value, and salespeople and their ethical behavior. The guidelines for personal protection and good labeling from the Food and Agricultural Organization of the United Nations have also been used as a basis for the empirical study.

A triangulation of data was use during the empirical studies and three types of respondents were interviewed; farmers, vendors and organizations and authorities. Participating observations were also made both in the field and in the stores.

The results of the empirical studies show that the main reason of the unsafe use of pesticides is not lack of information or unawareness. The etiquettes have to be approved by the Agrarian Health Department and all the interviewed farmers were literate and could therefore read the given information. All the interviewed farmers were also aware of how they really should manage the pesticides.

The primary source of information is however the vendors. They have a close relation to the farmers due their selling strategies of relationship marketing. The vendors recommend what pesticides the farmers should use, and how and when to use them. There is though a problem in the information from the vendors. The most recommended products are extremely or highly toxic and they are restricted; they are not allowed to use in rice. They also recommend the farmers to drink milk to avoid intoxication, which the etiquettes warn against. Regular safety instructions were only given by 50 percent of the interviewed vendors.

Keywords: pesticides, chemical companies, agrochemical distributors, agrostores, corporate social responsibility, relationship marketing, Tarapoto, Peru.
RESUMEN

Existen muchos problemas de intoxicación debido al uso de pesticidas en las zonas rurales de los países en desarrollo. Aunque únicamente un 25 por ciento de la producción mundial de pesticidas es utilizada en estos países, ellos sufren del 99 por ciento de las muertes causadas por pesticidas.

El estudio fue realizado en Tarapoto, Perú, donde se utilizan cantidades enormes de pesticidas en los cultivos de arroz. Los pesticidas, en frecuentes casos extremadamente tóxicos, se aplican con mochilas y sin ningún tipo de equipo de protección.

El objetivo del estudio es investigar si el uso inseguro de pesticidas, es resultado de la información insuficiente de parte de las compañías químicas y de los distribuidores. El objetivo es también estudiar cuál es la influencia de los vendedores sobre el uso de pesticidas. El propósito es ayudar a los agricultores de Tarapoto a tener una comprensión más profunda del problema.

Los resultados muestran que la razón principal por el uso inadecuado de pesticidas, no es ni la escasez de información, ni la inconsciencia de los riesgos. El nivel educativo, permite sin problema alguno a los agricultores leer las etiquetas en los envases; etiquetas previamente aprobadas por SENASA antes de salir al mercado. Existe por lo tanto una conciencia colectiva del uso adecuado de los pesticidas que no obstante, no se practica.

La fuente principal de información son sin embargo los vendedores. Ellos tienen una relación cercana con los agricultores, les recomiendan qué productos usar, cuándo y dónde. El problema recae en una recomendación de los productos más tóxicos e incluso restringidos para los cultivos de arroz. También se les recomienda beber leche para evitar intoxicaciones, a pesar de que es contraindicado en la etiquetas tomar leche en caso de intoxicación.

**Palabras clave:** pesticidas, compañías químicas, distribuidores de agroquímicos, agroveterinarios, responsabilidad social, marketing relacional, Tarapoto, Peru
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Agneta
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1. INTRODUCTION

This chapter’s objective is to give an introduction to the subject followed by the problem statement and the purpose of the study. Concepts used in the essay will be explained and the chapter finishes with an illustration of the study’s design.

1.1 Introduction to the Subject

The agricultural production has been greatly expanded in the developing tropical countries during the past decade. Together with the expansion of agriculture, the use of pesticides has also increased drastically; many of these are chemicals that are forbidden in the developed countries. Every year one to five million cases of pesticide poisoning are reported in the world, leading to several thousands of fatalities including children. The great part of these poisonings takes place in rural areas of developing countries, where the safeguards are usually inadequate or non-existent. Although developing countries only uses 25 percent of the world’s production of pesticides, they experience 99 percent of the deaths due to pesticide poisoning (Northoff, 2004).

One of the countries suffering from this is Peru, where 24 schoolchildren where killed and 18 intoxicated by eating breakfast contaminated with pesticides in Tauccamarca. A villager had mistaken plastic bags filled with the insecticide methyl parathion for a milk substitute. This happened in 1999 and is one of the most tragic in the country, but it is only one of many thousands of accidents occurring every year in Peru (RAAA, 2002).

Another Peruvian city with pesticide problems is Tarapoto. Tarapoto is one of the most important rice cities in Peru and since rice is one of the most sensitive crops a pesticide dependency has developed. Today the farmers do not have any choice; there is no harvest without applying pesticides. In general the farmers apply the highly toxic pesticides (class 1a and 1b) using backpack sprayers without any protection. The indiscriminate usage of pesticides brings a serious risk as much for the health as for the environment.

In general the pesticides are imported and formulated by national or multinational chemical companies. The pesticides are sent to the distributors, normally small shops with salespeople who visit the farmers to facilitate the acquisition of pesticides (RAAA, 2002).

The problem with the pesticides is complicated and needs to be attacked from many different directions and to be studied on different bias. Therefore this Minor Field Study, partly sponsored by the Swedish International Development Cooperation Agency (Sida), was implemented together with two biology students from Swedish University of Agricultural Sciences, SLU, as an interdisciplinary study. The study took place in Tarapoto, Peru, during two month (may-July 2005). This essay discusses the chemical companies and distributors’ responsibility and the role they play in the usage of pesticides. The focus of the study is on the information given to the rice farmers from the
chemical companies and the distributors as well as on the relationship marketing used by the distributors and how it affects the usage of pesticides. The problem with pesticides can not be explained from only this approach, since it is only one of many factors that have to be studied, but it can give a deeper understanding to it. The research partners Gun Lange and Britta Palm took blood, water and soil samples to map the effect by quantifying the concentrations of different pesticides. Unfortunately their results will not be presented in this essay since by the time it had to be handled in they were still working with the results of the analysis.

1.2 Statement of the Problem

Before starting the study I did not have much knowledge about the problem, but I did have a few hypotheses about the situation. The hypotheses became the base of this study and had to be verified or rejected. The hypotheses are as follow:

**H1.** The farmers have health problems with the pesticides and use them in an inadequate way.

**H2.** Many of the farmers are illiterate and can’t therefore read the information on the etiquettes on the pesticide packaging.

**H3.** The multinational chemical companies might use insufficient labeling that makes the information difficult to understand or the etiquettes do not show how toxic the pesticide really is.

**H4.** The reason why the farmers use the pesticides in an inadequate way is because they are not aware of the hazards of the pesticides.

**H5.** The distributors sell pesticides that are prohibited.

**H6.** The chemical companies do not take their responsibility in giving the right information to the users.

The main question of the study was developed from these hypotheses and has been the leading question and motivation during the collection of data.

- Is lack of information from the chemical companies and the distributors the reason why the farmers use the pesticides in an inadequate way?

But during the study another relevant question arose:

- In what way does the distributors’ relationship marketing affect the farmers’ way of using the pesticides?
1.3 Purpose of the Study

The major objective of this study is to help the farmers in Tarapoto to get a deeper understanding about their problem with pesticides. If there is understanding it is easier to improve the situation. This is performed by giving an explanation to the problem focusing on the farmers’ awareness and the role the chemical companies and distributors play in the introduction and application of pesticides. The objective is also to give this understanding to the reader and the author herself. This was going to be realized by confirming or denying the six hypotheses and to continue the study in the direction the answers would give.

The objective is not to give an absolute truth about the problem and the study was not made to be statistically correct, but to explain the problem the interviewed families have and how they have been affected. Hopefully the results can work as a help to farmers to evaluate their own situation. A shorter version of the essay with the relevant parts will therefore be translated into Spanish and sent to the persons who have been involved in the study. The complete version of the essay will however be sent to the National University of San Martín, Tarapoto, and to Sida.

1.4 Concepts

There are five important concepts that are used regularly in the essay. To avoid confusion, and to facilitate the reading, these concepts are explained below.

**Chemical companies** – These are the big multinational companies producing pesticides.

**Pesticides** – Chemical substances used to kill plagues and pests.

**Active ingredient** – The chemically active part of the pesticide.

**Agrostore, distributor, store, shop** – refer to small retail outlets where pesticides are sold directly to farmers

**Vendor, salespeople** – These words are used to talk generally about all the persons working in the agrostores, whether they are engineers, technicians or vendors without any higher education.
1.5 Design of the Study

This is a presentation of the study’s disposition to give the reader a structured overview of the essay’s different parts.

1. Introduction

Contains a presentation of the background, the problem statement, the purpose of the study and used concepts.

2. Theoretical Framework

Explains the theories used to analyze the empirical studies. The chapter also contains a summary of earlier researches on the subject.

3. Research Methodology

This chapter gives the reader a presentation of the methodology of the empirical study. Data collection and sources are presented and critically discussed.

4. Results of the Empirical Studies

The data collected during the study is presented showing the results from the interviews and participating-observations.

5. Analysis

The results from the empirical study will be discussed and analyzed together with the theoretical framework. The six hypotheses will also be evaluated.

6. Conclusion

The conclusions of the results and analysis will be presented and the problem statement answered.

7. Critical Review

This chapter contains the author’s critics on the study and a proposition for further research.
2. THEORETICAL FRAMEWORK

The theoretical framework has in this study served to facilitate the analyzing and the understanding of the empirical data. The theories were selected after the empirical study was finished since I didn’t know before beginning with the study which direction it would take. The empirical study was therefore not performed on the basis of earlier theories; the theories are rather selected on the basis of the results of the empirical study. The chapter starts with a presentation of the selected theories followed by FAO’s guidelines and earlier researches. The chapter finishes with a synthesis.

2.1 Theories

The theories selected for this study are treated separately as they are not coherent. In most cases one does not have anything to do with the previous or the following. Therefore the theories have to be read as separate information.

2.1.1 Corporate Social Responsibility

The concept Corporate Social Responsibility is a postulate for ethical behavior of business and a basis for good corporate citizenship. There are generally three different kinds of responsibilities (called the triple bottom line) companies should have in mind; advancing economically and at the same time being socially and environmentally responsible (Luetkenhorst, 2004). CSR has been defined in many different ways; the EU defines it as companies integrating “social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis (…) not only fulfilling legal expectations, but also going beyond compliance” (Luetkenhorst, 2004 and Löhman & Steinholtz, 2004). CSR is therefore the business’ contribution to sustainable development (Robinson in OECD, 2001). Working actively with CSR can also give many competition advantages since it gives the firm the opportunity to increase the involved parts’ loyalty (Löhman & Steinholtz, 2004).

