Socio-economic and cultural motives of farmers to choose for imported cattle or Madura cattle, Indonesia

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Abstract

The socio-economic and cultural motives of farmers in Madura and Probolinggo to choose for Madura cattle or crossbred cattle is the topic of this thesis. The goal is to find sustainable ways for development in the future regarding Madura cattle, crossbreeds and all the various breeding priorities. The first research question is about the motivations of farmers to choose for imported cattle in Madura and East Java. It is found that the motivations vary amongst the districts. Farmers in districts where the cultural events Karapan and Sonok are still of major importance are not motivated to maintain crossbreeds. These farmers do not need crossbreeds because of the financial and social capital they perceive with Madura cattle. In districts where farmers adopted crossbreeds, financial capital increased as a result of the better performance of crossbreeds and they feel they increased their social capital with crossbreeds. Especially where crossbreeds are recently introduced, farmers are happy to keep crossbreeds and they even attached a new cultural event to it. The second research question is about the preservation of Madura cattle, about what arguments in favor or against are. Where farmers keep Madura cattle, the most given argument in favor of Madura cattle is the cultural asset of the cattle which is interwoven with the economical asset and social status. In those districts where farmers maintain crossbreeds, the performance of Madura cattle used to be low which resulted in a low, or even no, cultural asset and thus the economical value and social status were low. The third research question is about different perceptions between people in Madura and Probolinggo regarding imported cattle, and why these exist.

On Java, crossbreeding has been done since a long time, whereas it was recently introduced on Madura. Most districts without crossbreeds have little knowledge about crossbreeds and they have negative perceptions about it. In the districts where crossbreeds are kept, farmers are positive: in Madura the farmers welcomed the crossbreeds almost as being lifesavers.

The main conclusions that are drawn are that Madura cattle in itself might not be of major importance to farmers, but the cultural events attached to the cattle. In those areas where crossbreeds play an important role, the performance of Madura cattle was low which resulted in no cultural events. These farmers adopted crossbreeds in order to increase their financial and social capital, and to deal with the lack of natural capital.

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1. Introduction

Not every farmer makes the same decisions under the same circumstances; there are many factors which can influence the farmer. These factors can influence the cattle breed a farmer uses, resulting in a certain farming style and in various practices regarding cattle keeping. Also in Madura and in East Java we can see these differences: under (seemingly) the same circumstances, the import of cattle, farmers acted differently. Some of them adapted their livelihoods to the crossbreeds, and some maintained to work with the local breed, Madura cattle. Madura cattle are known for their importance regarding cultural events. In many instances, these events are the most important drivers to maintain Madura cattle.

Taking a closer look tells us there are many varieties among different districts between farmers' strategies, and even between different sub-districts. All have their own criteria regarding 'good' Madura cattle and all organize different events with their cattle. However, some farmers choose to maintain crossbreeds which leads to changing farming strategies, a different valuation of Madura cattle and a changed financial position of the farmer. Farmers have different motivations to choose for Madura cattle or crossbreeds. It is interesting to find out what the different motivations and their underlying values are, and especially *why* farmers have these certain motivations. With this information it is possible to explore the possibilities for sustainable development of crossbreeds and Madura cattle in Madura and East Java in the future.

Before going deeper into this material, I will provide a short overview of the history of cattle on Java and information about Madura cattle and crossbreeds; the breeds which are the central theme of this thesis. Then the objectives, research questions and hypothesis which are used will be given. After this, the theoretical framework will be provided which is used during the fieldwork and practical applications of the used theories and concepts. The next chapter describes the research areas which are central in this thesis, followed by the used methodologies in the field. The chapters hereafter will provide the data which is collected during the fieldwork from November to January 2009/2010 which include husbandry and agricultural practices, income, fodder needs, cultural asset and status of cattle breeds, and farming and the

conservation of Madura cattle. Finally, there will be a discussion and conclusion including recommendations using the collected data and the theoretical framework.

1.1 Cattle import

These days, there is more crossbred cattle than local cattle to be found in Indonesia (Sutresnewati 2006). This is the result of Artificial Insemination programs carried out by the government. Livestock development policies often focus on the physical production of livestock systems, generally with a focus on marketed production, and thereby neglect the multiple functions of livestock (Moll 2003). This is not a recent occurring process, but started already in the colonial period. Since the colonial times in 1853, the Dutch government and the 'Burgelijke Veeartsenkundige Dienst' had a great interest in importing exotic cattle. According to them bigger, stronger animals were needed than the local breeds. They started to import breeds from India, New Zealand, Australia and the Netherlands (Barwegen 2005). Already in this early stage of a long history of importing cattle, the objectives from the government and the farmers were different which hampers the formulation of effective livestock policies that take into account both viewpoints. In the colonial times, the government plead for strong, big animals, while the farmers were satisfied with less strong and big animals because the less strong animals were good enough to carry out the tasks, need less feed and posses a high cultural asset.

Also in the postcolonial times, the Indonesian government continued to import cattle, because they wanted a stable economic situation with higher production to be able to meet the domestic demand and more intensified farms (Barwegen 2005, Soewardi 1986). Now more dairy cattle were imported because since the 1940's the use of animals changed due to the development of mechanical tools. In many areas, animals were kept for a more specific reason now, for meat or milk. Since 1960's Artificial Insemination was possible in Indonesia and this caused a quick distribution of beef and dairy cattle. To provide a picture: between 1979 and 1990, 100.000 head of dairy cows were imported (Ibrahim *et al.* 1991).

Since 1970's exotic breeds held for meat became more popular because they provided the owner status since not every farmer was able to buy them. Currently, the appreciation of cattle differs per family, some families do not want to keep cattle

anymore because it is ‘dirty’ work; a motivation which is mainly used by people in the urban areas. However, in many villages in rather remote areas, having cattle is still an important factor in the social status of households; it is still used for the accumulation of wealth (Moll 2003). Since 1850 cattle in general lost their value as a status-symbol; even the landless are able to keep cattle nowadays. Yet, cattle still play a role for farmers to distinguish themselves from other farmers trough the cultural asset of cattle. A good example of this is Karapan which is a bull race in Madura, people in Madura continue this tradition because it is an important part of their identity.

Not only status might be an important reason for a household to keep cattle, it can also serve as an insurance; the cattle can be sold in times of need (Ifar 1996, Udo 1998, Barwegen 2005). Motives for a farmer to raise cattle can be economic, ecological and cultural, yet these motives can be conflicting: selling cattle for urgent cash needs may not coincide with other motives such as breeding for meat production or cultural events. Every farmer may have different motives, or a combination of these motives, on the basis of which he makes a decision about buying, breeding and selling cattle. Also non-economic motives have an economic side, but they cannot always be interpreted in money (Barwegen 2005) such as the cultural events the Karapan race and the Sonok contest (an event about the occurrence of pairs of cattle) which are organized in Madura. On the one hand, these are very important cultural events which are highly valued by the local people because of the tradition and their Madurese identity, on the other hand because of these events cattle prices raise which keeps farmers motivated to maintain these traditions.

An important notion, however, is that in comparison with the colonial times and until the 1970-80s, communities lost their preference for particular breeds in some areas, but not everywhere. In Madura, when the Dutch government wanted to crossbreed Madura cattle with Ongole cattle from India, there was a lot of resistance of the farmers (Barwegen 2005).

In 1990, the import of dairy cattle ceased because farmers were no longer interested in buying imported cows (Ibrahim 1991). Many cows and calves died because there was too little experience with dairy cattle and there were ecological problems such as

climate, fodder and water shortages. Feasibility studies which have been conducted beforehand were negative about the results of imported cattle, but the government still wanted to import cattle, despite this negative advice from researchers from Wageningen University (pers. comm. Udo 2010).

1.2 Madura cattle

Madura cattle can be kept for various reasons: for production such as meat or milk, reproduction and draught power, but also for cultural purposes such as Karapan which is a bull race and Sonok, a 'dancing cows' contest (Payne and Hodges (1997). It depends on the performance of cattle whether they will be used for meat production, reproduction, draught power or the cultural purposes. When an animal is judged to perform well at the cultural events, it is trained or used for reproduction; if the animals are not good enough according to the farmers, they are used for meat production. The criteria which are used by the farmers to judge whether cattle is good enough for a cultural events depends on the sort of event. The bulls for the Karapan race have to be very fast (fast is hundred meters in nine seconds), and the cows for the Sonok contest for example have to be big, homogeneous to the other cow of the pair and dark red amongst other criteria. In Sapudi, an island next to Madura, the government stimulates the farmers to conserve Madura cattle. The policy is successful because of Karapan which farmers regard as a cultural event of major importance, also for economic reasons. The government chose this district for the conservation of Madura cattle because of the isolated location of the island; it is easier to maintain Madura cattle in an isolated area compared to an area which is very much connected to areas with crossbreeds. However, there is another district in Madura which is Waru where crossbreeds never have been introduced by the government because of the excellent performance of the cattle in this district and the breeding priorities for the Sonok contest.

Also in East Java Madura cattle are used for reproduction and the Karapan races. The popularity in East Java of the Karapan races is caused by the migration of Madurese people to the mainland of Java. These migrants find their Madurese identity still very important and some of them show this with Madura cattle and Karapan races.

1.3 Crossbreeds

The government of Indonesia is very much in favor of crossbreeding; they only focus on the improving productivity of cattle without taking into account the overall impact on the cattle population. The government launched massive crossbreeding instead of selection within local breeds. The Artificial Insemination centers in Java provide exotic semen of many breeds: American Brahman, Charlois, Simmental, Limousin, Shorthorn, Hereford, Aberdeen Angus and Santa Gertrudis. A problem with this recommendation to use crossbreeding (government policy: UU no 6/1967), is that there was no pedigree recording, which might cause problems regarding inbreeding in the future. Many farmers who use crossbreeding, have no idea about the pedigree of the animals which might result in a relative low performance of crossbred cattle in the future and the loss of hybrid vigor due to inbreeding. In Madura, however, crossbreeding is only allowed since 2002 when the borders opened under pressure to import other breeds (Barwegen 2005). Until this date, the local government of Madura was fiercely against crossbreeds, because it would threat the use of Madura cattle by farmers. Yet, until now Madura cattle are still very popular on the island, and there are only a few districts where the crossbreeds found their way into the farming systems. When farmers keep crossbreeds in Madura, they are usually a combination of Madura cattle and Limousin in Madura also referred to as Madrasin, the name the farmers gave to the crossbreeds. In East Java most crossbreeds are result from a cross with Simmental because they have a bigger body size. Despite the bigger body size of Simmental, Limousin is popular among farmers in Madura because this breed has a red color; farmers in Madura do not like the colors (white) of the crossbreeds resulting from Simmental. Reproduction of crossbreeds is always done by Artificial Insemination, there is no natural mating used. This is one of the arguments why some farmers especially in more isolated areas with bad roads (upland areas) do not like to keep crossbreeds, the inseminator might be too late and the cow might not be in heat anymore. The results of crossbreeding programs may differ per region because of various genotypes and environmental differences. As Payne and Hodges (1997) explained, local cattle in the tropics are kept under climatic stress conditions with high risks for diseases and parasites. Local cattle have the ability to adapt to these stressful conditions, while imported cattle often faces more problems in these climatic conditions.

1.4 Research objectives

The objective of this study is to explore what the different motives of farmers are to make certain decisions with respect to cattle. The research has a double focus in order to be able to compare differences and how these differences exist: there is a focus at the level of individual farmers and a focus at various districts as a unit.

First I studied *what* kind of decisions farmers make and what their goals are, and *why* they did what they did. Different districts are compared in order to be able to see whether there are contextual factors which influence the motives and strategies of farmers in cattle keeping.

Another part of the research looks at the possible changes which have occurred with respect to the status and value of Madura cattle. Did the import of cattle (semen) change the cultural perceptions towards Madura cattle, and if so, why did this shift occur? Part of this is also to find out if the perceptions have changed, whether they are influenced by the region the people live in. I try to answer these questions by using the following (main) research questions:

1. What are the socio-economic and cultural motivations of farmers to choose for imported cattle in Madura and East Java?

2 . What are the arguments of farmers in favor or against conserving the Madura cattle in both research sites?

3 . What are the differences between the perceptions of people who live on Madura and the Madurese migrants in East Java regarding the socio-economic status and cultural impacts of imported cattle, and why do they exist?

These questions were used in the light of chosen theoretical concepts: the livelihoods concept, the well-being concept and the styles of farming concept. These concepts and their relevance for this research are explained on page 16.

The hypothesis of the research is the following:

I expect that the function of social status of keeping Madura cattle has decreased since the 1980's because in this period the most cattle was imported. That is, because the imported cattle often have more potential regarding production, this could result in a decrease of status of Madura cattle, because the social-economic and cultural assets have changed in favor of the first. As a result, livelihood practices might have changed as well regarding cattle keeping.

My expectation is that the most arguments in favor of Madura cattle will be cultural ones, like for example the Karapan-races and other cultural events. Because of the widely adopted crossbreeding programs of imported cattle with local cattle the favorable position of Madura cattle regarding their adaptation to the environment and harsh climate might have disappeared. Also, because of the fact that the imported cattle have often more milk/meat production potential, I expect that most arguments against keeping Madura cattle will be economic.

2. Research area

The research has been conducted in two areas in East Java: the island Madura and two districts close to the city Probolinggo. These two areas were chosen because in both areas farmers kept Madura cattle, and the people in Probolinggo are originally migrants from Madura which gives the opportunity to compare the motivations of people who still live in Madura and people who migrated out Madura. This section gives background information about these areas.