Implementing CSR has been facilitated through common codes of conducts set by governments and standards set by the firms themselves (Robinson in OECD, 2001). However, CSR practice has so far mainly been the domain of large transnational companies although the application in small and medium enterprises (SMEs), including micro-business, is of a significant importance since they are the greatest contributors to the economy and employment. The SMEs makes up over 90 percent of the worlds enterprises and account for 50-60 percent of employment, especially in developing countries. The business environment in developing countries is generally divided into three types of SMEs:

- Enterprises that act as a subcontractor in international value chains, normally as suppliers to transnational companies. These companies usually need to fulfill certain standards of CSR depending on the transnational company’s requirements.
• Enterprises that independently service international markets. Such firms would adopt CSR according to domestic and international regulations.
• Enterprises that service national value chains or domestic markets. This is the biggest group of SMEs in developing countries. These enterprises usually adopt CSR to the extent domestic regulation, customer pressure or community concerns force the company to take action, but due to weak regulatory capacities and community organizations these pressures are generally low. (Luetkenhorst, 2004).

Finally, Luetkenhorst (2004) mention a few factors contributing to the low adoption of CSR in day-to-day business operations of SMEs;

• When times are economically difficult SMEs are forced to priorities short-term survival.
• They tend to have scarce managerial and financial resources to undertake activities beyond the concerns of survival and profitability.
• They tend to have little autonomy of action which would make their CSR initiatives more constrained than it would be for a large corporation.

2.1.2 Relationship Marketing

There doesn’t seem to be a clear definition of relationship marketing, but there is no doubt about what it involves. Relationship marketing is based on mutual trust, commitment and responsibility (Kavalli, Tzokas & Saren, 1999) and involves creating, maintaining and enhancing strong relationships with customers and other stakeholders (Kotler, 1999). Relationship marketing differs from traditional mass marketing since it doesn’t seek to increase the sales temporarily, but attempts to create loyalty and involvement by building a permanent bond with the customer. The ultimate goal is to increase sales in the long term (Takala & Uusitalo, 1996) and to deliver long term value to customers and to success in long term customer satisfaction (Kotler, 1995). Since the reason for using RM is to strengthen bonds and customer satisfaction and thereby also customer loyalty the company need to behave ethically. It’s not only the moral thing to do but also good business (Kavalli, Tzokas & Saren, 1999).

During a long time getting new customers was seen as more important then maintaining existent customers and a salesman who was good at this was considered dynamic. The interest today is however of keeping, taking care of and develop existing relations. The customer is today regarded as the company’s scarce resource (Gummesson, 1995).

Relationship marketing is often seen as more ethical than the traditional marketing since it implicates a close relation to the customer (Kavalli, Tzokas & Saren, 1999; Takala & Uusitalo, 1996; Gummesson, 1995). Even though relationship marketing has in itself an ethical base due to the close relationship between the company and the customer, salespeople often have the reputation of behaving unethically.
2.1.3 Salespeople and Their Ethical Behavior

Salespeople are notorious of being liars and are often criticized for being unethical, relating ethical sales behavior to societal norms such as honesty, fair play and full disclosure (Román and Munuera, 2005). There are several reasons for focusing on salespeople’s ethical behavior. Salespeople are often seen as occupying low status positions in the organization but they have at the same time a strong pressure to perform since they are primarily responsible for generating the firm’s revenues. Their performance is easy to measure and they are often evaluated on the basis of short term objectives (Wood, 1995; Román and Munuera, 2005). To constantly work under this short-term pressure to deliver may pressure them to act unethically which may not lead to long-term customer satisfaction (Wood, 1995).

“Ethical problems arise only when an individual interacts with other people. Ethical conflicts then occur when people perceive that their duties towards one group are inconsistent with their duties and responsibilities towards some other group, including oneself” (Kavalli, Tzokas and Saren, 1999, p. 575).

Román and Munuera talks about this problem as the role conflict-intersender. The role conflict-intersender involves conflicting expectations from two or more role partners and occurs when salespeople try to meet company expectations and customer demands. This problem is likely to be the most pervasive and intensely felt conflict experienced by salespeople. An unethical behavior is likely to arise from the pressure of trying to meet the two expectations.

2.1.4 Buyer Value Chain and Costumer Value

The value chain proposed by Michael Porter is a main tool to identify ways to create more customer value. A firm consists of a collection of activities, all parts of the value chain that are performed to design, produce, market, deliver and support its product. Every activity has to work constantly to make the product or service more valuable to the customer. To focus only on the product is not the primary mean of adding value since customer satisfaction also depends upon other stages of the value chain such as service, parts supplier and special characteristics as weight and size (Porter, 1985; Kotler, 1999). One way to increase the value to the product is by using relationship marketing. RM can be seen as a value carrier offering a greater net-value than the competitors.

Uniqueness does not lead to differentiation unless it’s valuable to the customer and to understand what is valuable to the customer the buyer’s value chain has to be studied. Understanding the value chains of commercial, industrial and institutional buyers is relatively easy since it’s similar to that of a firm. Understanding household’s value chain is more complicated but not less important. These value chains consist in a sequence of activities performed by a household and its members in which the product or service fits. The product is a purchased input to the buyer’s value chain and the chain shows in what
activity the product is used. A household’s chain reflects its members’ habits and needs and shows what is valuable to the buyer and how important the product is to him (Porter, 1985).

2.2 FAO’s Guidelines

The guidelines from the Food and Agriculture Organization of the United Nations have been an important framework throughout the whole study. They have served as guidelines in how the labeling should be done and how to protect yourself in tropical climate. They have shown what is right and what is wrong.

2.2.1 Guidelines for Personal Protection when Working with Pesticides in Tropical Climate

When pesticides are applied in agriculture there is always a need of protection, however, this usually bring difficulties in hot and humid conditions because of discomfort. The problem of wearing protective equipment in tropical countries is well recognized and commented. But there are certain measures which should always be undertaken and which are applicable in tropical climates. The first principle is to always read and follow the label recommendations on the pesticide container. Apart from the instructions the operator should also look for pictorial information which indicates the degree of hazard. Many countries follow international recommendations to use a colour band coding system to indicate the toxicity class of the formulation.

The second principle is to avoid contamination. If direct exposure of skin, nose, mouth or eyes can be avoided or minimised, the personal contamination can be greatly reduced. The most exposed part of the body is the skin and is therefore the part that needs the most protection. If any product falls on the skin or into the eyes, then this should be washed as soon as possible. Contaminated clothing must be removed and washed separately from the other clothing. The last principle of personal protection is good hygiene. If any contamination occurs it has to be removed as soon as possible. Operators should not eat, drink or smoke during work and should not touch their face with contaminated hands or gloves.

Work clothing must be considered as the first line of defence. The minimum requirement for all types of pesticide operations is lightweight clothing covering most of the body. In practice this includes a long-sleeve upper garment, a garment covering the lower body including the legs, footwear (boots or shoes) and, if spraying high crops, a hat. When pouring, mixing or loading pesticide formulations the wearing of protective gloves is advised. Since this operation usually occurs over short periods of time the mentioned

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1 Food and Agriculture Organization of the United Nations (1990) Rome
precaution can be taken in hot and humid conditions as easily as in other conditions. A simple face shield should also be worn to protect eyes and face during mixing and loading. It is recommended that footwear should be worn during pesticide operations and should be made of a material which can be easily washed and decontaminated. It is often impractical to wear boots or shoes when applying pesticides in water filled rice fields, but in this situation contamination from pesticides is low due to the high dilution by the water. Regular washing of the exposed feet and legs with clean water is recommended to further reduce possible contamination.

2.2.2 Guidelines on Good Labeling Practice for Pesticides

The guidelines on good labeling are intended for use by the industry and also by national regulatory personnel involved with the approval of labels. The guidelines contain an enormous quantity of information so only the general considerations will be presented here.

Labels are the principal, and sometimes the only, contact between the manufacturer/supplier and the user of the product. They are legal documents and convey essential safety information and use recommendations. To provide a successful label the essential message has to be as simple and direct as possible, if it is too complex or badly laid out the product may not be used correctly which may result in unnecessary health risks for the user.

Most pesticides are manufactured to be sold in several different countries and it is necessary with an accurate translation of product labels into many languages. In some cases, there may even be a need to have two or more languages on the same label. However, despite the number of language translations on a label, there still remain some users who are unable to read a label. For these users, pictograms which depict safe use and use of protective clothing during application are fundamental. It is of great importance that these pictograms are properly understood by the user.

The four principal ideals to adhere to in preparing a label are clarity, completeness, conformity and consistency. Clarity is achieved by avoiding complex or excessively technical explanations and by using a clear layout with a prominent display of key words, phrases and symbols, and pictograms. Completeness means that no important information or advice is omitted. Conformity is achieved by following existing regulations and guidelines, both national and regional/multinational. Consistency is assured by the standardization of label components, such as safety texts, so that label texts and layout of different labels will be as similar as regulatory requirements and user needs allow.

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2 Food and Agriculture Organization of the United Nations (1995)

The writer of the label has responsibility

1. To the user - who must be able to read and understand the label,
2. To the public and the environment - to protect both public health and the environment; and,
3. To the law - to follow pertinent regulations.

Lastly, labels should have physical durability. They should be resistant to the normal wear and tear encountered in transport, storage and use.

2.3 Theoretical Framework

The theories and guidelines presented above have served as a help to evaluate the results from the empirical studies. How they have been applied in the study is shown below.

**Corporate Social Responsibility** – The theories about CSR will not be used directly in the analysis but has served as an underlying model throughout the study since giving the right information to the customers has to do with business ethics. A study about the chemical companies and distributors ethical behavior would be impossible to make if there were no standards about how companies should act.

**Relationship Marketing** – The theories concerning RM have been used to evaluate the pesticide distributor’s selling strategies and the relations they have with the customers.

**Salespeople and Ethics** – A big part of the study has to do with the pesticide vendors’ behavior and their effect on the farmers. Therefore, these theories will be a help to evaluate the situation and the salespeople’s behavior.

**Buyer’s Value Chain and Customer Value** – In this study these theories has served to evaluate how important the pesticides are to the farmers in their lives. This knowledge will help to analyze the usage of pesticides and the distributors’ selected marketing strategies.

**FAO’s guidelines** – As the theories about CSR, these guidelines has played a key role during the whole study. To evaluate the usage and the labeling there has to be knowledge about what is right and what is not. Without these a proper evaluation could not have been done.
2.4 Earlier Researches

The problem with pesticides in Latin America is well known and there are several studies made on the subject. Four of these researches will be presented here and thereafter used in the analysis of the study. These researches give a general view of the problem and explain the situation. Unfortunately, none of the studies has got the same particular approach as this essay. Still, they all contain information that is important to make a good analyze of the empirical data.

2.4.1 Propuesta Participativa para el Fortalecimiento de Políticas y Marco Normativo sobre Plaguicidas Químicos en el Perú

This study performed by the two NGO’s La Red de Acción en Alternativas al uso de Agroquímicos (RAAAA) and VIDA- Instituto para la Protección del Medio Ambiente explains the general situation of pesticides in Peru and presents different international agreements on the subject as well as national laws.

The study verifies that there is a severe problem with pesticides in the country and that both the environment and the people are suffering from it. A survey made with 400 farmers in eight different parts of the country indicated that the farmers are aware of the danger of the fumigation with pesticides, despite this 53% of the respondents didn’t use any protection at all while working with pesticides. In the majority of the cases the farmer underestimates the problem. They think that the situation is a result of the lack of education on the specific hazards of the pesticides. The survey showed that 76.8 percent of the farmers had never participated in any kind of education about the risks.

2.4.2 Commercial Agriculture and Agrochemicals in Almolonga, Guatemala

Sonia I. Arbona made this study in Almolonga since the people there suffers from lots of different health problems as congenital malformations, cancer, anemia and respiratory infections, linked to exposure to pesticides. The article is a general view of the situation in Almolonga and there are some important and interesting findings that can be linked to this essay.

As in the previous study, the agricultural workers in Almolonga don’t practice safe use of pesticides. They don’t wear any protection and they are exposed to high concentrations of pesticides when they rinse pesticide containers and other equipment in the irrigation canals. The empty containers are thrown in the fields which continue exposing the farmer to pesticides. Some of the farmers she interviewed knew something about the potential negative effects of pesticides, but their awareness didn’t seem to have led them to practice safe use. The Almologueños themselves believed that they had developed immunity to the negative effects of pesticides.
The pesticide market in Almolonga is well represented by European and American companies which are holding periodic talks that introduce agrostore sales representatives and farmers to pesticides preparations and their proper use. But it is the salesperson from the agrostore that plays a key role in the introduction and application of pesticides, since he is the one who ultimately provides instructions and information about the product. The agrostores stock masks, gloves, boots and other types of protective clothing and the salespeople advise the customer to wear them; nevertheless this kind of gear is seldom bought or used. Training in pesticide precautions is minimal but some stores have wall posters illustrating the proper use and what to do in case of a poisoning.

2.4.3 Cultivating Crisis. The Human Costs of Pesticides in Latin America

This interdisciplinary study made by Douglas L. Murray integrates sociology, economics, ecology, political science and public health. The study is a work of ten years and contains international development strategies, pesticide problems and agrarian change in Latin America. He focuses on the human consequences for individual farmers and rural communities. Only a few of his findings will be presented here.

As found in Arbona’s study industry-sponsored seminars on the safe use of pesticides exist but despite this, protective gear is seldom or never used. Instead of searching for the reason, he goes one step further and discusses the problem with the general attitude of safe use.

“Much of the training of pesticide users focuses on the proper procedures for selecting, mixing, and applying pesticides, along with the appropriate personal protective measures and hygiene practices. The assumption is that once trained, workers will take greater precautions, such as relying on personal protective equipment and hygiene practices to reduce pesticide hazards.” (Murray, 1994, p. 127)

One question often asked is why the farmers keep exposing themselves to hazards even when they have been informed about the risks of pesticides. It is a very complex question and the answers are usually that personal protection often is uncomfortable, unaffordable or unavailable. Another explanation is that some users are simply less careful than others, no matter how much training one provides. Both explanations can in some instances be the case, but the latter could just as easily be a case of blaming the victim. Yet there are more powerful reasons why many workers fail to respond to the message of safe use. One is the lack of infrastructure such as available water for washing, for example, the hands and face before eating while fumigating. Another problem is that personal protective equipment doesn’t always provide adequate and consistent protection. This is partly because people rely on the wrong kind of protection. They might think that the respiratory system is most important to protect because of the noxious smell of pesticides forgetting to protect the skin from exposure. Respiratory protection, most often a handkerchief, is the most used protection in Central America.
2.4.4 Pesticide Use in Commercial Potato Production: Reflections on Research and Intervention Efforts towards Greater Ecosystems Health in Northern Ecuador

Yanggen, Crissman, Cole and Carpio, made this interdisciplinary study in Carchi, Ecuador, about the impacts of pesticide use. As in the other studies mentioned above a widespread ignorance of the symptoms of pesticide poisoning and little use of personal protective equipment among the agricultural workers was found. Only 20% of the farmers had received training on safe use of pesticides (partly from pesticide industry representatives). The most important source of usage information came from the farmers’ own experience and from reading the product labels, there is 90 percent literacy rate among adults in the area. However, the information from local retail outlets was unessential. About 75-90 percent claimed that they had never received any safety instructions or warnings about the hazards of the products from vendors.

As in Almolonga there is a belief among the farmers that repeated exposures to pesticides develop a resistance to their toxic effects in the body. To be able to handle pesticides without getting any symptoms of intoxications is seen as a sign of manliness.
3. RESEARCH METHODOLOGY

This chapter describes the research process of the study. It shows why certain methods were chosen and some of the problems the author had during the performance. The chapter finishes with a critical reflection on the methodology. Hopefully this chapter will contribute to the readers understanding of the research process and therefore also facilitate his/her own analysis of the study.

3.1 Research Process

At first the aim was to perform a quantitative study and using a survey with 100 farmers since quantitative data would have given a more general result. But after trying out the survey with six farmers it did not seem to be the right way to approach the problem. There was a need of deeper information that the survey could not give. So the method was changed and the study was carried out with qualitative data. After interviewing 28 persons I do feel that the result can be generalized and that many farmers can recognize their own situation in this material, as the results from the interviews are almost the same for everyone involved.

A triangulation of data sources has been used to get different perspectives and a deeper understanding to the problem. The use of multiple sources of data also helps to increase the quality and the validity of the study (Denscombe, 1998). To carry out this essay deep semi-structured interviews with rice farmers, a structured survey with salespeople and engineers from the agrostores, participating observations, un-structured interviews with persons from organizations and secondary sources has been utilized.

3.1.1 Establishing Contacts

To be able to perform this study lot of persons were required. The first step taken was to get information from organizations. They were contacted either by e-mail, by telephone or simply by visiting.

The day after we came to Tarapoto the rice farmers in Peru started a strike and built barricades on the roads to stop anyone to get in or out of the city. They protested against the low rice prices that make their income almost non-existent. This was a great opportunity for us to approach the farmers as many of them (several hundreds) were gathered at the barricades. The first visit was made together with a teacher, Max Pezo, from the National University in Tarapoto as he also was a rice farmer and knew many of the farmers at the barricades. We sat down in a circle of about 60 farmers presented ourselves, made a quick group interview with them all and took name and telephone number from all the farmers that were interested in helping us. A second visit was made to another barricade where more names were collected. We also attended at two committee meetings where matters as irrigation and cleaning of the fields where
discussed. These are obligatory meetings that takes place every two month and were also a very good place to introduce ourselves (although the majority already knew us from the barricades or the fields) and for interested farmers to approach us with questions and invitations to their fields.

The distributors were simply approached by visits to the agrostores where the personnel, and in many cases even the owner, were asked if they wanted to participate in the study.

3.1.2 Interviews

Interviews were made with three kinds of respondents; farmers, distributors and organizations and authorities to get different viewpoints of the problem. It also helped to verify or reject the statements made during the interviews, and to get a more objective attitude towards the involved parts. Before starting the interviews the person was told about the study and why he/ she were going to be interviewed. No one of the interviewed persons requested anonymity, but to protect their identity and interests their real names will not appear in the text. All interviews were performed in the respondents mother tongue, Spanish, without an interpreter. All the questions were adjusted to fit the person and the specific situation.

3.1.2.1 Rice Farmers

The selection of the farmers was made randomly. The farmers who seemed to be the most serious and had the most interest in participating were selected without concerns about the size of their land or how many years they had been working, since it is not important to the study. The only criterion was that they had their field in the district of Morales in Tarapoto. Since there are few women working in the rice fields the big majority of the interviews with the farmers and their employees were made with men.

The interviews with the farmers were made in two ways. I started with a survey at the barricades to get as much information as possible from as many persons as possible. I wanted to make the questions orally since I thought that it would give richer information. But the survey resulted quite insufficient, it took a relatively long time to do and the objects answered very shortly. In addition, although I tried to have it in private, there were a great audience commenting the questions and laughing at the answers, which of course affected the interviews and the answers. After the sixth interview we had to stop and leave the barricade since armed policemen came to break up the protests. In spite, the survey will be analyzed and used in this essay since they are not in total useless. The survey also worked out as test questions to see how they worked and were afterwards developed to fit the problem better. As the survey did not work out as planned the focus was turned to deep interviews instead.

Deep, semi-structured, interviews and conversations were made with seven families where one to four members participated, depending on how many worked in the rice
field. Some of their employees were also interviewed. A few interviews took place in their home but the majority of the interviews were performed on the field to get a more relaxing atmosphere and to have a more fluent conversation. To have the interviews in the field also contributed to that the farmers could show us how they actually work. There was a deep contact with the families and they were all visited regularly during the study period. The most fields were visited several times together with the farmer. Totally 14 persons were interviewed.

All the deep interviews were made together with the research partners Gun Lange and Britta Palm, but with separated questions. This gave a broader insight of the situation and it also facilitated the recording since tape recorders where not used during the interviews. The reason a recorder was not used is because it tend to make the respondent less comfortable and second because it was impossible to use it in the field walking around. Notes were however taken during the interviews.