2.1 Madura

Madura is an island which is considered as a quite remote, but densely populated, area. The island is 160 kilometers long from east to west, and 35 kilometers from north to south amounting is to a total area of 4497 km^2 . Madura has four regencies: Bangkalan, Sampang, Pamekasan and Sumenep. Besides this main land, Madura consists out of 10 other small islands. Compared to other areas in East Java, the soil is of relative poor quality; the land is stony and dry. However, almost all inhabitants of Madura are involved in agriculture (de Jonge 1984). The amount of rainfall per year is between 1800 and 2400 mm. Virtually, the whole island is cultivated, there are no pastures or cultivated fodders. Due to these harsh ecological conditions, many people migrated out of Madura to Java (Barwegen 2005). This migration of Madurese people might increase as a result of the bridge which is built in 2009 between Madura and Java (pers. comm. Widi 2009) which makes it easier to travel.

In the 1970's, there were more than 500.000 cattle on the island (Payne and Hodges 1997), nowadays there are 437.000 cattle (www.ditjennak.go.id). This large amount of cattle on the island is possible because of the cultural and economic asset; the cattle are extremely well-adapted, and the farmers use all crop residues and fallen leaf material to feed the cattle so there is enough fodder to find to feed all the animals.

2.1.1 Cultural events

In many ways the people are still very traditional compared to the rest of Java. For example the people are famous in the rest of Java for still wearing the 'sarong' which is traditional clothing (observation during fieldwork). But the island is not only famous because of their tradition, also because of the special events they organize regarding cattle. In my research, I chose to go to three various districts which all have

their own events to find out about various motives to keep cattle. In Sapudi; a small island which is located in the Sumenep district on Madura, Karapan races are organized. In Waru, the Sonok contest is a major event and in Langeran district people have started to develop a new event with crossbreeds, called the Madrasin contest.

The most well known are the Karapan-races, in the past this was one of the most important and honorable reasons to keep Madura cattle. The first races were organized in the thirteenth century, requested by the king who was originally from Java (Noer 1975). He was familiar with the practice of ploughing to prepare the land for planting crops whereas people in Madura were not, and that where the race finds its origin. The race continues to be a very important cultural event. It is a bull race, but it is more than simply racing; before the race the bulls are paraded through the towns decorated with flowers, ribbons and gilded halters.

Figure 1 Madura bulls during a Karapan race

The race itself is very short; the bulls break the human 100 meters record by finishing within nine seconds. Although the races itself are very short, the event takes a whole day; bulls have to be prepared, usually there are many contestants and the winner has to be announced. During the race, farmers bet on the couples they think will win, so many people are very much involved in the races. Sometimes, the bulls are fed with spicy ingredients in the fodder, because farmers believe it makes them run faster (see also de Jonge 1984). The race is done in pairs, with a wooden construction in between them which is almost similar to ploughing equipment, where the jokey takes place. Usually the jockeys do not weigh much and are small enough to fit in between the two bulls. Once the couple crossed the finish line, the jockey jumps forward to pull the strings to make the bulls stop. There are various age groups in which the bulls run; the

youngest are about four to five months old, the oldest around one year. The biggest Karapan races are organized in Pamekasan and Sumenep. The small island Sapudi on the east side of Madura is well-known for the reproduction of good Karapan bulls, farmers who want to have good bulls, buy them on this island.

The Sonok contest is about the performance and occurrence of cows and finds its origin in sapi pajangan. Sapi pajangan was first described in 1927 by Sommerfeld, and it evolved into the Sonok contest in the 1960's. Also with this contest the cows are decorated, to make them look as beautiful as possible. The cows have to walk in pairs on traditional music, and the farmer and his family and/ or friends walk behind the cows, holding the cords and dance.

Figure 2 Madura cattle during a Sonok contest

The person who leads the cattle and some dancers are hired by the farmer. The event is very popular, and the number of participants is increasing every year; last year there were 337 participants, see Table 1.

Table 1. Participating pairs of cattle at Sonok contest

No.	Year	Pairs of cattle
1.	2000	112
2.	2001	116
3.	2002	129
4.	2003	155
5.	2004	178
6.	2005	218
7.	2006	233
8.	2007	240
9.	2008	284
10.	2009	337

Source: Note of Sonok Community, Nov. 2009

Although it is a contest, there are no real winners. The farmers explain that they do not need to choose a winner, but they are already happy with the opportunity to show their cattle and dance with them. However, there is a jury which provides the audience with information about the farmer and their opinion about the pairs. Often the jury exists out of influential people, for example the head of the Sonok Community, government officials or head of the community. Although there are no prices, the contest is very important because during this day many transactions amongst farmers are done; farmers can show and trade their cattle for good prices. Also, the cows which perform well, are very popular to use for reproduction. In general, the Sonok contests are a 'bigger business' than Karapan: it is more expensive to join because of all the decorations for the cows and the hired people, and farmers with good cattle are richer than farmers with good Karapan cattle because of the higher prices of Sonok cattle.

The Madrasin contest was organized for the first time in 2007. It is a derivative of the Sonok contest for crossbred bulls. All the crossbreeds which are used in this area are a result from Madura cattle and Limousin, and the farmers name the cattle Madrasin. The bulls are tied up next to each other in the same traditional way as cattle for Sonok: the rope goes through the nose of the bull, is tied in between two pillars and the bull has to stand with its front legs on a platform of approximately 15 centimeters high.

Figure 3 Crossbred bulls for the Madrasin contest

The criteria of the contest are about the performance of the bulls. Also this contest is still growing and developing every year. The bulls which are used, are not used for reproduction but only for meat production since farmers always apply Artificial Insemination for crossbreeds.

These events are held in different sub-districts, were Karapan is popular, they find Sonok contest ‘boring’, and were they have the Sonok contest, they do not like the way the bulls are treated with Karapan. However, Karapan is done on the whole island of Madura and places on Java, and Sonok in more districts in Madura too. Not only the district, but also the breeding strategy differs: the Sonok cows have to be big and beautiful, the bulls for Karapan have to be quick and the bulls for Madrasin big.

In this research, the following districts were investigated with their husbandry practices:

Langeran = Crossbreed area with Madrasin contest.
Sapudi= Isolated island with Karapan races, formally appointed island for conserving Madura cattle by the government.
Waru = District with Sonok contest where no crossbreeds were introduced by the government.

Figure 4 Madura and the visited districts

2.1.2 Farming households in Madura

Nearly all farmers in Madura only went to elementary school, only a few went to high school and some did not go to school at all. Many farmers did not mind they had no (higher) education, since there are only a few job opportunities in Madura, practically all of the people become farmers. In Waru, farmers on average have plots of 0,7 hectare, followed by farmers in Langeran who have on average 0,8 hectare, and in Sapudi the farmers have on average 0,5 hectare. In Langeran and Waru farmers have various crops; the most grown is maize (see also de Jonge 1984), followed by tobacco and rice, and a few farmers grow cassava. In Sapudi, however, farmers only grow maize, no other crops. All the farmers used the cut and carry system to collect fodder for their cattle. This method allows farmers to collect and use the animal manure, and permanent cultivation of the fields is possible (Ifar 1996). Some farmers are next to being a farmer also a trader at the local market. The average family size varies between 4 and 6 mostly, with some peaks of 8 or 10 family members. In all the households I have seen, the woman are primarily housewives and help their husbands with taking care of the cattle and the land.

2.2 Probolinggo

Probolinggo is a city in East Java located at the mainland of Java. It is one of the cities where one can find many Madurese migrants (de Jonge 1984). One of the main reasons to migrate out of Madura according to the interviewees was that there are not many job opportunities, and the soil is of bad quality for farming. Some people still have family in Madura, others do not know about their pedigree, but they are all original from Madura. Through permanent settlements of the migrants, they form a

bridge-head for later migrants who are seeking for employment opportunities (Spaan 1999). The relationship of migrants with the area of origin is determined by various factors such as the socio-economic level, education, marital status, the number of dependents, the distance between the origin and the current area and the duration of the separation (Sukamdi *et al.* 2000).

There is literature written about the mixed identities people have in Probolinggo due to this migration of their ancestors which corresponds with what some people in Probolinggo told me. The people in Probolinggo placed themselves in between two major categories of kinds of people who geographically dominate the area: the 'Javanese' and the 'Madurese' people (Retsikas 2007). These people identify themselves as a blend of the people of both islands.

Also in this city, there are two areas where I went for the research which both have different ideas regarding breeds. The first villages I went belong to the Lumbang and Tongas sub-districts, in this area most farmers kept Madura or Ongole cattle. These sub-districts are located at the foot of the Bromo mountain, and exists out of fertile soil. The area is rather far away from the city itself, and the roads are not so good. This is the reason why most farmers here maintain local cattle: local cattle do not need Artificial Insemination, whereas crossbreeds always need Artificial Insemination done by the inseminator. The fact that the districts are rather far away from the city might cause that the inseminator is too late for the heat of the cattle.
The second area is Kademangan sub-district. Here the farmers mainly keep crossbreeds, and the sub-district is located in lowland with dry and less fertile soil. Also, the lowland area in Probolinggo is closer to the city than the upland area, which means the inseminator can be there on time.

In this research, two districts will be used with their specific husbandry practices:
Lumbang/Tongas= Upland area where farmers mainly keep Ongole and Madura cattle
Kademangan= Lowlands area where farmers mainly keep crossbreeds

Figure 5 Probolinggo and the visited districts

2.2.1 Cultural events

In Lumbang/Tongas, Karapan races are organized. The event is originally from Madura, but since all the people in Probolinggo are originally from Madura, it is still an important event although there are relative less participants compared to Madura. A difference between this district and Sapudi is that not all farmers are so much focused on Karapan; in Sapudi, farming and breeding priorities are organized around Karapan, whereas in Lumbang/Tongas not all farmers adapted their breeding priorities towards Karapan. Some farmers in Lumbang/Tongas keep Madura cattle for meat production and reproduction.

2.2.2 Farming households in Probolinggo

Almost all farmers in Probolinggo only went to elementary school, some have no education at all and some have higher education. There is no difference between the education level in Probolinggo or in Madura. The average plot-size in Kademangan is 1,3 hectare and in Lumbang/Tongas farmers own (and in some cases rent) 0,8 hectare and 5 farmers have no land at all. Maize and rice are the most grown crops in both districts (observation during fieldwork). Also in these districts the cut and carry system is used to provide fodder for the animals. The average family size is between 4 and 6 family members.

3. Theoretical concepts

In order to gain more insight in the research data and be able to interpret them, theoretical concepts are needed to understand the findings. I have chosen to work with 3 concepts namely the Livelihoods concept (Ellis 1999), with a special focus on the Well-being approach (Gough 2004, White 2008), and the Styles of Farming concept (Van der Ploeg 1997).

3.1 Livelihoods Concept

The Livelihoods Concept makes it possible to analyze differential livelihood strategies of individual actors (Wartena 2006). In this research, it is a valuable concept because a comparison between various farmers and farmer groups is one of the cornerstones of the thesis; it makes it visible what the differences are and why they occur.

Long (2001) defines livelihoods as practices by which individuals and groups strive to make a living, meet their consumption necessities, cope with adversities and uncertainties, engage with new opportunities, protect existing or pursue new lifestyles and cultural identifications, and fulfill their social obligations. Livelihoods encompasses styles of living, strategies, choices people make regarding norms and values and their identity towards other persons. The livelihoods concept can be divided into five spheres: human capital (education, skills and health), physical (farm equipment), social capital (social networks, associations to which people belong, culture), financial capital (savings, credit, cattle) and natural capital (natural resources) (Ellis 1999).

Next to this, it is useful to look at the ways in which actors interpret new elements in their life worlds because farmers (individual/groups) might react differently to the introduction of crossbreeds in their life worlds. Farmers might have different perceptions about Madura cattle and the impact of the introduction of crossbreeds might affect groups differently. Also, it is interesting to investigate how actors cope with their own 'projects', which may run parallel to or in challenge with other parties in order to understand how farmer groups evolve and how it might influence individual farmers. It is needed to understand the differences in livelihood strategies farmers may have while they face seemingly comparable circumstances; it gives

insight about different motivations farmers have for making certain decisions regarding cattle keeping.

3.2 Well-being Approach

Another concept which will be used to get insight about decision making processes and desired positions of farmers, is the Well-being approach which in this research can be used as a sort of 'extension' of the livelihoods concept by including emotions and psychology. The scope of the research is focused at farmers' livelihoods and preferences, therefore I will not use this concept as a whole, but use parts of it because the deep emotions and psychology are not relevant in this research. That is, I will especially focus on the themes which refer to social well-being in order to be able to find out about the degree of satisfaction and happiness farmers experience and not so much about the psychological well-being since this takes much more time to get this information.

The well-being concept refers to material resources, bodily well-being, social well-being security, psychological well-being and freedom of choice and action (Gough 2004). The concept of well-being can roughly be divided into three spheres: subjective well-being, material well-being and relational well-being (White 2008). It is important to notice, however, that these three dimensions are interwoven, they should not be seen as separated domains. Subjective well-being refers to the fact that well-being is socially, contextually and culturally constructed, there is no universal 'objective' well-being status. The subjective dimension is about what people value, desire, hold to be good and how they feel about their lives. The material dimension refers to 'human capital' or, 'capabilities'. Also livelihood activities, income, physical health and environmental quality are referred to as material well-being. The relational well-being refers to intimate relations of love and care as well as social networks and interactions with organs of the state. Relatedness with others shapes people in who they are and what they are (White 2008). The collective dimension is important in the well-being approach, people reflect not simply individual preferences, but rather values which are grounded in a broader, shared understanding of how the world is and how it should be. Closely connected to this collective dimension is the notion of culture, which can be perceived as a resource and a context for social action. Culture in this context is seen as a set of norms, values and rules developed by a community

in relation to a particular natural and social environment which generates meanings for people within that community (Gough 2004). Culture in this sense can be used as a resource because it provides durable solutions to problems people/communities face. Using these concepts of livelihood and well-being, I want to explore what the farmer's perceptions of well-being and 'living a good life' are, and whether this agrees with the life they desire to have in relation to a particular choice for cattle which support this idea.