It should be mentioned that only one of the interviewed farmers lives on the field today, the rest lives in the center of Morales.

### 3.1.2.2 Distributors

Two types of employees were interviewed from the distributors; salespeople and engineers/technicians. Just as the farmers they were picked randomly, the only criterion were that they had to sell pesticides for rice cultivation. A structured survey was made with nine persons, six men and three women. Six of the interviewed were engineers or technicians and three were vendors without a higher education. They were all structured, but varied a lot depending on the person. Some interviews did not take more than 15 minutes while others took more than an hour. In one interview all the employees of the agrostore wanted to participate and did so. All interviews were made in the agrostore but one that took place in the field with one of the engineers. The interviews with the salespersons were performed with people from seven different distributors, one person from each distributor except for the biggest with 2500 clients where two persons were interviewed.

All the interviews, but the one mentioned above, were made in private, i.e. they took place in a in a secluded area where it could be performed without disturbance. However, all interviews, but the first one, took place in the agrostore while the respondent was working and in many cases it was not possible to be completely alone with the person. Knowing that other people might be listening could in these cases have affected the answers.
3.1.2.3 Organizations and Authorities

Before going to Tarapoto, five visits to organizations and authorities that in some way work with pesticides and/or alternatives were made to give us more knowledge about Peru’s situation. All the organizations were very friendly and helpful, welcomed us with open arms and gave us all the information needed. The first visit took place in the International Center of Potatoes (CIP) where David Yanggen, who had made a similar study in Ecuador, gave us lots of advises and information. The other organizations visited are Red de Acción en Alternativas al uso de Agroquímicos (RAAA) and Proyecto Andino de Tecnologías Campesinas (PRATEC), both NGO’s that works with alternatives to pesticides. Two authorities were visited, one in Lima; Instituto Nacional de Investigación y Extensión Agraria (INIA) and one in Tarapoto; Servicio Nacional de Sanidad Agraria (SENASA. The Agrarian Health Department at the Ministry of Agriculture). These visits gave us a general insight to the pesticide problem in Peru and were a good start to the study since it gave us a deeper insight to the problem. They also contributed to get many contacts that supported our study.

3.1.3 Participating Observations and Visits to the Fields

Several visits were made to the farmers’ homes and the rice fields to see how they work with the pesticides, where they store them and what they do with the empty bottles. Many and long days were spent in rubber boots under the hot sun conversing with the farmers, spending time with their family and/ or workers and sometimes watching them work. Two of the visits were made during the application of pesticides. Three visits were also made with engineers from the agrostores. The very first visit was made with one of the engineers as we did not know much about cultivating rice. He showed how it grows, diseases, irrigation systems, explained the use of pesticides etc. This visit and interview was a good help to future interviews. The other two field trips were made with an engineer visiting clients to see how he worked.

Other participating – observations were made in the agrostores to see how the salespeople work and what kind of information they give to the buyer. These observations turned out to be rather inefficient since the strong smell of toxics gave me headaches and dizziness. It was impossible to stay long enough to make a good observation. Several and short observation were therefore made. Unfortunately they gave a poor result since they were too short to give the information needed.

3.1.4 Secondary Data

Earlier researches have been utilized to strengthen the findings from the primary sources. However, theses researches were not read until after the field study had been completed so they would not influence the results. Finding earlier researches on the subject were not easy, and only a few similar studies were found, but no one with this particular approach.
3.1.5 Data Reduction

Living in the study site for two months gives an incredible quantity of very important information. And the more information you get the more you want to know. When I left Tarapoto the curiosity was bigger than ever as lots of new questions had arose. If I could, all the information obtained would be presented here, but unfortunately it is too much. The data reduction has in this case been very important and difficult. I’ve gone through the information over and over again in my head to structure it and to sift out the things that has to be saved for another time. The data has been selected on the basis of the problem statement, everything ending up outside had to be reduced.

3.2 Reflections on the Methodology

Before going to Tarapoto I thought that the study would be very difficult to carry out and that the people wouldn’t want us poking around. Even worse being three young Swedish women. But they all welcomed us with opened arms, helped us and were actually very grateful for the study. And being a Swedish woman rather helped us approaching the farmers since they were almost as curious of us as we of them. As a lot of time were spent together with the farmers and some of the sellers a quite intense relation arose, and they became friends instead of simply respondents. For the study this became both positive and negative. The positive side is that they felt very relaxed and comfortable in our company and they were not afraid to talk. As mentioned earlier a whole day could be spent together with the farmer and his/her family. Many of them didn’t have any problem at all talking about personal problems, even things that didn’t relate to the study. If the relation and confidence would have been weaker they probably wouldn’t have given us as much information as they did.

The negative part of having a good relation with the respondents is that it is a higher risk of subjectivity. It is difficult to think that the person might not tell the truth and to analyze the results in an objective way. But the triangulation of data and the awareness of the problem have helped to get a broader perspective to the subject and perceive the data in a more objective way.

During the interviews we tried to be as neutral as possible, but it is not easy when the interview is made in another country where no one looks like you, but we tried to be as little sensational as possible. We also tried not to show our thoughts and feelings about the subject to avoid affecting the answers. It can be very difficult to see when people do not tell you the truth, but in most cases the farmers seemed to answer the questions very honestly. The salespeople however seemed to be more suspicious to the study and in some cases probably answered what they thought would be the best answer.

I said above that being a Swedish woman helped to approach the farmers, for the salespeople it had the reverse effect. The truth is that only nine vendors were interviewed because I didn’t dare to enter more agrostores. The environment on the street where all the agrostores are situated is actually very intimidating for a woman. It’s a man
dominated area where bunches of men are standing outside the stores whistling and calling for the young women passing by. The majority of these men are in addition vendors. In this case being a man would have helped a lot.
4. RESULTS OF THE EMPIRICAL STUDIES

To give a deeper understanding to the situation this chapter starts with a presentation of Peru, Tarapoto and pesticides in general. This background information will hopefully contribute to a more interesting further reading. Thereafter the results of the interviews will be presented. It starts with a short introduction to the general usage of pesticides and an explanation of the commerce of pesticides in Tarapoto and the distributors marketing strategies. This is followed by the results of the interviews with the farmers and the distributors. Mostly these results are presented together since they are almost impossible to separate because of the strong connection. It may seem a bit confusing to present it this way, but to understand one thing you have to understand the other.

Since the most questions were answered very similarly the results from both the farmers and the salespeople will be presented as general information considering the respondents. Differences however will be treated as separate information. The chapter finishes with two tables to give an overview of the results from the interviews.

4.1 Background Information of the Study

4.1.1 Peru and the city of Tarapoto

The Republic Peru, with 27 500 000 inhabitants, is often associated with mysterious ruins, friendly people, the Ands and magnificent views, but it is probably as often associated with poverty, corruption and terrorism. The social gulfs and the differences in income are extreme in Peru. The mayor part of the farming population and the huge amount of people living in the shantytowns live in extreme poverty. In year 2000 54 percent of the population was estimated to live of under 1,5 USD per day and child labor is common. Approx. 700 000 children work instead of going to school. The malnutrition is widespread and every four household lack drinking water. Common diseases are diarrhea, malaria and tuberculosis and every fourth child suffers from chronic undernourishment. The child mortality is the highest in Latin America.\(^3\)

The Peruvian economy is distinguished by its dependence of the mining industry, the fishing and the so-called informal (black) sector. About 40 percent of the country’s total production was estimated to be informal in the late 1990s. During the 1980s Peru suffered from one of the most severe economic crisis in Latin America, underlying the country’s big foreign debt. The crisis was stopped with drastic political tools and because of increased prices of raw material, increased demand from Asia and new investments in

\(^3\) Utrikespolitiska Institutet, www.landguiden.se
the mining and energy sector. The last years are distinguished by economic growth; over five percent in 2002 and four percent the following year.\textsuperscript{4}

Tarapoto is the largest city in the Department of San Martin in the north-eastern Peru and also the centre of commercial activities in the region. It is surrounded by rainforest and situated in the high Amazon jungle at approximately 350 meters above sea level and has a hot dry tropical climate. Tarapoto is divided into three districts (Tarapoto, Morales and La Banda de Shilcayo) and the study took place in Morales, three km north of the center of Tarapoto, where the mayor part of the rice fields are situated. The population of San Martin is approx. 760,000 with approx. 69,000 living in Tarapoto, 27,000 in Morales and 22,000 in La Banda de Shilcayo.\textsuperscript{5}

Previously the city was a stronghold of drug cartels and much of the civil unrest and terrorism was rooted in the area during the late 80’s and the early 90’s, which had negative effects on the development in the area. Today 52 percent of the population of San Martin are farmers and agriculture is the most important income. Crops as cotton, cacao, plantains, maize coffee, coca and tobacco are cultivated but the principal crops are palma aceitera (91 percent of Peru’s production), rice and cassava. The rice production is the third most important in the country\textsuperscript{6} and control 80 percent of the economy in Tarapoto (Andrés Sixto, SENASA).

### 4.1.2 Pesticides and Their Effects on Human Health and the Environment

“With the exception of antipersonnel chemicals such as war gases, pesticides are the only toxic chemicals that we deliberately release into the environment which, by definition, are intended to cause harm to something living.” (Keifer, 1997, p. xi)

In Peru the pesticides are divided into four groups; extremely toxic, highly toxic, moderately toxic and lightly toxic (authors translation). The toxicity depends on the active ingredient and its concentration. The group of chemicals known as pesticides is enormous and there is a significant gap in the knowledge about many of the effects on the human health. Acute toxicity of pesticides is more easily documented than the long term effects in workers or in the general population (Keifer, 1997). The main reason for intoxication of the farmers is direct exposure of the pesticides in the moment of application and for not using safe gear (Gomero, Aldana and Lizarraga, 2002). Some of the most common direct affects are nauseous, diarrhea, headaches and skin problems. Researches performed by the WHO have shown that poisoned workers for example suffered from significant reductions in normal neurological functions including verbal and visual attention and visual memory, nervous system damage, such as permanent reduction of feeling and strength in the hands, arms and most frequently in the legs and

\textsuperscript{4} Utrikespolitiska Institutet, www.landguiden.se
\textsuperscript{5} Instituto Nacional de Estadistica e Informática, www.inei.gob.pe
\textsuperscript{6} http://es.wikipedia.org
feet. Pesticides are also associated with cancer, birth defects, miscarriage and organ malfunctions (Murray, 1994).

The major problems in ecosystems are a result of the increasing use of pesticides. The contamination is produced by the persistent pesticides in the soil, by dispersion in the wind or by introduction to the water. This is a severe threat as much for the flora as for the fauna (Aldana, Gomero and Lizárraga, 2002). One problem with contamination of aquatic ecosystems, as rice fields, is that it has contributed to the increased resistance observed in mosquito population. This has resulted in the spread of malaria in Latin America, Asia and Africa (Pimtel & Pimtel, 1990).

### 4.1.3 History of the Rice Cultivation in Tarapoto

According to the interviewed farmers the rice cultivation in Morales started in the year 1986 when the irrigation systems where built from the river Cumbaza. Cumbaza is the main source of drinking water in Tarapoto and flows through Morales into the river Mayo and then into the river Huallaga which is a tributary river to the Amazon. Until then, the farmers had cultivated traditional crops as maize, cassava and plantains but the irrigation canal made it possible to cultivate other crops with a high water demand as rice. The traditional way of cultivation was abandoned and a monoculture of rice was introduced since the rice gave an opportunity to raise the farmer’s income. While they cultivated in the traditional way there were no need of using agrochemicals since there were no pests and the first years of rice cultivation gave good harvests without using any pesticides, but since all the fields are next to each other and because of the monoculture, the pests started to attack. Today great amounts of chemical pesticides are used and the farmers do not have any choice since the intense pest control has developed a dependency. Smallholder households dominate production in Morales and they sell the vast majority of the output. In the last years great strikes and road blockades have been carried out to protest against the low rice prices that make the rice cultivation unfavorable and the cost nearly as high as the income. Until today the protests have still not led to any solution of the problem.

### 4.2 “Everybody Uses Pesticides!”

On the barricades a group of approx. 60 farmers were asked if they use pesticides in their rice cultivations. The answer was unanimous: “Yes, everybody uses pesticides!” (Sí, todos usamos pesticidas!) No one could think of anyone who doesn’t apply it. The deeply interviewed farmers gave the same answer. Using pesticides is the only way of getting any harvest.

The same unanimity was presented on the question if anyone uses safeguard. “No, nobody uses safeguard”. This was also confirmed by the visits to the fields. In the fields not only the respondents were observed but all the farmers working on the fields around them.
4.2.1 Usage, Protection and Storage

Before the application the pesticides are mixed with water from the irrigation canals in a thin or a big bucket. The person who prepares the pesticides do not use any gloves and stirs with a stick constantly exposing the hand to the chemicals. He or she does not wear any mask or glasses to protect the eyes or respiratory system. They are also often barefooted. The person who prepares the pesticide usually does not apply it but serves the applying person with the pesticide, bringing it to him in buckets to refill the backpack sprayer. He runs over the fields barefooted spilling the product all over himself (picture 4.1 and 4.2). Residues are simply thrown on the ground or into the irrigation canal.

Farmers apply the pesticides using manual or motor driven backpack sprayers. The farmer sprays in front of himself walking through the pesticides cloud of fine particles. A father and his 15 year old son even sprayed on each other since they walked so closely. None of the respondents claimed to use protection. The usual way to protect themselves is by putting on a long sleeved shirt, trousers and a cap or a cloth on the head. If the pesticide is very strong they cover their mouth and nose with a piece of cloth or a t-shirt (picture 4.3). They always work barefooted in the water filled rice field since it is impossible to walk in the dirt with boots.

The water from the irrigation canals does not only serve as an inflow but also as the drain. This means that the canal is contaminated with all the pesticides used by the farmers. The last field in the canal is therefore receiving all the toxic waste from the others. No one of the respondents use this water for drinking but all to wash their hands and the equipment. Some use it to wash the clothes worn during the application and some even to wash themselves. This means washing with poisoned water. During one of the observed applications the farmers took a breakfast break during the application. Before starting to eat they rinsed their hands in the canal. Eating during application is absolutely not recommended. The drain ends up in the same river as the inflow comes from, river Cumbaza, meaning that the pesticides finally ends up in the very important Amazon river.

All over the fields thrown bottles and bags can be found. Some farmers claimed to throw them were they happened to stand when the bottle is empty, others said that they burn them, which is recommended. One family visited at the field burn the pesticides bottles in the open fire they cook over (see picture 4.4). Empty bottles are also put on a stick in the ground to mark different kinds of limits.

The interviewed farmers store the chemicals in different places, some at home and others in the field. One respondent had them in the kitchen, another under the bed and a third in the living room next to the television giving the house a strong smell of toxic thus the house was full of playing children (picture 4.5).

The question asked is of course; why do they not protect themselves from the toxic? As explained in the introduction this study focus on the information given to the farmers and what impact it has in the usage. Are they not aware of what they are doing? Could lack of
information be the reason? Before going into this the commerce of agrochemicals in Tarapoto has to be understood.

*Picture 4.1: Filling the backpack sprayers with the blend. Source: The author*
Picture 4.2: A mother and her son preparing the pesticides for application. The woman is wearing gloves because we gave her a pair. Usually she prepares without gloves dipping constantly her hands into the blend. Source: The author.

Picture 4.3: A 15 year old boy without any protection applying pesticides on his father’s field. When he put on the backpack sprayer after refilling the chemical poured down his neck. Source: The author.
Picture 4.4: Cooking over empty pesticide bottles. Source: The author

Picture 4.5: Storing backpack sprayers and pesticides at home in the living room. Source: Gun Lange.
4.3 The Pesticide Commerce in Tarapoto

The pesticide commerce in Tarapoto is dominated by small retailers called agroveterinarios. As the name indicates, these shops do not only sell products for the agriculture but also for breeding, such as animal food and vaccination. Since a big part of the population support themselves on agriculture these shops are abundant. In Tarapoto they are all situated in the same block, all next door to each other. It is impossible to miss this street because of the noxious smell of chemicals. The shops are also impossible to miss because of the colorful walls covered with painted advertising of the products and the chemical companies (picture 4.6). The shops are very different in size and they have from about 20 until 2500 costumers. The personnel consist in agronomists, technicians and salespeople without a higher education. Without any consideration to the size, the shop always needs to have at least one professional engineer to be registered, and thereby legal. The registration takes place at SENASA (The Agrarian Health Department at the Ministry of Agriculture) who once a month visit different agrostores to make sure that they are following the safety rules and do not sell prohibited or smuggled products from other Latin American countries. Apparently there are no problems with forbidden pesticides since the retailers do not sell them any more, but some sell modern pesticides in packaging of forbidden products so the customer thinks he buys a stronger product (Andrés Sixto, SENASA). No signs of prohibited pesticides were found during the field visits.

*Picture 4.6: Agrostores in Tarapoto, Source: The author*
4.3.1 The Distributors Marketing and Selling Strategies

Since the agrostores all sell the same products there is a hard competition and the only way to win clients is to have outstanding service and a good relationship with them. There is also a need to be seen and to pull the clients to the shops. The shops employ massive marketing, e.g. radio commercials, group talks, posters, flyers, lotteries and distribute things as t-shirts, caps and pens. But the most important strategy, that all the shops employ, is visits to the fields. These visits imply that an engineer or technician visit the farmer, takes a look at his/her field and give a solution to the problem, i.e. recommending different agrochemicals. They give the farmers a so called prescription so that they later on can go to the shop and buy the recommended products (it is not necessary to have a prescription to buy the pesticides; it’s just to remember the products). Three of the seven shops even bring the products to the client the same afternoon and two of the shops have got telephone service during opening hours to facilitate the acquisition of the pesticides. The opening hours are by the way very generous, generally Monday to Saturday, 7 am to 8 pm. These are also the working hours of the personnel, the salespeople work at least 60 hours per week. There are farmers who don’t work closely with an engineer, these costumers simply go to the shop and buy the product without having an engineer looking at the plague first.

The engineers and technicians develop a deep relation with the costumers they work with, making regular visits to check on the cultivation. If the engineer or technician makes a good work the farmer is loyal to him. The engineer or technician is responsible for the result. The farmer is looking for a product that can save his cultivation and that is also
what the engineer has to give him. If the engineer doesn’t help him he can easily change retailer. The salespeople are the primary source of information and are the ones who give the ultimate instructions for the use.

4.4 The Etiquettes: The Direct Information from the Chemical Companies

The first source of information studied was the etiquettes. This is information from the chemical companies that every costumer receives. All packaging has got standardized etiquettes that have to be approved by the Agrarian Health Department, SENASA, before putting it out to the market (Andrés Sixto, SENASA). To show the toxicity of the products the etiquette has a broad colored stripe with an enclosed text (picture 4.7 and appendix 2);

Red – Extremely Toxic – Poison
Yellow – Highly Toxic – Poison
Blue – Moderately Toxic – Caution
Green – Lightly Toxic – Precaution
(The author’s translation)

The red and some of the yellow stripes also wear a death’s head to strengthen the message. Apart from this the etiquettes have an uncomplicated and informative text about how to use the product; if it is restricted, for which kind of crops and plagues it’s suitable, the measurements, how to protect yourself and what to do in case of an intoxication. In addition to the text there are clear pictures showing the appropriate protection. All the interviewed farmers and farm workers had at least primary school education, and were all able to read the etiquettes. All of them also claimed to do so. They also said that they find the etiquettes easy to read and that they contain sufficient information. Despite this, only two of the farmers could tell us the order of the color stripes. Only three could say that the products with the red stripe are the most toxic.

Three of the interviewed farmers mentioned educative talks about risk management given by different chemical companies. Apart from these lectures the etiquettes is the only way the chemical companies give information directly to the costumer.