3.3 Styles of Farming Concept

A third concept which help can help to understand more about the motivations farmers have regarding cattle keeping is the Styles of Farming Concept, which is related to the livelihoods concept but more specified towards farming. This concept specifies the way farming ought to be organized (Hebinck & Van der Ploeg 1997); it comprises three interrelated and mutually dependent levels. These are, a specific cultural repertoire composed of shared experiences, knowledge, insights, interests, prospects and interpretations of the context in which farmers operate. Also, a style of farming is an integrated set of practices and artifacts. Third, a style of farming comprises a specific ordering of the interrelationships between the farming unit and markets, technology and institutions. A cultural repertoire characterizes the differentiated stock of cultural components which relate to social norms and values, different lifestyles, and rationales for living (Long 2001).

The concept of styles of farming refers to the highly differentiated practices which are the result of different and strategically chosen 'positions' of farmers as family, markets, cultural repertoires, technological developments, relations with agribusiness companies and extentionists are concerned. That is, a style of farming can be interpreted as 'the result of goal-oriented actions and related strategies, and thus as actors' projects carried out in particular historical contexts and arenas' (Hebinck & Van der Ploeg pp 207). With this concept it is possible to determine what the position of the farmer is in all the different domains (family, markets, culture, and technology) compared to other farmers. Styles of farming are also of influence on the different livelihood practices, the chosen positions determine the various practices. On the other hand, livelihood practices also determine the chosen positions and styles of farming.

3.4 Three interwoven concepts

To work with the concepts, I need to be able to compare and interpret the results in the light of the three concepts. Various issues and values will come to the fore which can be divided into the five spheres of the livelihoods concept which are: human capital, physical capital, social capital, financial capital and natural capital. These issues and values are determined by styles of farming, livelihood strategies and/or perceptions of well-being. The used issues which are researched and division in this research is done the following:

Human capital

- Education: education determines the job possibilities people have.
- Knowledge breeds: what kind of knowledge do farmers have about various breeds? From whom did they receive the knowledge?

Physical capital

- Farm equipment: ploughing, other tools.
- Roads: the accessibility of districts.

Social capital

- Social status: some breeds might give farmers a higher social status than other breeds. Also, financial capital is important regarding the social status.
- Social networks: the network a farmer has, might determine the knowledge about breeds and farming, herewith the connection with the outside world is important in determining the opinion of farmers. The network a farmer has might also determine the decision making regarding cattle keeping and the social status within that network.
- Cultural assets: the cultural events (Karapan, Sonok, Madrasin contest) determine the cultural asset of cattle and the events play a very important role in the choice of farmers to opt for a certain style or breed.

Financial capital

- Income/savings: the demand of cattle on the market is important regarding financial capital, which relates to the type of breeds farmers keep/ want to keep. The savings farmers have determine the investing possibilities they have

and herewith the generated income. Not only market and production influences determine financial capital, also kinship, other relations and social capital can determine the financial capital one has.

Natural capital

- Location of the farm: the location of the farm might determine various factors such as: level of education, market, cultural and economic asset of cattle, fodder availability and quality, water and land availability and natural resources.

Not only these capitals in itself are important, but also the interrelations between these capitals. Trough these differences, various farming styles and livelihood practices occur; a certain factor which is the same in all districts can have various consequences due to different interrelated capitals. In this research, especially the interrelation between social capital in the shape of cultural asset and financial capital is interesting because of the various cultural events which are held.

As can be noticed, the three chosen concepts are all interwoven. All these capitals, their interrelation and issues in relation to practice are touched upon in the following fieldwork chapters.

4. Definition of concepts

Farmer: in this research all the people who have cattle are indicated as being a farmer; there is no distinction made between people who took care of the cattle themselves and people who employed caretakers. I have decided to indicate all these people as farmers to obtain a broad view of people who have cattle and discover all possible motivations to keep cattle.

Cultural asset: in this research, cultural asset is regarded as a contextual concept which rests on historical, social, symbolic, aesthetic and spiritual values (Holden 2004). It is contextual because the value of an object or performance can differentiate in various places. Cultural assets play a major role in decision-making and are an explicit recognition of non-economic assets, although they may have economic outcomes. Also, the preservation of economical assets, practices, locations and knowledge are important to be able to create cultural asset in the future.

Social status: the degree of honor and prestige attached to one's position in society can be understood as social status (Maiese 2004). Various characteristics can determine someone's social status, these include: ethnicity, gender, age, skin color, economic class, caste, religious sect and regional grouping. In this research, especially the regional grouping comes to the front and sometimes the economic class also plays a role. Status might be assigned to individuals at birth or achieved, requiring special qualities and gained through individual effort (Encyclopædia Britannica 2010). The notion of social status is in this thesis attached to cattle keeping, especially to the breed and the usage of cattle (production versus cultural events). Social networks are linked to the notion of social status; the membership of a certain network provides members a certain status derived from the group to which they belong (Bourdieu 1986). These social networks partly determine the decisions farmers make regarding cattle keeping, since their social status is attached to these decisions.

Madura cattle: Madura cattle have a relatively long body in relation to their legs, and a small head. The height of the cows varies between 1.16 and 1.24 and they have very strong hoofs. The cattle are reported to be very good draught animals relative to their

size (Barwegen 2004). Compared to other breeds like Ongole, they have a high fertility rate (Maule 1990). Madura cattle originate from a cross between Zebu and Banteng (Nijman 2003). A Zebu has the ability to lower its metabolic rate with high temperatures with about 20 percent and as a result they generate less heat. Also, with high temperatures the feed intake is reduced which is not a problem as opposed to other breeds because of the low requirements of Madura cattle. The cows weigh about 200-235 kg (Maule 1990) and are able to make relatively good growth in poor quality grazing conditions. The animals are red, yellow or brown, but in Madura only red-brown animals are acceptable. The hump of Madura cattle is usually quite broad in relation to the height of the animal. The calving interval is between 433-474 days and the cattle only produces sufficient milk for their calves. The cattle grow slow, but the meat is considered to be of good quality.

Ongole: The Ongole breed originates from Andhra Pradesh in India. The cattle have long bodies, long legs and a short neck (Payne and Hodges 1997). The skin is white and often mottled. The cattle have a hump which especially well-developed in the male. Usually, Ongole are docile and the bullocks are very powerful and suitable for heavy field or transport work. Ongole is used for two purposes: beef and draught power. The breed is in large numbers exported to Indonesia, for the purpose of crossbreeding with indigenous cattle and upgrading, which has resulted in a breed known as Sumba Ongole.

Crossbreed Madrasin: Madrasin is the name of a cross between Madura cattle and Limousin cattle, given by the farmers. Officially, the name of the cattle should be different since the bull is Limousin and the cow Madura cattle; for example Limura (pers. comm. Widi 2010). Limousin cattle originated in the west of Massif Central between Central and South France; a region with harsh conditions and poor soil quality (British Limousin Cattle Society Limited 2010). Due to these harsh conditions, the cattle evolved into a breed with a high adaptability. The breed is used mainly for beef production and draught power. The live weight of a crossbred Limousin with other breeds varies between 450 and 550 kg. The skin color is golden/red. The cows calve easy because of relative low birth weight, and the bulls have a high fertility. Limousin pure bred and crossbred are known for their high fertility, a good milking ability, high conception rate, high feed efficiency, high

carcass yield and ease of calving (North American Limousin Foundation). Madrasin is the most popular crossbreed amongst farmers in Madura; it is the most suitable for meat production and the contest because of its size and color. The crossbreed is popular because of its adaptability to the environment; both Madura and Limousin cattle are able to perform well in harsh conditions.

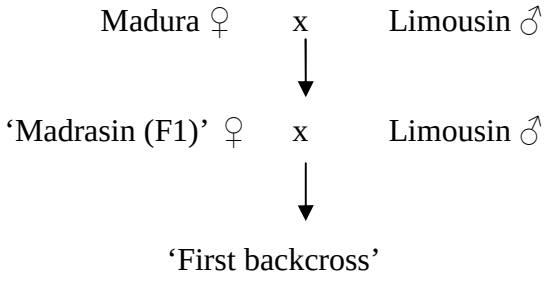
Crossbreed Simmental: the Simmental breed originates from the Simmen Valley in Switzerland. The breed is well-known for its high adaptability in various environments. The advantage of Simmental is the dual purpose of the animal; it is used for milk and meat production. The average live weight ranges from 1100 kg to 1400 kg (British Simmental Cattle Society Limited). Farmers in East Java are more in favor of the Simmental crossbreed than Limousin because of the higher production potential regarding meat compared to Limousin (pers. comm. Widi 2010).

Sustainable development: sustainable development is a concept which widely used and understood in many different ways; there is no consensus on its precise or operational meaning. The meaning differs across space and time and between individuals (Rigby *et al*. 2001). Next to this, sustainable development is culturally defined and time specific (Giddens 2002). The most well-known definition is the one of the World Commission on Environment and Development, who introduced the concept of sustainable development in 1987 (Boogaard 2009): 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland 1987: p43). In this research, sustainable development is focused towards farming practices in relation to the cattle breeds farmers have.

Values: values can be observed as leading principles for people, or, as Schwartz (2006, p143) stated that values 'serve as standards or criteria that guide the selection or evaluation of actions, policies, people and events' . These values influence people's lives, often unconsciously for example in their life style and world view. By studying these values, one can gain insight in the decisions farmers make and the preferences they have (Boogaard 2009) and explore the differences between the different areas related to cattle breeds.

Cultural repertoire: a cultural repertoire is the aggregate of options utilized, in this case, by a group of farmers and by individual members of this group for the organization of their lives and more specific, farming (Even-Zohar 1997). The concept of cultural repertoire is part of, and interwoven with the concept styles of farming.

First Backcross: this is not an official term, but I will use it to refer to the most profitable generation of crossbreeding according to the farmers. This generation is developed the following:



The first backcross was by the farmers referred to as the F2 generation. However, in theory this is not correct. That is why I will use term first backcross.

5. Research methodology

In this chapter I will elaborate about the start of the thesis; how the ideas were shaped, the research sites and how the data was collected during the research.

5.1 The birth of the thesis

Why Indonesia? This is a question many have asked, and the answer lies at the University. During a lecture of Professor Leontine Visser, I had a talk with her about thesis possibilities and my interests. Some of the keywords which were pointed out were: agriculture, cattle, Asia and farmers. She told me about a PhD student who was doing her research in Indonesia with the Animal Production Systems group about Madura cattle and crossbreeds. With her help and the help of Henk Udo, I came in contact with Ms. Widi, the PhD student. After some emailing back and forth, it became clear I could combine my MSc Thesis with her PhD research as a part of her much broader research. The contact with her was very valuable for me because she helped me in many ways regarding the content of the thesis as well as the arrangements needed to be able to carry out the research. Once I got there, I got the opportunity to work at the Gadjah Mada University at the Animal Husbandry Faculty, the department where Widi also has her office. She and her student assistants helped me to find research sites, some accompanied me for translation and to arrange all the needed documents. The student assistants were students who almost graduated their Bachelor degree and had time to help me. Ideal was that they were all familiar with agriculture, so they knew what farmers were talking about. A pity was that not always the same students could join me because of other obligations they had, and as a result the first interviews with ‘new’ students I had to spend more time explaining the students what I exactly wanted to know. On the other hand, this sometimes also gave other insights and were topics looked at from different points of view which was sometimes very valuable.

5.2 Research sites

The study was carried out in Madura; an island which lies in East Java, and in Probolinggo, a city at the mainland of Java were many Madurese migrants live. During my stay at Gadjah Mada University in Yogyakarta, I spoke with different people about the most possible research sites. We found that in Madura Pamekasan and Sumenep were the most interesting districts to visit, and that Probolinggo and

Situbondo are cities with many possibilities to find Madurese migrants. Pamekasan is devided into several sub-districts, and from these sub-districts I went to Waru and Langeran. Waru is the sub-district were the Sonok contest is of very high importance in the daily life of farmers, and in Langeran this is the Karapan race. In Sumenep I went to a sub-district where Karapan plays a major role; the island island Sapudi, which is about 1,5 hour by boat from the main land. I never went alone to the areas, I was always accompanied by people who could help me with the translation, and inseminators who lived in that area, so they were familiar with the local people and the situation. However, being dependent on people who help you to find interviewees and translate, is sometimes difficult. The main difficulties were language problems and the planning. In some instances, some questions or meanings were lost in translation. Which is not surprising considering de fact that these translators and local people never deal with these issues in this way, and I was not used to do field research with interpreters from another culture. Regarding the planning, it was sometimes difficult be sure whether people could help me or not and this lead sometimes to changes in the proposal. It the end this caused no major problems. The most 'radical' change of the proposal was that I did not go to two different cities in East Java, but to one city. However, I did go to two districts which were different in cattle breed and the value of breeds. During all the fieldwork periods, I slept in local people's houses, except for the last period in Kademangan, this time it was not possible to stay at someone's house, so I had to stay in a hotel in de city centre of Probolinggo. I preferred to stay at local people's houses, because it gave me a lot of extra information which would never come to the fore during the interviews. When I stayed at a house, I was always accompanied by students or Ms. Widi, in the hotel I was alone which made it difficult to have a flexible schedule, since the student who helped me lived about 15 minutes away by motorbike, and he had his own obligations too. I compensated all the people who helped me during my research, sometimes Widi and I shared costs. I compensated them with money for the time they helped me and for the food, place to stay and travels we had to make.