Thus they all can, and claimed to, read the etiquettes these are not the most important source of instructions. It is not the chemical companies but the distributors that have the direct contact with the farmer and are also the ones who are supposed to give the information needed to use the products in a proper way. The salespeople are the most important source of information for all the interviewed farmers. They tell them what to use, when and how. For this reason the chemical companies had to be put aside and the focus was turned towards the distributors.
4.5 The Most Used Products and the Reason

All interviewed farmers use an immense quantity of pesticides. The most common ones, according to the farmers, are products classed as extremely or highly toxic (class 1a and 1b in the WHO’s classification). The two most commonly used pesticides among the respondents (Tamaron and Thiodan) are based on the active ingredient methamidophos, a very strong substance labeled with the red stripe. Since the toxicity is so high and since the chemical sticks to the crop, these products are restricted, on their way to become prohibited. When a product is restricted it can only be used for a very few special crops and plagues. Rice is not one of them (Andrés Sixto, SENASA). According to the salespeople products with methamidophas are also the most sold for rice cultivation. Usually the respondents buy the products they are recommended by the vendor and according to the respondents from the agrostores products with methamidophos are also the most recommended. This means that the most recommended products are the most toxic that are not even permitted in the rice cultivation. Many of the other most recommended products are extremely or highly toxic as well.

Naturally there are different kinds of persons working in the pesticide business; some more responsible than others. Especially one of the interviewed engineers seemed to be much more concerned about the costumer’s safety then the others. He said that he gives away a mask to every client and that he always tries to sell the less toxic chemicals, but that it is difficult and a good way to loose clients. Another said:

“Lo importante es usar lo que mate la plaga, no es importante que tan peligroso es.”

The important thing is to use whatever kills the plague; it's not important how dangerous it is.

4.6 Health Problems and Awareness of the Problem among the Farmers

4.6.1 Awareness

All the farmers but one had at least once become ill after applying, symptoms as diarrhea, nauseous, vomiting, burned skin, dizziness, headaches fever and fainting were all common. One farmer told that his first child was born skinny and dry and her mouth burned on the inside. He thought it had occurred because his pregnant wife had washed clothes contaminated with a very strong pesticide. Some of the farmers also talked about friends that had died from cancer from all the exposure to toxics. One also thought that her bad vision could be an effect of the pesticides.

Talking about the complaints given by the chemicals all the farmers seemed to be aware of why it had happened. They all knew that it was because they had become intoxicated from not protecting themselves. And they thought, as mentioned, that their friends’ cancer had developed because of the exposure of pesticides. All of them seemed to
understand the danger of the products, knowing which ones are stronger than others since they know which ones make them ill. So if they know about it, why do they not use protection?

They were also aware of that pesticides contribute to environmental problems. All the deeply interviewed farmers talked about that it used to be much more animals around the fields and that it’s all so quiet now.

### 4.6.2 Risk Management

As shown above, the pesticides are used without a sufficient safeguard. The farmers gave several reasons why. No one of the deeply interviewed farmers claimed that the reason is lack of knowledge but mentioned other reasons. One is the hot climate that makes it impossible to wear sufficient protection. Although they apply early in the morning to avoid the heat of the day the weather does not allow them to cover themselves. E.g. glasses can’t be used since condense from the perspiration ends up inside the glasses, leaving the applier without vision. And if they use a mask they feel like they are suffocating. The son of a farmer explained it as follow;

“Es mejor respirar veneno que no respirar del todo.”

*It is better to breathe poison than to not breathe at all.*

Another reason according to the farmers is the macho ideal claiming that a real man does not need protection; the poison can’t get to him. If a farmer would use a full protection the others would probably laugh at him. A third, and maybe the most common reason, is that they are not used to wear it; it’s simply a lack of custom. There is also a belief that a person used to work with pesticides get immune of it. Another strong reason seemed to be that they already think that they protect themselves from the inside. All interviewed farmers drink milk with sugar, milk with soda or water with sugar before and after applying the toxics. This also seemed to be the most common thing to do to treat intoxication. There were lots of different explanations what effect it had on the body; e.g. it makes it more difficult for the toxic to get attached to the body, it cleans the blood, it helps to eliminate the toxic that enters through the pores, it cleans the kidneys, the liver, the lungs and the respiratory system, i.e. it prevents and cures an intoxication. No further investigation about the milk’s or sugar’s effect on intoxication was made, so no judgments can be done but the farmers seemed to belief that they don’t have anything to worry about as long as they drink their sweetened milk or water with sugar.

Drinking milk is also something the salespeople recommend, but none of them really knows why. They just know that it helps to avoid intoxication. Only one of the eight vendors said that he doesn’t recommend it since it can have an adverse effect and contribute to a graver intoxication. According to Andrés Sixto at SENASA milk has a positive effect on some of the products, but not on all. For some chemicals it has the reverse effect. On the most sold and recommended products with methamidophos it says
very clearly on the etiquette that ingestion of alcohol, oil and milk must be avoided to cure a intoxication. This means that the engineers and technicians recommend the farmers to protect themselves in a way that could be dangerous and that the state warns against.

Apart from the milk, some of the salespeople claim to talk to their costumers about protection, some don’t. The most mentioned reason why they don’t say anything about it is because they feel that the farmer don’t care about protection and often get molested and angry if they say anything. One of the interviewed vendors said:

“Ya no se dice nada porque se molestan, se enojan y dicen – ¿Piensas que es la primera vez que fumigo?”

*Now we don’t say anything because they get molested, angry and says – Do you think it’s the first time I fumigate?*

And if they upset the costumer he will likely change retailer and go to the one next door instead since all stores provide the same products.

About the half of the deeply interviewed farmers said that the salespeople do talk about protection but the majority talks about the vendors as persons who are only interested in selling as much as possible without any concerns of the costumers’ health.

### 4.6.3 Attitudes towards the Salespeople

Every farmer, but one, thought that the vendors are competent in what they do and that they give good instructions. They also seem to be able to answer the questions the farmers have, although it seems that asking questions is not a common thing to do. Although, the vendors seem to mention something about safety and the importance of being careful according to the farmers, they also talk about them as vendors that don’t care about anything but selling as much as possible. One farmer talk about them as a mafia that doesn’t leave anyone alone, knocking on every door.

### 4.7 Summary of the Empirical Results

The two following tables will facilitate the understanding of the empirical studies by giving an overview of the answers. First the farmer’s results will be presented and thereafter the vendors. The family members who has not been interviewed formally are not presented in this table since the interviews with them were informal conversations. The summary shows the great unanimity among the respondents.
<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
<th>Sometimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Pesticides in the cultivation</td>
<td>14</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Use safeguard</td>
<td>0</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Able to read</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Read the etiquettes</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Find the etiquettes easy to read</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Distributors the main source of information</td>
<td>13</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Buy products recommended by vendors</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Use products with methamidophos</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Drink milk/ water with sugar to avoid intoxication</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Main reason for not wearing protection is lack of knowledge</td>
<td>0</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Is aware of that pesticides are bad for the health</td>
<td>14</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Think the vendors are capable of selling pesticides</td>
<td>10</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Have felt ill after application</td>
<td>13</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Do the vendors talk about safety (this question was only asked during the nine deep interviews)</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 4.2: The results of the interviews with the vendors. Source: The author

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>YES</th>
<th>NO</th>
<th>Sometimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply relationship marketing by using engineers visiting the fields</td>
<td></td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Give usage instructions</td>
<td></td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Give safety instructions (apart from drinking milk)</td>
<td></td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Recommend to drink milk to avoid intoxication</td>
<td></td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sell products with methamidophos, a restricted chemical</td>
<td></td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Recommend products with methamidophos</td>
<td></td>
<td>7</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Provide safety equipment</td>
<td></td>
<td>2</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>
5. ANALYSIS OF THE RESULTS

This chapter begins with an analysis of the six hypotheses presented in the Introduction. Thereafter the rest of the results will be analyzed and discussed on the basis of the problem statement.

5.1 The Results of the Hypotheses

The hypotheses will be presented one by one in the order they were presented in the introduction. Every hypothesis is followed by a discussion about its correctness.

H1. The farmers have health problems with the pesticides and use them in an inadequate way.

There are no doubts that the farmers use the pesticides in a way that exposes both themselves and the environment with the chemicals. The pesticides are applied without any safe gear and the residues are thrown on the ground or into the irrigation canal. All the farmers but one said that they had suffered from symptoms of intoxication at least once. Also some of the family members had felt sick just standing by the field during the application. One farmer also told that his first daughter was born extremely skinny and with her mouth burned on the inside. He thought it had happened because his pregnant wife had wash clothing contaminated with a very toxic kind of pesticides. Many of the farmers also talked about people they knew that had died from cancer, probably from working with pesticides.

H2. Many of the farmers are illiterate and can’t therefore read the information on the etiquettes on the pesticide packaging.

All of the interviewed farmers are literate having at least primary school education and they all claimed to read the etiquettes. They all said that they find them easy to read and that they contain sufficient information. Of all the rice farmers we met during the study only a few of the elder seemed to be illiterate. This has, however, not been confirmed with any statistics.

H3. The multinational chemical companies might use insufficient labeling that makes the information difficult to understand or the etiquettes do not show how toxic the pesticide really is.

It is not the chemical companies that have the power to decide how to design the labeling since it has to be approved by SENASA (the Agrarian Health Department) before putting
the product out to the market. The labeling is standardized and all the products with the same active ingredient have to contain the same information. The text on the etiquettes is clear and contains the information needed for a safe use. For those who can’t read there are pictures showing how to use the product in an adequate way. The colored stripe on the front also indicates how dangerous the product is, the most dangerous products also wear a death’s head to intensify the message. According to FAO’s guidelines the labeling is designed in an adequate way.

**H4. The reason why the farmers use pesticides in an inadequate way is because they are not aware of the hazards of the pesticides.**

Also this hypothesis was proved to be wrong during the study. All of the respondents know that pesticides are bad both for the human health and for the environment. They know that the sickness after fumigation is a result of intoxication and they know that they really should wear protective safe gear. They are aware of that the great part of the fauna has disappeared since the rice cultivation, and thereby, the massive use of pesticides started. That the awareness naturally doesn’t lead to safe practice of pesticides were also found in the studies made by Arbona and RAAA.

**H5. The distributors sell pesticides that are prohibited.**

According to Andrés Sixto at SENASA there is no problem with prohibited products. They do not exist anymore. One problem however is that some distributors sell non-prohibited products in packaging with labels from forbidden products, like DDT. The buyer therefore thinks that he buys a stronger product than he really does. During the study there were no traces of that the farmers are using forbidden products. The big problem is therefore not prohibited products but the smuggling of cheaper pesticides from other countries, e.g. Ecuador.