5.3 Data collection

The fieldwork was conducted during 3 months from November 2009 to January 2010. Data collection was done by secondary data collection, semi-structured interviews and participatory observation.

5.3.1 Secondary data collection

Secondary data was collected through publications, documents, websites (e.g. www.jatimprov.go.id, ditjennak.go.id) and reports from institutions. Secondary data helped me to gain more insight in the recent local situations and have an idea of what I could expect during the research period.

5.3.2 Semi-structured interviews

An interview is a directed conversation towards a certain topic so as to collect information about a particular culture. The questions posed should follow logically out of the observations done; they should correspond with the local context (Agrosino 2007). In this research, semi-structured interviews were used which are interviews with predefined domains of interest; the questions and conversations were directed in a certain direction. Because of the language, a translator was needed. In this case it is important to first understand how some words are translated by the interpreter, so there is a clear understanding of the translation which is given. It is also important to make sure the translator translates everything, and does not filter out what they consider as unimportant because this might be precisely what is important for the researcher (Bujra 2006). The observations which were done, lead to field notes which help to memorize what was observed.

Semi-structured interviews were conducted in both research areas with farmers, key informants and traders. In some areas, the team I was working with were already familiar with the local people, so there it was easy to start. In other areas, we first had to introduce ourselves and explain the reason of our presence. I always had local people/graduated students with me to help and translate, since not all people in Madura speak Bahasa Indonesia, and I speak it only at a very basic level. However, I did have a short language course of one month, which certainly helped me during the fieldwork. Sometimes I was already able to interpret roughly what the conversations were about. An advantage of having local people who help you is that the interviewees trust the person, so they feel more free to speak. Sometimes, the inseminator Mr. Rudi, who was from Madura, held some daily conversations with farmers and the information that came out of these conversations also contained some valuable information; sometimes even more than from an interview. Nevertheless, the language itself sometimes formed a barrier; as mentioned before: some meanings and

questions were lost in translation. I tried to solve this with posing the question differently, or by giving some extra explanation of what I wanted to know and why. In many cases this overcame the problems, but not always. Sometimes, I could not make myself understood for the translators or farmers. This sometimes resulted in answers they had given before, other information they wanted to share or simply in silence. In the last case, I just moved on, although sometimes it was a pity I could not get all the information I liked to have. The interviews were prepared in advance but I always adapted the questions to the situation; some farmers knew or gave more value to certain subjects than others. Also, after a while I noticed that some questions were not relevant, or resulted in the same answer as given before. In this case I did not ask these questions anymore. The number of interviews conducted with farmers was 102, see Table 2. This total number can be divided in 4 subgroups: farmers with crossbred cattle in Madura, Langeran, Karapan race in Sapudi, Sonok contest in Waru, Madurese migrants in East Java, Probolinggo which is divided into two districts: Lumbang/Tongas with Madura and Ongole cattle and Kademangan with crossbred cattle.

Table 2 Interviews

Districts	**Waru**	**Sapudi**	**Langeran**	**Lumbang/Tongas**	**Kademangan**
N Interviews	36	21	21	11	13
Gender	36 male	20 male, 1 female	20 male, 1 female	10 male, 1 female	12 male, 1 female
Average age	46 (range 25-62)	47 (range 22-60)	45 (range 28-60)	39 (range 26-60)	50 (range 28-65)

Source: fieldwork Nov-Jan '09-'10

On average, interviews with farmers took about 45 minutes. Some were much longer because there were more people involved with much extra information, sometimes they were shorter because I could not make myself understood. With the interviews I was trying to find out about the background of the farmer, the motives of the farmers to keep a certain breed and the importance of their Madurese identity related to cattle.

The interviews were about as well technical details for example the number of animals the farmer had, their breeding priorities, as well about what they liked about being a farmer and how they value their culture.

Interviews with the traders were rather short because usually they were busy, and we just asked some basic questions about various breeds. The inseminator who was accompanying me also gave me a lot of background information in all the different situations. This helped me to adapt the interviews as much as possible to the recent local situation.

5.3.3 Participatory observation

During the whole period of research, I used participatory observation to be able to find underlying reasons or motivations for certain actions. Participatory observation was especially useful to compare the different areas and situations. There were times when we had to wait for a proper time for interviewing, so then we just wondered around a bit or talked with the farmers where we stayed. I was very lucky regarding the Karapan race and the Sonok contest, I have seen them both. This gave insight in what the farmers were actually talking about and where their livelihoods are dependent on.

6. Socio-economic implications of local cattle and crossbreeds

'…So partly, the answer[1] is embedded in the various, but locally specific agronomic husbandry practices of farmers (…), as well as in the strategies devised by farmers to secure a certain livelihood for themselves and their families. But the answer also lies partly in the differential access to resources and the nature of the relationships with the institutional environment'.

Hebinck & Van der Ploeg, 1997

Some decisions are determined by the physical environment the farmers live in, some by the social networks they have, some by economic reasoning and some by the governmental institutions. The styles of farming which are the result of these decisions and goal-oriented actions are also a result of the historical context: the traditions attached to Madura cattle are still of major importance. This section deals with these socio-economic issues, regarding the decisions of farmers, the styles of farming and the underlying values to keep Madura cattle or crossbreeds.

6.1 Husbandry and agricultural practices

Not all farmers carry out farming in the same way; there are many variations among farmers and their practices and perceptions about farming. In Table 3 on the next page these differences are visible.

[1] The answer to the seemingly chaotic variation in farming practices regarding maize production in Nandi District, Kenya

Table 3 General information of the farmers per district

	Waru (N=33)	Sapudi (N=20)	Langeran (N=20)	Lumbang/Tongas (N=10)	Kademangan (N=13)
Main Occupation					
- **Farming**	29	20	19	8	12
- **Other**	1 teacher, 1 government official, 1 head of village		1 inseminator	1 government official, 1 Santory employee	1 factory employee
Second job					
- **Trader**	11	4	3	-	4
- **Other**	1 laborer		1 government official, 1 making Batik, 1 carpenter, 1 driver	2 Santory employees	
Family size	4-5	4	6	4	5
Knowledge					
- **Family**	20	20	9	10	4
- **Extentionist**	16		16		
- **Community**			5	1	2
Average # Cattle (adult+young)					
- ♀	3	3	3	3	2
- ♂	1 to 2 (N=4)	3 (N=9)	2 (N=13)	2 (N=7)	2 (N=9)
Average # other livestock					
- **Goat**	-	3	4 (N=12)	5 (N=6)	6 (N=10)
- **Chicken**	-	5 (N=11)	94 (also ducks)	29	9

Source: fieldwork Nov-Jan '09-'10

As can be seen in Table 3, the main occupation of farmers in Sapudi is farming, they have no other jobs except for some farmers who are also involved in trading cattle. The reason is that Sapudi is very isolated, and there are no other job opportunities for the people who live there except farming or fishing. Some examples of these farmers are Mr. Conginik, Mr. Isnait and Mr. Sahmatun; they all gave the same answer to the

question ‘Do you like to be a farmer?’ They all said: *‘ I like because I have no other choice here in Sapudi. There are no other jobs and I have no education for other jobs’*. Another reason which was given a few times was that they felt responsible for the land, and that it was important to take care of it.

In other districts however, some farmers have also other main occupations, especially in Waru. In some cases this other job takes a lot of time and the farmer has to employ a care taker who can look after the cattle while the owner is busy with his other job. A reason some farmers gave for having other jobs next to being a farmer is that they have cattle for saving and for big expenditures and that they like to have another job because they are not satisfied with being only a farmer. Mr. Solihin, a Madurese migrant in Kademangan is an example, he does not take care of his cattle himself, but a caretaker does. When I asked him why he did not take care of the cattle himself he answered: *‘ I only have cattle for saving, and I got land from my father. But I do not like to be a farmer. I had higher education and can speak English so I wanted to work in a company. I do not really care about the cattle, it is just for the money’*.

The knowledge farmers have about farming and various breeds comes from different sources; farmers have their own social networks which determines the information they receive and how they interpret this information. Most farmers in all districts receive knowledge from their family since they grew up in a farming family, and they usually helped their parents since they are child. The same goes for knowledge received from the community, the children grow up in farming communities which share knowledge and experiences regarding farming. In Langeran however, many farmers receive knowledge about crossbreeds from an extentionist and inseminator. Not from their family because crossbreeds were recently introduced here, which means that all the information about crossbreeds is relatively new for the farmers. The extentionist and inseminator are the sources who have connections with the government and Artificial Insemination stations which provides them with knowledge about crossbreeding and using other breeds than Madura cattle. The introduction of these breeds lead to a change in farming styles and values; the ideas farmers had about farming have shifted towards other strategies regarding cattle keeping. With this, the value of Madura cattle has changed in this district. Before the introduction of crossbreeds, Madura cattle was the only cattle farmers had which made them as a

result valuable since it was their only source of income regarding cattle keeping. With the introduction of crossbreeds, Madura cattle lost their cultural and economic asset because the farmers can earn more money with the crossbreeds. Now, Madura cattle is kept mainly for reproduction of the crossbreed by most farmers, which results in 'Madrasin' cattle.

The number of cattle farmers have, is comparable in all districts but there are some differences between the number of farmers and the sex of the cattle they keep. In Waru only four out of thirty-six farmers owned a bull. This is a result of the role of the Sonok contest; with female cattle farmers can earn a lot of money while bulls are only used for reproduction, which can also be done with the bull from other farmers. In Sapudi, despite of the money farmers can make with bulls, there are many farmers who also keep female cattle. Female cattle is needed for reproduction, and farmers try to have a short calving interval, since not all bulls are good enough for Karapan, so constant replacement of young bulls is needed. In Langeran, relative many farmers have bulls, because of the growing interest in the Madrasin contest and the size of the crossbred bulls for meat production. In Langeran, also many farmers keep bulls. Here, farmers not always have an obvious reason, but often they are proud to have big cattle, and males are bigger than females.

6.1.1 Management of cattle

Madura cattle need very intensive management according to the farmers, they mentioned two main reasons: the fodder needs are difficult to comply with, and the traditional maintenance is very time consuming. This traditional maintenance includes tighten them up outside everyday for washing the cattle and sunbathing in order to obtain a shiny skin and the daily 'meetings' farmers have, the social context around Madura cattle is considered to be very important. The maintenance of Madura cattle is not only about production, but it involves farmers' whole social life as well. For example, in Waru when the Sonok animals are tied up outside, farmers have meetings where they discuss, have cigarette and enjoy themselves. Although others might find this daily meeting a bit overdone, for these farmers it is very important, it plays a major role in their satisfaction of being a farmer. Especially the animals used for Sonok and Karapan need intensive management; they need to be trained every day. Also, Madura cattle which is only kept for reproduction in those areas receive this

intensive management; the special maintenance of Madura cattle is of high value for the farmers in Sapudi and Waru. All cattle receive this intensive management. Partly because the farmers always hope that the calf will be good enough to participate in Sonok/Karapan, partly because it is an important part of the cultural repertoire embedded in the maintenance of Madura cattle.

Compared to Madura cattle, the bulls used for the Madrasin contest in Langeran need less intensive management, because they do not need to walk during the contest. Yet, in Madura the practices are slightly changing regarding the maintenance of crossbreeds, since the start of the Madrasin contest. At first, the bulls were kept for meat production, but slowly it shifted towards a more intensive management when farmers started with the Madrasin contest. Now the crossbred bulls are also tied up outside like Sonok cattle. The difference is that the bulls for Madrasin need no further practice, so no walking or 'dancing'. The farmers who shifted from Madura cattle towards crossbreeds partly based this choice on the fact that crossbreeds need less intensive management than Madura cattle, which was for these farmers a pleasant change, Mr. Jadi: *'Sonok needs a very intensive management which takes a lot of time and effort and is expensive'*. Some farmers find this pleasant because they were not able to manage the Madura cattle perform well enough, some because they argued it is simply too much work. However, with the Madrasin contest, the maintenance becomes more intensive.

When the farmers in Langeran started with the crossbreeds, some of them expected to spend less time on taking care of the animals than they did with Madura cattle. In most cases this corresponded to the practice; the crossbred cattle need less intensive management, they are easier to maintain according to the farmers: Madura cattle are more difficult to feed because they are picky, and their performance is more related to the (intensive) management of the farmer than the performance of crossbreeds. Mr. Ku Sairi: *'Crossbreeds are much easier to feed, they eat everything'*. Many other farmers share this opinion. One farmer, however, argued that he needs more time to search for fodder than he had to with Madura cattle, but he had already expected this since he knew about the amount of fodder crossbreeds need. The reason that he is the only farmer who needs more time to search for fodder might be explained by the fact

that he lives in a place where not much fodder is found, so he has to go further away compared to the other farmers.

6.1.2 Ploughing

Since the introduction of crossbreeds, the way farmers carry out ploughing has changed. Madura cattle and Ongole have a hump and are usually relatively easy to work with, which means that these animals can be used for ploughing.