**H6. The chemical companies do not take their responsibility in giving the right information to the users.**

This hypothesis can not be totally answered since the focus of the essay was changed during the study. When it was clear that the primary source of information is the distributors and not the chemical companies their responsibility was not studied further. Although, it can be said that the chemical companies do give the users the right information through the labeling and that they seem to take at least some responsibility through the educative talks they occasionally give to the farmers and vendors, according

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to some of the respondents. Apparently these talks are something the chemical companies hold all over Latin America according to Murray and Arbona.

As seen above only one (H1) of the six hypotheses seemed to be completely true in Tarapoto, the rest resulted to be false. After these hypotheses had been verified and rejected the study could take one direction more. This will be discussed below.

### 5.2 The Vendors Impact on the Usage of Pesticides

The pesticides are highly important products to the farmers and possess therefore a high position on the farmer’s value chain. Pesticides are actually one of the most important products to the farmer since they contribute to the family’s income. Without pesticides there is no rice. It’s not a product they can choose to live without. But there are many stores selling the same products and to increase the costumer value all the distributors practice relationship marketing which implies a close relation to the farmers.

The vendors are also the primary source of information and play a key role in the introduction of pesticides. This was also found in Arbona’s study in Guatemala. As seen in the previous chapter the vendors has a strong influence on the usage of pesticides, they recommend what to apply and how to use it. The farmers use some of the most toxic products in the market on their fields, e.g. pesticides with the active ingredient methamidophos that is restricted for rice cultivation. Products with methamidophos are also the most recommended by the vendors. This means that the vendors recommend the farmers to use products that are highly toxic and that shouldn’t even be used in their cultivations. These are products that are not even allowed to sell for application on rice.

Another recommendation from the vendors is to drink milk to avoid intoxication. This is one of the few recommendations the vendors give on how the farmers should protect themselves. It’s well known among the farmers and the vendors that milk in some way protects the body from intoxication. The problem is that on the methamidophos packaging it says clearly that milk mustn’t be drunk in case of intoxication. The vendors recommend the farmers to drink something that the labeling, and therefore also the chemical company and the state warn against. Having a professional telling you to drink milk might strengthen the belief in its effects.

#### 5.2.1 The Vendors and their Ethical Behavior

There are a few factors that have to be taken in consideration while analyzing the vendors’ ethical behavior, that in this case seem rather poor. This behavior can be analyzed on the basis of the theory about salespeople that was mentioned earlier. First of all, salespeople usually work under a strong pressure to perform since they are primarily responsible for generating the firm’s revenues. Their performance is easy to measure and they are often evaluated on the basis of short term objectives. The engineers and technicians has to recommend products with the capacity to help the farmers to kill the
plagues, if it doesn’t work or if anything goes wrong, the engineer or technician has the responsibility. He or she must therefore recommend products they know are efficient. If they recommend a less efficient product the farmer will likely complain and consider working with another engineer/ technician probably from one of the competitors.

The vendor therefore works under two kinds of pressures to perform, one from the shopkeeper and the other from the farmers. He must generate revenues and he must help the farmers. As one of the engineers said; recommending the soft pesticides is a good way of loosing clients. And loosing clients is what they mustn’t do. Another good way of loosing clients according to some of the vendors is to tell the farmers about how to use the products in a safe way. Some of the vendors complained that the farmers get molested and angry if the vendors tell them how to use the products in a safe way. At the same time, many of the farmers seemed to be disappointed with the vendors for not taking more responsibility for the safety.

As mentioned earlier small companies seldom practice CSR due to various reasons; one, and the most important in this case, is that when times are economically difficult the small firms usually are forced to prioritize short-term survival. And they also tend to have scarce managerial and financial resources to undertake activities beyond the concerns of survival and profitability. Peru is a country with great economically difficulties, about 50 percent of the population is living in poverty. Tarapoto is no exception. In addition the distributors work under strong competition as all the stores provide the same products and almost exactly the same services. Working actively with CSR is said to give many competition advantages since it gives the firm the opportunity to increase the costumers’ loyalty. But is it really that way in Tarapoto when the vendors claim that the best way of loosing clients is to recommend less toxic products and nag about safety gear? Or is it that the stores hasn’t done it in an adequate way or tried hard enough?

5.3 Is lack of information the reason?

The reality is never black and white, and not this time either. Knowing exactly why the farmers do not practice safe use is impossible, there are many factors contributing to it. As Murray said, it is not easy to follow the recommendations when the infrastructure doesn’t allow it. The only water near the fields comes from the irrigation canals and if the farmers wish to clean something the easiest way is to do it in the canals. And there are no safe places to throw away the empty bottles or bags like we have here in Sweden. The most mentioned reasons for not using any safety gear were the heat, laziness, machismo, and the bad habit. None of the farmers however complained that he/ she didn’t know how to practice safe use, on the contrary they all seemed very aware of the dangers and that they did handle the pesticides in a wrong way.

But all over the world we do things that we know are bad for our health. For example there are several millions of smokers around the world knowing the effects it has on your health, and despite this, they continuing smoking. The big difference though between a smoker and the rice farmers in Tarapoto is that the smoker has a choice. The smoker does
not have to buy cigarettes and he can quit whenever he wants to. The farmer has to buy
the pesticides, because if he doesn’t apply it there will be no income to feed the family
with. He has to continue applying although he doesn’t want to. The most farmers
complained about the use of pesticides saying that it was better when there was no need
to use them.

Some of the farmers told that they had participated in educative talks held by chemical
companies and the Agrarian Health Department about how to practice safe use. Despite
the knowledge obtained in these talks the farmers had not changed their way of managing
the pesticides. They continue exposing themselves to the toxics without using safe gear.
6. CONCLUSION

In the Introduction six hypotheses and two problem statements were presented. Their results were discussed in the Analysis and will in this chapter be answered concretely on the basis of the empirical studies and the theoretical framework.

- Only one of the six hypotheses was proved to be correct (H1), the rest had to be rejected during the study time. Yes, the farmers have problems with the pesticides and use them in an inadequate way, but it’s not because they are unaware of the danger and the adequate use or because the chemical companies withhold important information and design insufficient labeling that is difficult to understand. In addition all the respondents are literate and can read it. Commerce with prohibited pesticides isn’t a problem either in Tarapoto.

- The reason for the unsafe use of pesticides it’s not lack of information in the way I thought it would be; chemical companies giving insufficient information resulting in unaware farmers. The etiquettes are good and must be approved by the state before putting out to market. All the interviewed farmers were literate and can therefore understand the given information. They all claimed to read the etiquettes and they are aware of the dangers of the pesticides. Still they all practice unsafe use exposing themselves and the environment constantly to the chemicals. Although some of the farmers had attended to educative talks, held by either a chemical company or by the Agrarian Health Department, about correct risk management they didn’t practice safe use today.

- Still there is clearly a problem in the information from the distributors. The distributors are the primary source of information and the relation with the farmers is close and built on trust. Many of the farmers use what the engineers or technicians recommend them to use. The problem is that they recommend highly toxic products that are not allowed to use in the rice cultivation and they tell farmers to drink milk to cure intoxications, something the etiquettes of the most used substance, methamidophos, warn against. And only 50 percent of the interviewed vendors claimed to give safety instructions. Yet it is not clear if better information and propaganda from the distributors about protection and specific pesticide hazards really would change the farmers’ way of handling the pesticides. The farmers and farm workers have worked with these products for many years, and many of them claimed not to have any signs of impaired health. And there are many different factors contributing to the unsafe use of pesticides such as bad infrastructure, lack of custom, machismo, heat etc.
7. CRITICAL REVIEW

This finishing chapter contains critics made by the author on the study process and the obtained results. The chapter finishes with propositions to further research.

First of all I must say that the results of the study are not near from what I had expected. This is shown in the hypotheses that were rejected one by one, which actually says more about me than about the situation in Tarapoto.

The study has shown that the farmers are aware of the problems but despite this they don’t practice safe use of pesticides. Although the costumer is aware, is it really his responsibility? Isn’t there something more the chemical companies can do to improve the situation? It is clear that only awareness and knowledge about safe use doesn’t give a satisfactory result. Something more has to be done, but who has got the responsibility? The producers? The distributors? The state? The NGO’s? The costumers? It’s a complex question that I can’t answer.

Knowing what I know today, the study could have been done in a more efficient way. But since I did not know anything about the situation lot of time-consuming background information had to be collected before attacking the grain. But there are two things that I wished that I hade done differently. First, I would have spent more time with the salespeople to find out more about their work, attitudes and the relationship with the framers. What kind of instructions they really give to the farmers and how they act if they notice that the farmer is for example throwing the bottles on the ground or cook over them. Do the vendors correct the farmers when it’s obvious that they putting themselves and others in a risk? Unfortunately, I do not have sufficient information to answer that today. Secondly, I might have been quite naïve sending around a list where the interested framers could write down their names. In this way I might have done it more difficult to the illiterate farmers to show their interest. But in that particular situation it felt as if it was the most efficient way of getting the farmers’ contact information.

As shown in the results from the empirical studies almost all the respondents had the same answers. Of course this made the conclusion easier to make, but at the same time it brings up more questions. Is the reality really that unanimous or did the respondents feel any pressure to answer the way they did? Did I or the questions influence them to answer in that particular way? I think that some of the farmers and vendors felt these pressures. I believe as since they know what is right and what is wrong some of the respondents wanted to give the impression of doing right. Despite a slight distortion of reality I believe that it didn’t have a significant effect on the results since the interviews has been analyzed carefully considering this problem. The conclusions have also been discussed along the way with my research partners to see if they had got the same impressions. In some cases the reality distortion has been a help in the interviews, for example when the question was “Where do you store the recipients?” some farmers answered “In a safe place far away from the children”. What this answer shows is perhaps not so much where
they really store the pesticides but rather that they are aware of where they should be stored.

This study took place during two month, it might seem like a long time but it’s not. A study like this would need much more time to get all the important answers. While I was writing this essay lots of new questions arose that can’t be answered by just writing or telephoning the respondents. To get the answers I would need to go back. Getting away from the study site gives you another perspective of the collected data which leads to more questions. There are many things I would like to study much deeper than I had time to do during the study time. Therefore this essay does not feel totally complete today. The things I would like to explore further are presented below.