Table 4 Cattle used for ploughing

	Waru (N=36)	**Sapudi (N=20)**	**Langeran (N=21)**	**Lumbang/ Tongas (N=11)**	**Kademangan (N=9)**
Cattle used for Ploughing[1]	38%	85%	9%	54%	11%

1 Significance is 100% with Chi-square test
Source: fieldwork Nov-Jan '09-'10

Crossbreeds however, do not always have 'enough hump' which is suitable for ploughing, and they are often considered as too wild and too big for ploughing, which makes these animals difficult to work with. When looking at Table 4, it becomes clear that the practice of ploughing has changed since the introduction of crossbreeds in those districts where farmers adopted crossbreeds. With the introduction of the crossbreeds, the farmers made the decision to carry out ploughing in other ways than with Madura cattle. Most farmers with crossbreeds now use a (hand) tractor or prepare the land by hand. Apparently, the value of Madura cattle regarding ploughing is not so high that farmers would not adopt other ways of ploughing their fields. Also, not all the land in Madura needs ploughing because the quality of the soil is very poor.

6.2 Income and savings

Most farmers have a mixed farming system; most have crops and cattle. The crops such as tobacco, rice and maize are used to meet the daily expenditures. The farmers can sell the crops to the local market, and a part of the yield from rice and tobacco

they use for own consumption. Farmers mentioned that especially tobacco yield a good profit.

Cattle is used for big or unexpected expenditures; it serves as an insurance. An example is Mr. Rafii: '*I sell cattle when I need money for big expenditures, for example when a child goes to school or someone has to go to the hospital*'.
It depends on the objective of the farmer how many animals are sold per year. If the cattle are used for reproduction, farmers sell approximately one calf per year to other farmers or to the slaughterhouse. Cattle used for Sonok however, is only sold when another farmer offers a good price, which depends on the performance of the cattle. Also, crossbreeds are sold at a relatively young age for meat; around 2 years old.

6.2.1 Cattle

In different areas, various breeds have different socio-economic assets as can be seen in Table 5. Striking is that there is relatively little information about animals older than 3 years, especially in Langeran and Sapudi. In Langeran, an explanation is that the crossbreeds are sold for meat before they reach the age of 3 years; usually they are sold at the age of 2. The table consists out of assumptions of the farmers; which price they most likely would receive when they sell the cattle, so some prices may not correspond exactly with the actual selling prices.

Table 5 Overview breeds, price in Rupiah x 10^6, age and function per region

	Waru (N=36)	**Sapudi (N=21)**	**Langeran (N=21)**	**Lumbang/Tongas (N=11)**	**Kademangan (N=13)**
< 1 year					
- ♀	9,8	3,3	5,3	-	-
- ♂	4	10	5,8	-	-
-					
1 – 3 year					
- ♀	-	-	9,6	3,5	O[1]=8,3;
- ♂	-	-	15,1	15,4	M[2]=7,5;
					MS[3]=8,4
					-; M=8
3> year					
- ♀	12,5	-	-	OxS[4]=30	O=13,5
- ♂	-	-	-	-	MS=9
Function	Sonok/ Reproduction	Karapan race/ Reproduction	Reproduction/ Meat/Madrasin contest	Reproduction/ Meat	Reproduction/ Meat

1 Ongole 2 Madura 3 Madrasin 4 Ongole x Simmental

Source: fieldwork Nov-Jan '09-'10

In Sapudi, there are only a few farmers with older animals, since they are not useful for Karapan anymore. Here, the difference between the prices of female and male animals is very big. Female cattle in Sapudi are only used for reproduction, while the male cattle are used for the Karapan race, which makes them much more expensive and valuable. Cattle which is not used for reproduction or Karapan, is sold to the main land of Madura. Every month approximately 500 cattle are sold to Madura.

As can be seen in Table 5, female cattle in Waru are twice as expensive as male cattle. The reason is that only female cattle are used for Sonok, and male cattle are only used for reproduction or production purposes. There are quite some farmers who have relative old female cattle compared to the other areas, this is because the performance of the cattle does not necessarily have to decrease when the animals get older. In Langeran and the areas in Probolinggo, there are relative small differences between

female and male animals. This might be the result of relatively little cultural asset attached to the animals in these areas (only some farmers join a Karapan race), whereas the cultural asset of Madura cattle in Sapudi and Waru are very strong and the prices are very much related to the function of the animal.

In Sapudi and Waru, nothing has changed yet since the allowance of the government for crossbreeds. Madura cattle are very expensive (respectively 30-40 million, 20-40 million (1 million rupiah= € 89,84[2])) which is due to the Sonok contest and the Karapan race. Of course there are new opportunities/constraints regarding cattle keeping since the introduction of crossbreeds, but this has not reached these areas yet, traders in Sapudi did not notice any difference yet when I asked them: *'I prefer Madura cattle instead of crossbreeds. I know about crossbreeds from Pamekasan district, but I think that the market here on Sapudi has not changed since the introduction of crossbreeds. The reason is that the prices for Madura cattle are still high because of Karapan'*. Only in Langeran where the cultural and economic asset of Madura cattle was not so high before the introduction these changes influenced farmers' practices.

In many instances, farmers argued that they like the contest/race because it keeps the price of the cattle high. Especially the farmers in Sapudi are very much focused on the positive effect of the race on the price of the cattle, like Mr. Madhair: *'I like the Karapan races because it keeps the price of the cattle high and stimulates the economy here'*.

Trough maintaining these events, the means of production and income are also preserved. The average price for bought cattle of approximately six months old is 3,9 million. Trough training and good performance, the price is almost 4 times higher when the animals are sold at an age of approximately two to two and a half years old. Not all farmers join the race, for Karapan this was seven farmers out of twenty-one. The reason that not everybody join is that not all the bulls are fast enough, and it is expensive to join (participant fee is ± 300.000 rupiah, and some farmers spend about 7 million to prepare the bulls for the race). Not only farmers with Karapan cattle are

[2] Retrieved from www.oanda.com at 8-06-2010

happy with the popularity of the races, also the farmers who do not participate are happy with the positive economic effects. They argued that one day they might have a bull calf with potential themselves, which they can sell for a very good price. The same reasoning is used in Waru district regarding the Sonok contest.

Where these events are not held, most of the farmers have adopted crossbreeds (in the visited areas). The reason that these farmers switched to crossbreeds is that Madura cattle were not performing well in Langeran, they were tiny and thin. As a result, the prices for the animals were very low because they have only little meat, and there is no cultural asset attached to animals which do not perform well. To the question why do you have no Madura cattle? Many farmers answered: *'I do not have Madura cattle because they are difficult to keep with the traditional maintenance, they do not perform well here. They are also expensive to keep for Sonok or Karapan because of all the supplements'*.

The farmers had many positive expectations about the performance of crossbreeds and the related possible income they would generate. The main reason to start with crossbreeds here was income, all the farmers expected to generate a higher income when starting with crossbreeds. The better performance results in more meat, so the farmers receive more money for the cattle they sell nowadays. At the present day, all farmers actually do generate a higher income. There was only 1 person, who is also an inseminator, who mentioned the negative side of having crossbreeds: he faced some problems with selling the cows because not all traders/butchers want to buy the crossbreeds. They do not always want to buy crossbreeds because of the big body size or the different quality of the meat. Because of the big body size, they can face some problems with selling all the meat in one day. However, the farmer was not worried about this, because more farmers kept crossbreeds now, so the traders will follow and buy more crossbreeds from farmers according to him. The income of the farmers has increased because the crossbreeds perform better and are bigger, so the farmers receive a better price when they sell the cattle. For many farmers, another reason to stop with Madura cattle were the high costs; the cattle need food of good quality and the traditional maintenance is relatively expensive and time-consuming. Also, whenever a farmer has good cattle in this area, many of these farmers join the Sonok

contest, which is an expensive activity and might not always lead to increasing prices for the cattle.

For some farmers with crossbreeds the income increased a lot because of the Madrasin contest they started to organize in 2007. It is called the Madrasin contest because all the crossbreeds in this area are a cross of Madura cattle and Limousin. The contest is about the appearance of the bulls. Due to this contest, the prices are increasing as much as in the areas where Sonok and Karapan are held. The farmers with big, well performing bulls can sell these bulls for high prices: an adult bull for maximally 24 million; which is comparable to the prices for good cattle in Waru.

The Madrasin contest is comparable with the Sonok contest regarding the performance. With the Madrasin contest, there are also meetings, although less often than with Sonok; with Madrasin there is a monthly meeting. Last Madrasin contest which was organized in Langeran in October 2009 , thirty-two bulls from farmers in the village attended, compared to the Sonok contest with 337 this year attendants this is relatively small. However, the contest is growing; not only in numbers of participants but also in the hearts of people which results in increasing numbers of participants and an increasing cultural and economic asset, comparable to the Sonok contest. The value of crossbreeds in Madura is rising in certain districts, and even outstrip the prices of crossbreeds in Kademangan. Here, the difference between the price for cattle bought at the age of 18 months, and the price of cattle sold at the age of 3 years old is only 1,4 million. The price rises simultaneously with the cultural asset of the animals; in Madura, the prices of crossbreeds are getting higher because now there is a cultural event for the crossbreeds. Mr. Zaini: *'Madura cattle is not important here, Madrasin is very important. The Madrasin contest is good for my social status and the price of the cattle'*. In Kademangan, however, the prices are of a relatively low level because the prices are purely based on meat production and reproduction, there is no cultural asset attached to these animals here. In Lumbang/Tongas, Madura and Ongole cattle are sold for higher prices than the crossbreeds. The average price of bought Madura and Ongole cattle is 5 million for approximately 9 months, and the selling price is 10,4 million for the age of 2,5 years. Ongole and Madura cattle can be used for ploughing, so the animal is more multifunctional than the crossbreeds and this results in a higher selling price. For

Madura cattle, the price might be higher compared to crossbreeds partly because of the Karapan races which are held. Nevertheless, there are relatively few farmers who join the Karapan races compared to Sapudi. Some farmers in Kademangan argued that they have Madura cattle because of the culture attached to these animals, others kept Madura cattle because of a higher selling price, which might be related to the farmers who argued that Madura cattle have a better production than other breeds regarding meat and reproduction.

It depends on the purpose of the cattle where they are bought by the farmer. In most cases, if the farmer wants to use the cattle for Karapan, Sonok or reproduction for these events, he bought the cattle at a farm in the village. The reason is that when he buys the cattle at a farm, the farmer knows about the pedigree, and often he knows the farmer so he also knows about the quality of the cattle and the maintenance. As a result, these cattle are sometimes more expensive because of the good performance (on average one to two million more). When the farmer buys cattle just for meat production, they buy the cattle at a local market which is often cheaper. At the market usually there is no information about the pedigree because there is a trader involved who sells the cattle.

6.2.2 Other means

Next to cattle keeping, most farmers also own a plot of land, or rent it as can be seen in Table 6. Here they plant crops they can sell to generate a daily income.

Table 6 Land size and crops

District	**Waru**	**Sapudi**	**Langeran**	**Lumbang/ Tongas**	**Kademangan**
Average Land size in Ha.	0,7 hectare	0,6 hectare	0,8 hectare	1,3 hectare	0,8 hectare
Crops					
- **Maize**	36	20	17	9	10
- **Tobacco**	17	-	10	-	-
- **Rice**	-	-	7	7	9
- **Other**			6	3	1

Source: fieldwork Nov-Jan '09-'10

The plot sizes vary per region are related with the availability of land. In Waru farmers own plots with an average of 0,7 hectare, farmers in Langeran 0,8 hectare and the farmers in Sapudi have approximately 0,6 hectare of land. The farmers in Sapudi have relatively small plots because Sapudi is a very small island (from east to west is

only a few kilometers). In Probolinggo, there were also differences in plot sizes between the two districts: the average size in Kademangan was 0,8 hectare and almost half of the farmers does not own land at all, and in Lumbang/Tongas the average size was 1,3 hectare. The difference occurs because of the higher population density in Kademangan and higher prices per hectare.

6.3 Fodder needs

The amount and type of fodder needed depends on the breed. These considerations are important for farmers to decide which breed they maintain. Many farmers in the areas where purely Madura cattle is kept, mentioned as main argument against crossbreeds that crossbreeds need too much fodder, while in the areas where farmers keep crossbreeds, Madura cattle is regarded as difficult to maintain regarding the fodder needs: the cattle is too picky, they only eat high quality fodder.

The farmers who started with crossbreeds, were aware of the fact that these animals have a bigger appetite compared to Madura cattle. Therefore, some farmers expected to spend more time on taking care of the animals because the farmer has to look for more fodder. Some farmers expected less time because crossbreeds are assumed to be less picky; they do not have to search for specific foodstuffs. The different answers of the farmers relates to the area where they live, whether it is an area which does not have very fertile soil, they have to search relatively far away because there is not much vegetation, or live in a fertile area.

As can be noticed from Table 7, the animals in Sapudi receive the least fodder. This is because it is difficult to find fodder in Sapudi; the area is very dry, and farmers have to go far away to find fodder of good quality. Many farmers cannot afford it to buy concentrate or forage from the mainland of Madura. This was also often mentioned by farmers as a motivation not to keep crossbreeds. Mr. Marsahid: *'I would like to try a crossbreed to see the results, but there is not enough fodder here to feed the animal'*. Mr. Sa'in: *'If I could choose between Madura cattle and crossbreeds I would still keep Madura cattle because crossbreeds are too difficult to feed here, they eat too much'*. Farmers feed the cattle mainly fresh leaves and grass. As a supplement they use sugar and sometimes special concentrate and eggs, especially in preparation for a Karapan race, the farmers argued that the bulls run faster with these supplements.

Another explanation for the low amount of fodder is that in general the animals are relatively small in Sapudi, which is desired for the Karapan race, which results in a lower fodder intake compared to for example cattle which are used for Sonok; these animals are much bigger.

Table 7 Amount of fodder per region

District	Waru	Sapudi	Langeran	Lumbang/ Tongas	Kademangan
Kg fodder per animal	55	32,5	45	52,5	70

Source: fieldwork Nov-Jan '09-'10

Sonok cattle are judged by their appearance, and one of the main criteria with the contest is the size of the animal; it has to be big. In order to let these animals grow big and look well-fed, they need much fodder, and the fodder has to be of good quality. The ration of the Sonok cattle mainly exists of dry grass, sometimes dried leaves, and as a supplement the farmers add maize bran. It is relatively cheap to maintain good performing Madura cattle in Waru because the farmers can find all the fodder they need close by, they never have to buy forage. Only the supplements they to buy. In Waru, farmers can afford to buy concentrate at the market which is close by because their financial situation is higher compared to Sapudi.

Striking in Table 7 is the fact that the crossbreeds in Langeran receive a relatively small amount of fodder, it is even less than the amount which is given to the Sonok cattle. The reason is that in general cows are fed more compared to bulls in Madura, and animals for Sonok are cows and in Langeran the bulls are the most kept (pers. comm. Widi 2010). Also it is a bit more difficult to find fodder in Langeran, because the crossbreed is not as well adapted as Madura cattle to the environment, the animals start to eat everything they get offered, Madura cattle do not. However, some of the farmers mentioned that Madura cattle do not satisfy them, they like to see that their cattle eat everything which is offered. As someone of the research team stated, it is comparable with children, parents like it to see them eat everything instead of only half of it. As a result of the ability of Madura cattle to slow down their metabolism, the cattle does not grow as much as they would under ideal circumstances, which

makes them not suitable for joining a Sonok contest. Sometimes this was the reason why many farmers were interested in crossbreeds when was allowed in Madura, because they could not earn a lot of money with their Madura cattle since they were not suitable for Sonok.

In Lumbang/Tongas, farmers feed their cattle more than the farmers Langeran, and almost as much as the Sonok cattle. This is a striking observation, because Ongole and most of the Madura cattle are only used for draught power and reproduction. There are some farmers who join Karapan, but not many. The reason for this relatively large amount of fodder is that there is more fodder available in East Java than there is in Madura because the land is more fertile. All the farmers in Lumbang/Tongas feed their cattle grass and some farmers add maize leaves or straw.

Of all the groups of farmers, the crossbreeds in Kademangan are offered the most fodder by far. As mentioned before, farmers realized that crossbreeds need more fodder compared to Madura cattle in order to have a good performance. The same reasoning for Ongole and Madura cattle is the explanation here; there is more fodder easily available than in Madura. In general, the ration of the crossbreeds exists of grass and maize leaves, some farmers add concentrate rice skin. In Kademangan more farmers add concentrate to the ration than farmers in Lumbang/Tongas.

The type of fodder might be more related to the purpose or function of the animal rather than to the breed, seeing the variation in fodder amount given by the farmers. For example the ration of cattle kept for Karapan is different from cattle used for Sonok, because of the different purposes.

7. Cultural assets and status of cattle and farming

Keeping cattle is not only economically determined, but also culturally. In the research sites, the amount and performance of cattle played an important role in the social status of farmers. The importance of cattle regarding the social status of farmers is very much determined by the cultural asset which is attached to cattle in these areas.

7.1 Social status attached to cattle breeds

In Waru, the cultural asset of Madura cattle is high as a result of the social networks these farmers have and the groups they live in. In these networks, the farmers' lives are organized around Madura cattle; maintaining Madura cattle is the centre of most people's lives in Waru. The reason for this focus on Madura cattle is good financial capital farmers can generate as mentioned earlier. However, not only farmers are able to generate a good financial capital and thus a high social capital with Madura cattle, but a whole network around these farmers too such as traders and butchers.
Through these networks, Madura cattle maintain their high status in the district. Because of the fact that Madura is relatively isolated, the market is still local and very much focused on Madura cattle rather than crossbreeds. However, not every farmer in Madura maintains Madura cattle, in Langeran many farmers keep crossbreeds because of economic considerations. Some of the farmers who started with the crossbreeds expected to reach a higher social status because of the lack of social status connected to Madura cattle in this area due to the bad performance of the cattle. All the farmers who started with the maintenance of crossbreeds, felt proud and were happy they started with the crossbreeds.

All the interviewed farmers have the idea that they reached a higher social status in their village. Mr. Jumali (Madrasin since 2006): *'Madura cattle is not important, I maintain Madrasin since 2006 and I feel that it is good for my social status'*. Mr. Sabina (Madrasin since 2007): *'Madrasin grows fast so my income is higher. Also, the Madrasin contest is very important for competition, increase of cattle prices and social status'*.

The farmers who expected to reach a higher status were not the first ones to adopt crossbreeds, most of the farmers started between 2004 and 2006 with crossbreeds. They probably expected a higher social status when starting with the crossbreed because they saw some other farmers who adopted the crossbreed earlier, and noticed that these farmers had bigger cattle and generated a higher income than before.

Financial capital and performance of cattle are important indicators of social status as many farmers told. The increased social status when keeping crossbreeds shows that crossbreeds are well adopted in Langeran, while in other districts in for example Sapudi, farmers are proud to maintain Madura cattle as a result of the cultural events. Farmer Mr. Rafii in Sapudi explained: *'There are no other breeds on Sapudi because everybody is proud to have Madura cattle'*. Mr. Mussahwi argued that: *'If I could choose between crossbreeds and Madura cattle I would still choose Madura cattle because you cannot use crossbreeds for Karapan. And Karapan is very important here in Sapudi'*.

7.2 Intra-household relations

In almost all instances, the farmer himself takes care of the animals sometimes with help from his wife or the whole family; there was only one exception in Kademangan who has a caretaker to look after his cattle. There were no differences between the areas with crossbreeds or Madura cattle in time allocation of the household. Also, when asking in Langeran what has changed since the introduction of crossbreeds, the farmers never mentioned work allocation as a changed factor. Unfortunately, I was not able to interview many women, because answering questions was seen as a man's job, and since the husband is the farmer, people found it strange when I mentioned I also wanted to ask questions to the woman. For example, I tried to interview the wife of Mr. Sumuh, but she explained that her husband knows everything about the cattle and we had to wait for her husband. The woman which I did interview (only five, sometimes the husband took over) however, had less knowledge about the animals and farming in general than the husband had. To be able to compare this with the most given answers by the man, both the answers of man and woman from the same areas are in the tables below.

Table 8 Women's perspectives regarding Madura and cattle

District	Woman Sapudi (N=1)	Woman Langeran (N=1)	Women Lumbang/Tongas (N=2)	Woman Kademangan (N=1)
Perspective breed	Madura, because of culture	Crossbreed because of economic reason and easy maintenance	Madura, because of culture. Ongole, because easy maintenance and selling	Ongole and crossbreed because of technical and economic reasons
Karapan race	Liked it, watched	~[1]	1 Did watch, other did not	Did not like it
Still feel connected to Madura	X	X[2]	Yes, show with language	Yes, show with language
Reason for having cattle	Income, ploughing	Saving	Income, saving, culture	Saving

1 No answer

Source: fieldwork Nov-Jan '09-'10

Table 9 Men's perspectives regarding Madura and cattle

District	Men Waru (N=36)	Men Sapudi (N=19)	Men Langeran (N=20)	Men Lumbang/Tongas (N=9)	Men Kademangan (N=12)
Perspective breed	Madura, because of culture	Madura, because of culture	Crossbreed because of economic reasons	Madura because culture, economic reasons. Ongole, because easy/cheap	Crossbreed, Madura and Ongole because economic reasons.
Karapan race/ Sonok contest	All liked Sonok because it is a marker of Madura and tradition	All liked Karapan, because of culture and economic reasons	Most farmers liked Karapan and watched	Liked Karapan, some watched	Most farmers liked Karapan and watched
Still feel connected to Madura	X	X	X	Yes, show with cattle, symbols, language	Yes, show with language, special habits
Reasons for having cattle	Income, saving, status, culture	Saving, income, status	Economic reasons, tradition and manure	Income, saving, manure	Saving, income, status

Source: fieldwork Nov-Jan '09-'10

As can be seen in Table 9, there are not many differences between the perceptions about cattle and culture of men and women. Women are often seen as a help for their husband regarding taking care of the cattle, and they do not seem to care about the social status of having cattle of a certain breed. In many instances, the farmers in Kademangan and Sapudi gave as reason to keep cattle to perceive a good social status. The women, however, did not mention social status, they only mentioned cultural or economic motives for keeping cattle. Also, all women feel connected to Madura,

when asking how they show it, they could only think of the Madurese language they all use and not about the cattle breeds they have. The men seemed to be a bit more outspoken concerning this matter, since many of them mentioned not only the language but also other traditional symbols, for example a specific Madurese knife, or traditional habits like marriage. However, only a few men mentioned that they show being from Madura with cattle after asking it specifically.

Comparing the differences between men and women, it might be that women are less interested/involved in the culture and traditions about farming and cattle. Since the husband makes all the decisions regarding cattle keeping, he also determines the social status position of him and his family; the women never regard themselves as much responsible for the cattle as their husbands did. Yet, the woman in Lumbang/Tongas is a widow, and she continues farming but the neighbor takes care of the animals. She is 50 and she finds it too difficult to take care of the cattle herself.

In Waru, there is conspicuous difference between older and younger farmers: all the older farmers regard the Sonok contest and being a farmer still very important, while some younger farmers mentioned that they like the Sonok contest, but it is not so important to them as for their parents. Some of them would also prefer to have another job, but they are still farmers because there is not much choice in Madura. The reason for this difference is that the older farmers are usually richer so they can afford good cattle and join Sonok contests whereas younger farmers do not have enough money yet to buy good cattle with Sonok potential. Therefore, the young farmers are not so much interested yet in Sonok, and care less about the breeds they keep.

7.3 Perception of wellbeing

'Living a good life' is for every group, even every individual different. However, almost all the interviewed farmers are happy being a farmer as can be seen in Table 10.

Table 10 Feeling towards farming per region

District	Waru (N=33)	Sapudi (N=15)	Langeran (N=16)	Lumbang/Tongas (N=11)	Kademangan (N=9)
Happy being a farmer	Yes, status, income, workload, no choice	Yes*, workload, responsibility, no choice	Yes, income, tradition	Yes, workload/flexible, income	Yes, income, no choice

*Except 1 farmer

Source: fieldwork Nov-Jan '09-'10

The main argument is that with being a farmer they have good financial capital to support their families. Another motivation which is experienced as positive is the workload and herewith the flexibility they have to plan their days, the farmers do not consider themselves as very busy or having no time for their social life. Mr. Dayono: '*I like to be a farmer because I never feel busy, I like the work*'. Farming is the centre of their social life, so even when they are working the whole day, they have much contact with others. Nevertheless, there are also quite some farmers who mentioned as first or second motivation that they have no other choice than being a farmer; this argument was mainly brought up in Madura. Mr. Isnait: *'I like to be a farmer because I have no choice because of little education and job possibilities in Madura'*. The reason behind this motivation is that practically all the interviewed farmers only went to primary school and some to high school, and with only a low level of education it is more difficult to find other jobs outside Madura. Most people who wanted to study left Madura, because of more choice regarding job possibilities and often better facilities on Java. But, despite the little choice farmers have in Madura, they all seem to be pretty happy and proud to be a farmer and have cattle because they grew up with it. Farming is seen as a tradition, explained some farmers, which must be preserved.

Farmers feel always more proud when they have cattle than without, and in general farmers are a little bit embarrassed when they have cattle which performes not so well, sometimes they did not even want to show the cattle. As one can see in Table 10, many farmers referred to material factors which makes them happy to be a farmer. The social factors were not really mentioned by the farmers, but this was obvious

from the observations. All the villages I have been were very much community based; the farmers and families shared much of their lives with each other. A good example of this sharing is a farmer in Waru, he was always around when I was interviewing, and also with the Sonok contest he came much to the fore, but when I asked him whether I could see his animals, he did not want to show it because they were not performing well enough.

In Langeran, it seems that material status- and wellbeing plays a bigger role than in the districts with Madura cattle; the economic considerations of cattle keeping were mentioned more often. This is because before the introduction of crossbreeds, some farmers were facing troubles regarding their financial capital, which made them feel sad and not happy to be a farmer. Nowadays the income is good as a result of the change to crossbreeds. Therefore, farmers in this area are still focused on income generation, because this used to be a difficult and important issue in their daily lives. The social aspects in the life of these farmers seem to be a little bit less important than in Waru and Sapudi. For example, the Madrasin contest does not have weekly meetings like Sonok, but monthly meetings. Also, the bulls are not tied up outside as frequently as in the other areas, which usually causes a daily coming together of the farmers. Satisfaction plays an important role in the decisions farmers make regarding cattle keeping. Satisfaction is not only related to the performance of cattle, also to the fodder intake. Madura cattle are very picky, whereas crossbreeds eat everything, which is more satisfying for the farmer. The farmers like to see that the cattle empty their fodder manger, instead of a half empty manger. With a half empty manger, they feel that the cattle does not receive what they would like to have and it makes the farmer feel sad and not satisfied.