7.1 Further research

As I have mentioned several times there are lots of things I would like to study further to get a more complete view of the situation.

First of all it would be very interesting to focus on the chemical companies, which couldn’t be done this time because of the short study period. It would have been very interesting to know how they work with CSR. I would also like to know how often they give the educative talks and to whom? If they have any ethical requirements on the distributors? What they think about the unsafe use of their products? If they are aware of the information given to the farmers from the vendors i.e. that they recommend products with methamidophos and to drink milk? And finally, how does the commerce between the chemical companies and the distributors work?

As mentioned it would also be very interesting to give the vendors even more attention. Which kind of information do they really give to the farmers? In this study most of the time was spent with farmers, and as a result, more farmers then vendors were interviewed. It would be very interesting to spend much more time with the vendors and study how they interact with the farmers, how the both parts act, and what kind of information the vendors really give to their costumers. Why does only one of the vendors know that milk shouldn’t be drunk to cure intoxication? How can something that apparently is incorrect be so widespread among professionals?

The vendors also could be studied from another viewpoint; how are they really feeling? How do they feel about not giving safety instructions to the farmers? Do they have any signs of impaired health? How high are their levels of chemicals in the blood?

The last thing I really would like to know is if better education, information and nagging about protecting really would make any difference. If a better knowledge about the long-term hazards would make them work differently or would the farmers keep on working as before?
7. REFERENCES

7.1 Literature


7.2 Articles


7.3 Other Sources


Food and Agriculture Organization of the United Nations (1990) *Guidelines for personal protection when working with pesticides in tropical climates.* Rome

Instituto Nacional de Estadística e Informática, [www.inei.gob.pe](http://www.inei.gob.pe)


Utrikespolitiska institutet, [www.landguiden.se](http://www.landguiden.se)

Wikipedia, http://es.wikipedia.org/wiki/Regi%C3%B3n_San_Mart%C3%ADn

7.4 Interviews

7.4.1 Farmers

Survey

Man, 40 years old. At the barricade, 050526, Morales

Man, 65 years old. At the barricade, 050526, Morales

Man, 41 years old. At the barricade, 050526, Morales

Man, 38 years old. At the barricade, 050526, Morales

Man, 40 years old. At the barricade, 050526, Morales

Man, 43 years old. At the barricade, 050526, Morales

Deep Interviews

Man, 31 years old. At his home. 050601, Morales

Man, 35 years old. At the field, 050602, Morales

Man, 33 years old. At the field, 050602, Morales
Man, 57 years old. At the field, 050610, Morales (His 28 year old son also participated in the interview)
Man, 42 years old. At his home, 050611, Morales (Conversation about the problem were also made with his 20 year old daughter)

Woman, 44 years old. At her home, 050612, Morales (Conversations about the problem were made with her two sons, 24 and 21 years old, and one daughter, 19 years old)

Man, 74 years old. At the field, 050616, Morales

Man, 33 years old. At the field, 050616

7.4.2 Vendors

Agronomist, man 31 years old. At the field, 050601, Morales
Agronomist, man, 42 years old. In the store, 050622, Tarapoto
Technician, woman, 32 years old. In the store, 050622, Tarapoto
Technician, man, 30 years old. In the store, 050708, Tarapoto
Agronomist, man, 44 years old. In the store, 050708, Tarapoto
Technician, man, 24 years old. In the store, 050709, Tarapoto
Technician, woman, 26 years old. In the store, 050712, Tarapoto
Vendor, woman, 29 years old. In the store, 050712, Tarapoto

7.4.3 Organizations and Authorities

David Yanggen, Centro Internacional de Papas, Lima, 050429
Andrés Sixto, SENASA, Tarapoto, 050712.
APPENDIX 1: Interview Guides

Encuesta para agricultores de arroz

Edad_______  Sexo________  Grado de instrucción____________________

¿Cuántos años se dedica a la producción de arroz?________

1. ¿Usa Usted pesticidas en sus cultivos?

2. ¿Cuál usa? (nombre comercial)

3. ¿Por qué usa este tipo y no otro?

4. ¿Cómo supo del producto?

5. ¿Dónde compra normalmente el producto?

6. ¿Le parece que los vendedores tienen la capacidad de vender pesticidas? ¿Por qué?

7. ¿Los vendedores conocen bien los productos?

8. ¿Pueden responder bien a las preguntas sobre los pesticidas?

9. ¿Quién le da a Ud. las instrucciones para el uso?

10. Ha participado en alguna capacitación del uso de agroquímicos?

11. Qué tipo de información dan los ingenieros y vendedores de los agroquímicos? Recomiendan equipo de protección?

12. ¿Lee Ud. las instrucciones que vienen en los frascos?
   a. Si NO, ¿por qué no?
   b. Si las lee, ¿qué le parecen?

¿Son fáciles o difíciles de entender?

¿Son suficientes?
13. ¿Usa equipo de protección?
   a. Si NO, ¿por qué no lo usa?
   b. Si lo usa, ¿Cómo se protege?

14. Después de la aplicación, ¿qué actividad realiza?
   - se baña con agua y jabón todo el cuerpo______
   - se cambia de ropa________
   - se lava la ropa separada a la ropa de la casa______

15. ¿Conoce el significado del color de la etiqueta de los frascos (rojo, amarillo, verde, azul)?

16. ¿Sabe que color tiene las etiquetas de los pesticidas que usa? ¿Cuáles son?

17. ¿En qué lugar prepara los pesticidas?

18. ¿Sigue las instrucciones de mezcla que vienen en el frasco?
   a. Si NO, ¿por qué no?

19. ¿Dónde guarda los pesticidas?

20. ¿Qué hace con los residuos y los frascos vacíos? ¿Reutiliza los frascos? Si los reutiliza, ¿para qué los usa?

21. ¿Se ha sentido mal alguna vez después de aplicar los pesticidas?

22. Si se ha sentido mal, ¿por qué cree que ha pasado?

23. ¿Qué síntomas le dio?

24. ¿Qué hace cuando se siente mal?
Translation into English

Questionnaire for rice farmers

Age________________  Education__________________________
Time cultivating rice?__________________________

1. Do you use pesticides in your cultivation?
2. Which ones do you use?
3. Why do you use these products?
4. How did you know about the product?
5. Where do you buy the pesticides?
6. Do you think the salespeople have the capacity of selling pesticides? Why?
7. Do the salespeople know about the products?
8. Can they respond the questions you have?
9. Who gives you the instructions for the use?
10. Have you participated in any education about the pesticide management?
11. What kind of information do the engineers and salespeople give you? Do they recommend any safeguard?
12. Do you read the instructions on the packaging?
   a. If NO, why not?
   b. If YES, what do you think about them? Are they easy or difficult to understand? Are they sufficient?
13. Do you use a safeguard?
   a. If NO, why not?
   b. If YES, how do you protect yourself?
14. Alter applying the pesticides, what kind of action do you perform?
   - Wash the whole body with water and soap?
   - Change of clothes?
   - Wash the used clothes separate from the other clothes used at home?
15. Do you know the significance of the different colored strips on the packaging?

16. Where do you prepare the pesticides?

17. Do you follow the instructions on the packaging?
   a. If NO, why not?

18. Where do you store the pesticides?

19. What do you do with the leftovers and the empty packaging? Do you reuse them?
   If YES, for what?

20. Have you ever felt sick after applying pesticides?

21. Why do you think it happened?

22. What symptoms did you get?

23. What do you do when you feel sick?
Encuesta dirigida a personal de tiendas de agroquímicos

Edad__________________   Grado de Instrucción _____________________   Cargo__
Tiempo trabajando__________      Días/horas a la semana_________  N° de clientes___

1. Forma de venta

2. Medios de marketing (folletos, volantes, afiches, almanaques, lapiceros, gorras, camisetas, reuniones con agricultores, almuerzos, visitas al campo etc.)

3. Cuáles son los cinco plaguicidas de mayor venta para el cultivo de arroz? 
(Nombre comercial, plaga)
Son los que más recomienda también?

4. Cuáles plaguicidas de etiqueta roja (extremadamente, altamente peligrosos) son los más vendidos? (Nombre comercial, ingrediente activo)

5. Ha participado en algún curso, entrenamiento o charla sobre el manejo de plaguicidas? Si SÍ, ¿Quién lo organizaba? (Empresa de agroquímicos, consultoras, SENASA, otros.)

6. Cuando vende plaguicidas, ¿qué tipo de información da?
(mezcla, ingrediente activo, precauciones, equipo de protección, qué hacer con residuos y frascos vacíos, dónde lavar mochila y ropa, dónde guardar los plaguicidas...)

7. Los agricultores suelen tener preguntas sobre el manejo de los plaguicidas? Qué tipo de preguntas?

8. Se debe tomar o comer algo especial antes y/o después de fumigar? Qué? Es algo que Ud. recomienda?

9. Vende algún equipo de protección?

10. Qué se debe hacer con los residuos y frascos vacíos? Hay algún lugar dónde se puede botarlos?

11. Si algo sale mal en el cultivo ¿quién tiene la responsabilidad? ¿Quién paga?

12. Procura vender lo menos tóxico posible o el producto que mejor sirve para matar las plagas?
Translation into English

Questionnaire directed to personnel of the agrostores

Age______________ Education ___________________ Position_________________

Time worked___________ Days/ hour per week_____________ N° of clients___

1. Mode of selling

2. Marketing strategies

3. The five most sold pesticides for rice cultivation. Are these also the most recommended?

4. Which pesticides with red etiquette are the most sold?

5. Have you participated in any course, training or seminar about the management of pesticides? If YES, who organized it?

6. Which kind of information do you give when you sell pesticides?

7. Do the farmers usually have questions about the management of the pesticides? What kind of questions?

8. Is there something special that you should eat or drink before applying the pesticides? What? Do you recommend it to the costumer?

9. Do you sell any kind of safeguard?

10. What should the farmer do with the leftovers and empty bottles? Is there any place special where they can throw it away?

11. If anything goes wrong with the cultivation, who has got the responsibility? Who pays for it?

12. Do you intend to sell the less toxic or the most efficient products?
Source: The author