8. Conservation of Madura cattle

There are many reasons farmers can think of in favor of conserving Madura cattle. These reasons can be economic and cultural, referring to the cultural events which are attached to Madura cattle. In some areas, however, crossbreeds play a more important role in the lives of farmers regarding financial capital; in these areas Madura cattle is not kept because of economic motives, rather because of reproduction and some because of cultural motives to maintain the tradition.

8.1 Economic arguments

Economic arguments embrace elements such as social networks, breeding priorities and ecological/geographical context.

8.1.1 Social networks

As mentioned before, the value of Madura cattle and crossbreeds depends to a large extend on the area where farmers live in terms of environmental opportunities/constraints and contact with the 'outside world' through social networks related to extension. On the island Sapudi there is little contact with the mainland of Madura or Java, so only little is known about crossbreeds which results in a high valuation of Madura cattle; the cattle are regarded as an important source to maintain their livelihoods. Another reason why the economic asset of Madura cattle is high in Sapudi is because Karapan plays a major role in the daily lives of people, which results in a high cultural/economic asset. Also, because the government formally appointed this island as conservation area, farmers are encouraged to maintain Madura cattle. In Waru the government also plays a role in valuation of Madura cattle, since they did not introduced crossbreeds through Artificial Insemination, in contrast to other areas. The Sonok contest is a still increasing event in Waru which is interwoven in the daily lives of people. Because farmers can show their good cattle with the contest and farmers want to buy good cattle, the prices maintain to be very high. As a result, Madura cattle are regarded as economic more valuable than crossbreeds, which is related to the culture of the Sonok contest. However, in Langeran where crossbreeds were introduced in 2002 through Artificial Insemination, the economic asset of crossbreeds is higher compared to the value of Madura cattle. Crossbreeds are regarded as more valuable here because the animals are bigger, easier to maintain and perform better regarding meat production, therefore they make the

owner proud to have crossbreeds. In other words, the reason why crossbreeds are regarded as more valuable than Madura cattle is mainly based on economic motivations. Bigger animals produce more; the farmer can increase his financial and social capital. Since 2007 farmers organize the Madrasin contest. This contest has as main objective to increase cattle prices of crossbreeds which results in a higher social status of farmers with good cattle. The farmers who join are very proud to show their cattle, the same as with the Sonok contest. Even though most farmers started with the crossbreeds because they wanted to increase their financial capital, a cultural event regarding cattle still seems to be very important, also for social purposes such as meetings and status.

In Lumbang/Tongas, Madura cattle and Ongole are equally popular, but the motivations of farmers are differently in favor of one or another. All the motivations of farmers to keep Ongole (which is regarded as a local breed) are mainly price/maintenance related, and the motivations in favor Madura cattle are mainly based on cultural and economic arguments. In this area there are no crossbreeds, according to one farmer because the cattle are too expensive and it is sometimes too hot, which would result in a badly performing animal. As one can notice, the economic reasons to choose for Ongole cattle are determined by the limitations of the crossbreeds and the capabilities of Ongole cattle.

In Kademangan the crossbreeds are regarded as economically more valuable than Madura cattle, all the motivations of the 12 farmers which had crossbreeds were price/production related, Mr. Muklas: *'I have crossbreeds because these animals grow much faster compared to Madura cattle, so I receive more money when I sell it'*. and only two out of three farmers who kept Madura cattle had price/production as a motivation.

8.1.2 Breeding priorities

The breeding priorities farmers have, differ per area. The knowledge and motivation of the inseminator plays a major role in the breeding strategies of farmers. When the inseminator has much knowledge about breeding strategies, how to avoid inbreeding and about Artificial Insemination, the farmers are more open to various options.

In Waru the farmers are very much aware of the notion that inbreeding is bad concerning the future of Madura cattle. Actually, the pedigree is very important regarding the Sonok contest. All the farmers with Sonok cattle know about the pedigree of the animal, they know which bulls and cows are used for reproduction. The farmers do not have records of the pedigree, they have all the information in their minds. This is not a problem since they always only have a few animals.
As mentioned before, cattle for Sonok is all about appearance. The most important points are size (big), color (dark red) and shape of the eyes (preferably with 'black eyeliner' around the eyes). The farmers are aware of the fact that inbreeding will cause problems in the future, for example a decrease in size, which is something they absolutely try to avoid regarding the contest and the corresponding economic asset of the animals. This awareness is to a large extent created by the inseminator Mr. Rudi, who is very motivated and promotes Artificial Insemination with bulls from outside Madura, an institute in Malang (East Java). The farmers still make their own decisions, but because of Mr. Rudi they are aware of many options. The inseminator in this district has much knowledge about the pedigree of the cattle of the farmers because he records everything, all the used combinations of natural mating and Artificial Insemination.

Table 11 Breeding priorities per district

District	Waru (N=18)	Sapudi (N=18)	Lumbang/Tongas	Kademangan	Langeran
Size	Big	Did not matter	Big	Big/small	Big
Color	Dark red	Did not matter	Did not matter	Did not matter	Red
Pedigree	Very important	Did not matter	Did not matter	Important	Very important
Other	Shape of eyes	Fast, straight legs	~	~	~[1]

1 No answer

Source: fieldwork Nov-Jan '09-'10

In Sapudi, however, the farmers do nothing else than inbreeding. They know that they are doing it, but they do not mind at all, as long as the bulls run fast enough for the Karapan race it is not seen as a problem. The farmers do not mind that the bulls will become smaller in the future. Mr. Mussahwi: *'I know about inbreeding, but it does not matter'*. Farmers use the same bulls/semen all the time because they only want to use semen from Sapudi, and not from Madura. They are afraid that it would be 'Sonok semen' and thus the bull calves would not be useful for Karapan. It is also a matter of pride and tradition, because Sapudi is the island where Karapan originates from so the farmers feel they should use semen from Sapudi. Also, some farmers explained that when they would use a bull from the mainland, they have to use Artificial Insemination which in their view 'a sin'; it is not the natural way of mating. Herewith, Widi told me that inseminators who have a bad rate in Madura are usually sent to Sapudi because there are no inseminators who want to work there. This is a problem regarding inbreeding since the inseminator is not motivated to provide the farmers with knowledge and try to avoid inbreeding.

In the Langeran the farmers are involved in the breeding process. They are involved because they discovered that the 'first backcross' generation in general performs best according to their own observations and standards. Which means that they maintain this generation trough breeding, so they are aware of the generation and pedigree of their animals. The farmers who are involved in the breeding process know about the pedigree of their cattle, but to a certain level. They do have oral information about the Madura cattle they use and they know which bull they use trough contact with the farmer who owns the bull, but not the complete lineage of the cattle. Often farmers use bulls from other village members, thus at a certain moment, inbreeding will occur which might result is lower performing animals. The farmers are aware of this process of inbreeding, because the pedigree is very important in this region. With inbreeding, the animals will become smaller, which has a negative influence on the performance of the cattle regarding meat production and the Madrasin contest.

One farmer also has an animal of the F3 generation, but the performance is very bad, Mr. Saiful: *'The F3 generation of Madrasin is not good because it cannot adapt to the circumstances; it is too hot here'*. Also the inseminator mentioned that the 'first backcross' generation performs best. It is not clear whether this observation was the farmer's own experience or he had this knowledge from the inseminator. Besides these breeding priorities, the farmers in Langeran are interested in big cows/bulls, which is next to the length and the body shape one of the main aspects which is paid attention to in the Madrasin contest. The pedigree of cattle is of big importance here, like in Waru.

In Lumbang/Tongas, the breeding priorities of most farmers are comparable to the priorities in Sapudi because there is also a Karapan race held here. The tradition of Karapan has migrated to East Java with the people, and so did the breeding priorities. Some of the farmers only want to buy cattle from Madura, especially from Sapudi because it is famous for its good and fast bulls. Most of the farmers go to Madura to buy a bull they want to use. Sometimes this is the only reason for farmers go to Madura, sometimes they combine it with a family visit; which indicates the importance for some farmers to use bulls from Madura, because the travel is long, especially to Sapudi (±7 hours by car and boat). However, there are relative less

farmers who are so much focused on Karapan compared to Sapudi. Some farmers in Lumbang/Tongas keep Madura cattle only for meat production and reproduction. The Karapan races are still important, but not for all farmers this was the main breeding priority. Most farmers buy their cattle at the local market, so they do not know about the pedigree. Only the pedigree of cattle which are used for Karapan is known by the farmers since they buy these animals at a farm.

In Kademangan the breeding priorities are similar to those in Langeran, so it is important for the farmers to maintain the 'first backcross' generation of crossbreeds and herewith Madura cattle, needed for the reproduction of crossbreeds. However, the farmers are much less involved in the breeding process; in Madura farmers seem to be much more involved possibly because crossbreeding has just started recently here. In Java crossbreeding has been done for a long time now, so many combinations of animals and breeds have been used. In Langeran farmers know much more about the pedigree compared to the farmers in Kademangan. The reason is that most farmers buy their cattle at the local market which means that they do not know about the pedigree of the animals they buy.

8.1.3 Ecological context and location of the farm

In some areas the ecological and geographical context determines the possibilities and restrictions of certain breeds. In Sapudi, it is not very likely that farmers will start with crossbreeds in the near future. The reason is that there are no slaughterhouses in Sapudi, and the purpose of crossbreeds is meat production. So all the cattle which has to be slaughtered, first has to be transported to the mainland of Madura. The main priority of breeding is Karapan, and with this the farmers can generate good financial capital so there is no need for these farmers to shift towards other breeds. Next this, the government stimulation of Madura cattle plays a role here.

In Langeran farmers prefer to keep crossbreeds, because they find it difficult to find good quality food for Madura cattle due to poor soil quality. Facing this lack of natural capital, it is easier to feed crossbreeds because finding a big amount of lower quality fodder is not regarded as a problem in this area. Mr. Tuli: *'Feeding Madrasin is easier and cheaper compared to Madura cattle'*.

A farmer in Lumbang/Tongas argued that it is too hot to maintain crossbreeds. An example to illustrate the problems crossbreeds face in East Java is the special treatment that Frisian Holstein crossbreeds receive in a fattening company called Santory. The special treatment exists out of water installations above the animals in order to spray water damp every once in a while so that the cows can cool down. Santory is a fattening company which is located in Probolinggo and buys cattle from middleman from various places; from Java, but also Australia they buy shiploads of cattle for fattening. The company stores around 1400 cattle year round for about three months before they are brought to slaughter houses in the region. Most of these animals are crossbred bulls, the company does not buy Madura cattle because they are not suitable for fattening; their feed conversion ratio is not good (Maule 1990) enough. Madura cattle only grows about 0,2 kg per day, while crossbred cattle can grow 1,5 kg per day, and Ongole 0,7 per day. Nevertheless, crossbreeds suffer of heat stress, while Ongole and Madura cattle are tropical breeds so they do not have these problems. The production results crossbreeds have versus Madura cattle in Santory, explains why farmers who do not live in areas where Sonok or Karapan is held choose for crossbreeds: it is economically more feasible to maintain crossbreeds in these areas.

8.1.4 Governmental environment

Not only the ecological context plays a role in the decision of farmers to maintain a certain breed, the government plays a role too. In Sapudi, the government strongly recommends to maintain Madura cattle in order to preserve the breed. This island is chosen for the preservation of Madura cattle because the circumstances are rather ideal; it is relatively isolated which makes it easy to preserve. However, also in Waru keeping Madura cattle is stimulated because the government never introduced crossbreeds here. The reason is the good performance of cattle, resulting in Sonok. The circumstances in Waru are good regarding the availability of fodder, farmers are able to find enough fodder of good quality. Also the knowledge of the farmers about breeding is relatively good. Through stimulation of the Sonok contest by giving it a lot of attention, and the preference of the inseminators for Madura cattle, farmers are enthusiastic and willing to maintain Madura cattle. The farmers here are not interested in crossbreeds at all, since there is no need like in Langeran, to increase their financial capital.

8.2 Cultural motivations and assets

Not only the financial capital is important for farmers to choose for Madura cattle, but also cultural assets are important. However, financial capital and cultural assets cannot be seen as being separate; they are interwoven. Most of the farming practices are built around cultural events; yet, economic reasoning regarding these events play an important role. To the question 'why do you like Karapan?' many farmers answered that they like it because of tradition and it maintains the high prices of cattle: Mr. Sukardi: *'I like Karapan because it is an important tradition here in Sapudi, and because it increases the prices of the cattle'*. Mr. Mussahwi argued *that 'Karapan is important because of economic reasons, the value of Madura cattle is very high'*. Also farmers with Sonok cattle answered similarly: Mr. Maad: *'I like Sonok because it is a marker of Madura people and there are bets during the contest which is very important'*.

8.2.1 Cultural symbols and events attached to Madura cattle

In general, the role of Madura cattle is bigger in Madura compared to East Java. However, Madura cattle are still important in East Java. There are still Karapan races held in Lumbang/Tongas and although it is not as popular as in Sapudi, it is still an important event. Most farmers in East Java like Karapan, and the farmers who do not like it, mostly live in Kademangan where crossbreeds are kept. The reason for these different perceptions about Karapan are obvious because for the farmers in Kademangan the Karapan race is not a part of their livelihoods and cultural habits, since they maintain crossbreeds and not Madura cattle. Some of the farmers who were interviewed joined the Karapan contest, and their enthusiasm was the same as the Karapan farmers in Sapudi. For many people in Probolinggo it remains important to show that they are originally from Madura. Most of these people show it by using the Madurese language, only some farmers keep Madura cattle for this specific reason. Some farmers mentioned that it is important to maintain Madura cattle, in order to preserve the Madurese tradition. Mr. Mustaim: *'I always have Madura cattle, I must have Madura cattle because I am originally from Madura, my grandfather was born in Madura.'* The cattle are still very important in the daily life of farmers because of the events, with which farmers have good financial capital. However, there is a difference between Kademangan and Lumbang/Tongas which is caused by the location of the districts; one is far away from the city (Madura cattle), the other is not

(crossbreeds). Next to this, two farmers in Kademangan argued that their culture is more like a combination between Madura and Java, which would explain why keeping crossbreeds is seen as something usual, since crossbreeds were adopted a long time ago on Java. Another farmer added that when one lives in Madura, one has to have Madura cattle, in Probolinggo this is different. Here many farmers do not feel responsible themselves to maintain Madura cattle. Mr. Sukamid: *'I have crossbreeds, but Madura cattle is important to maintain the culture because everybody here is Madurese. But I do not have Madura cattle, that is not a problem for me, I do not have to have Madura cattle myself. Madura cattle is important for Karapan'*. An observation related to this was that in Kademangan none of the farmers took their cattle outside to show it to us, whereas in Madura all farmers did this, and in Lumbang/Tongas also a few. Thus it seems that the farmers in Kademangan feel less connected to Madura.

Another explanation for the difference between the districts is the distance from Kademangan to the city in a sociological way; it is further away from the city compared to Lumbang/Tongas which might cause less 'modern' influences from people from the city in the choice of breeds. Also, the farmers here are more traditional, for instance, many of them wear a sarong which was hardly observed in Kademangan with the crossbreeds.

According to all the interviewed farmers, only Madura cattle are suitable for Sonok and Karapan and crossbreeds are not. Mr. Sana: *'I do not want to have crossbreeds because I cannot use them for Karapan'*. Mr. Imam: *'Crossbreeds are scary and ugly and not suitable for Sonok'*. Almost all cattle are trained in the traditional way, depending on the area where they are kept, whether they are trained for Sonok or Karapan. The animals which are regarded as not good enough to join the Sonok contest are still tied up outside every day, but they do not receive any further training (no walking on music). In Sapudi, farmers start to train with the bulls at a very young age, the youngest bulls are only four months old. They start this young with the training because in this early stage the farmer can already tell whether it will be a fast bull or not. If it turns out to be a fast bull, they maintain the training on a weekly basis, if the bull is too slow , it (very fast bulls can run hundred meters in only nine seconds) will be sold just for meat.

These events are the main reasons why crossbreeds are not adopted everywhere; farmers are able to have high financial capital with Madura cattle. Within Madura, there is some kind of competition going on between the farmers in the different areas. The farmers with Sonok do not like Karapan because they hurt the animals with a riding whip, they use a lot of inbreeding and the animals are very small. The farmers in Sapudi do not like Sonok because they think it is boring and not exciting.

8.2.2 Culture attached to crossbreeds

In the first place, when the crossbreeds were introduced, they were not considered as culturally valuable, but this perception is changing nowadays in Madura. Since their introduction in 2002, slowly there began to grow a culture around the crossbreeds, which resulted in 2007 in a “Madrasin contest”. This is a contest organized around the crossbreed of Madura cattle and Limousin. Farmers in Madura grew up with Sonok or Karapan, and most of their social life is build around these events. These traditions which are still important in the lives of farmers who maintain crossbreeds, lead to the Madrasin contest. It is their way of acting out social relationships, through the cattle and the related networks.

9. Discussion

The subject of this thesis are the socio-economic and cultural motivations of farmers to choose for imported cattle or Madura cattle, in Indonesia. The data collection was done by fieldwork in Probolinggo and the island Madura, both located in East Java. However, although going into the field, guided by local people, this does not mean that all the data which was collected tells us something about what is really going on. One always should keep in mind that one has to deal with uncertainties due to misunderstandings or other reasons. However, I did try to limit these uncertainties to the minimum through conversations with the research team and secondary data collection.

Although Madura and Probolinggo are both located in East Java and relatively close to each other, this does not mean that one can assume farmers deal with the same circumstances or act the same on similar material conditions. Also, economic and social/cultural motivations are directing their choice in for or against crossbreeds.

Madura is an island which is quite remote, with poor soil quality but densely populated. Most farmers in Madura only went to elementary school and the average family size is 5. Plots are between 0,5 and 0,8 hectare (Sapudi and Langeran respectively) and the most planted crop is corn, followed by tobacco and rice. Only a few farmers are landless. In the districts Sapudi and Waru, Madura cattle is kept. In Langeran farmers maintain crossbreeds. In other words, we cannot treat Madura as one homogeneous unit, there are important differences between districts. There are cultural events attached to Madura cattle which are Karapan, and Sonok. These events still play a major role in the daily lives of people on the island. Most of the farmers have adapted their farming style to these events, especially in the districts Sapudi (Karapan) and Waru (Sonok). But not everywhere Madura cattle was of this importance anymore, due to the allowance of the government in 2002 to import crossbreeds to the island. The farmers in Langeran are very much in favor of crossbreeds because of poor performing Madura cattle in the past. In 2007, the farmers in this district started to organize a new event with the crossbreeds: the Madrasin contest, which is expanding ever since.

Probolinggo is a city located in East Java where many Madurese migrants live. In Probolinggo, crossbreeds (district Kademangan) and Madura and Ongole cattle (Lumbang/Tongas) are maintained by farmers. Almost all farmers only went to elementary school and the average family size is 5. The average plot-size is between 0,8 (Lumbang/Tongas) and 1,3 hectare (Kademangan), and some farmers are landless. Corn and rice are the most grown crops in both districts. In Lumbang/Tongas Karapan is organized, although it is less interwoven in the daily lives of people compared to Sapudi. In general, crossbreeds are much more used in East Java, due to the early introduction of crossbreeds here. Crossbreeds are seen as something more usual compared to Madura.

9.1 Socio-economic and cultural motives of farmers to choose imported cattle

The impact caused by the import of cattle, which resulted into crossbred cattle, differs per region. There are various factors which play a role in this variety of impacts and motivations of farmers and their farming style. One of the most obvious reasons is the location of the farm: cattle import and crossbreeding has been done on Java since 1853, on Madura the first crossbreeds were introduced in 2002 as a result of the permission of the government since that date. This form of natural capital regarding cattle keeping among causes resulted in various styles of farming, opportunities or constraints, cultural identifications and social obligations.

In Probolinggo, many farmers grew up with crossbred cattle, especially in Kademangan most farmers keep crossbreeds since a long time and some farmers Madura or Ongole cattle. The most important motivation to maintain crossbreeds instead of Madura cattle in this district is financial capital according to the farmers. These farmers generate higher financial capital because of the better price they receive when selling crossbreeds to the market, and the better performance/production of the animals. With this increased financial capital of the farmers, they increased their financial capabilities and savings. Next to this, some farmers who changed from local cattle to crossbreeds, mentioned a higher social status due to maintaining crossbreeds; they feel more proud to maintain better performing animals. Thus, the adoption of crossbreeds by the farmers in Kademangan increased their financial and social capital.

In Lumbang/Tongas, nearly all farmers keep Madura or Ongole cattle; only two farmers maintain one crossbred animal. In other words, despite the fact that crossbreeds have been used for a long time on Java, in these districts farmers are hardly motivated to maintain crossbreeds. The main reason in this district is lack of physical capital asset: because the districts are far away from the city centre, only accessible with bad roads, it is difficult for inseminators to be on time for insemination which is needed when having crossbreeds. Madura cattle do not need Artificial Insemination which is preferred by the farmers in these districts. Next to this, Karapan still plays an important role in the lives of farmers here.

In the districts Waru and Sapudi located in Madura, we can see the same motivations; although here no Ongole cattle are maintained. These last two districts hardly experienced any impacts of the import of cattle due to the cultural asset of Madura cattle. The Karapan-races in Sapudi and Lumbang/Tongas still play a major role in the decisions farmers make regarding breeds and farming styles, in Waru the Sonok contest is the cause of the importance of Madura cattle. Next to this, these farmers mentioned the big amount of fodder needed for crossbreeds which is for many farmers hard to comply with. In Langeran, however, crossbreeds had a major impact in farmers' lives. The reason that crossbreeds gained so much popularity in this district in a relatively short period was that Madura cattle was not performing well. The animals were tiny and thin, are were of no use for cultural events which normally increases the economic asset of the cattle. Therefore, the farmers were very motivated to keep crossbreeds because they have a higher meat production potential and this would increase their financial capital, which was most welcome because of the problems they were facing with the performance of Madura cattle. However, not all famers started immediately with crossbreeds once they were allowed. There were only a few farmers who started with crossbreeds, and the rest of the farmers followed once they saw the good results in terms of financial and social capital. In the light of the livelihoods concept; these farmers can be seen as actors who coped with their own, new 'projects' or elements in their lives. At first, these projects were in challenge with the other farmers who kept Madura cattle. However, many farmers followed after seeing the positive results. Thus, the culture of maintaining Madura cattle was not a tradition they held on to in this district. In fact, the farmers choose to secure their livelihoods and financial capital. Through this, social capital increased as a result of

the adoption of crossbreeds. In my view, this shows that farming communities in Madura can evolve over time when needed to secure their livelihoods even though this might be not in line with the strong culture attached to Madura cattle.

When the rest farmers started with keeping crossbreeds, they all expected to generate higher financial capital, and some expected that the crossbreeds would be less difficult to feed, some expected they would be more difficult to feed. All expected an increased social status. According to the farmers, the practice turned out to be what they expected; which means that they all generated a higher financial and social capital with the adoption of crossbreeds. Yet, some farmers find it difficult to comply with the fodder needs of crossbreeds because of the poor soil quality in Madura, and they have to search far away while other farmers are able to find enough fodder closer to their farm. Satisfaction of cattle keeping is also a major driver for farmers to change to crossbreeds; crossbreeds performed in line with the farmers' expectations and because crossbreeds always empty their feed manger, farmers are more satisfied. So, their sense of well-being increased when starting with maintaining crossbreeds, which in my opinion shows that well-being is attached to cattle in farming communities in Madura and East Java. With poor performing cattle, farmers feel unsatisfied not only because of low financial capital, but also because they feel they are not able to give the cattle what they need.

Since 2007 these forms of financial and social capital are even increasing, due to the newly developed Madrasin contest by the farmers. The contest ads cultural asset to the crossbreeds and with this also financial value which results in an increased feeling of satisfaction and happiness.

9.1.1 Function of cattle and breeding priorities

The function of cattle have changed, there where farmers maintain crossbreeds. While Madura and Ongole cattle are known to be suitable for draught power, crossbreeds are not because these animals miss the hump that the other cattle have, needed for the ploughing equipment. Also, farmers mentioned that these animals are too big and too wild to use for ploughing. Despite this, farmers in Kademangan and Langeran were still willing to adopt crossbreeds into their farming system which shows a shift in function of cattle in these districts. Draught power is not considered to be a major

reason to keep cattle anymore and farmers find other ways to carry out ploughing, usually by (hand)tractor or by hand. In Lumbang/Tongas, Waru and Sapudi the breeding priorities did not change since the introduction of crossbreeds. In Kademangan the breeding priorities changed a long time ago which results in no recent changes. The only district where are some recent changes is in Langeran. The reason is that when farmers still maintained Madura cattle, they did not worry so much about the pedigree, since all animals were used for meat or reproduction. Nowadays, farmers need to maintain the 'first backcross' generation since they discovered that this generation achieves the best results which are in line with their standards. This means that the farmers use Madura cattle in order to maintain the 'first backcross' generation of the crossbreed, and thus he needs to conserve Madura cattle. However, this does not comply with the literature which argues that the F1 generation are always superior to the F2 ('first backcross') generation (Syrstad 1989). This different opinion of the farmers in contrast to Syrstad might occur because of different breeding priorities, possibly due to the Madrasin contest; which is about performance and less about (milk) production.

9.1.2 Dealing with a lack of capitals

Due to the shift to crossbreeds, the function of cattle and the fodder needs of crossbreeds the farming styles have changed. The farmers in Langeran welcomed the crossbreeds with open arms because they dealt with the lack of capitals; financial, social and natural capital. Social capital was low since the cultural asset of Madura cattle was not high and herewith the social status of farmers maintaining these cattle was low too. Financial capital was low because the prices of Madura cattle were low since there were no cultural events. Also, these farmers lack natural capital in the form of fodder of good quality, which caused problems regarding the maintenance and performance of Madura cattle. Based on these data, it is not one form of capital which influences the decision farmers made regarding crossbreeds, but it is the interrelation between these capitals. The livelihoods concept is about how people deal with adversities, and in my view the lack of these capitals were the adversities farmers had to deal with which resulted in a shift towards crossbreeds instead of Madura cattle. The start with crossbreeds gave them the opportunity to avoid this adversity and maintain their Madurese identity, since the farmers started to apply a cultural contest to the crossbreeds. The motivations of farmers to start with this contest are

economically and culturally. Economically because farmers want to increase the price of crossbreeds (pers. comm. Widi, 2010), culturally because events attached to cattle is according to many farmers important because of the tradition and it is part of showing their Madurese identity. The new contest increased their feeling of well-being, the farmers were proud again to be farmer and the contest gives them the opportunity to show their cattle to others. The result of this shift towards crossbreeds shift lead to an increase in social and financial capital, and the farmers found a way to deal with the lack of natural capital since crossbreeds do not need the high quality fodder.

9.2 Conservation of Madura cattle

There are many arguments farmers can think of in favor or against conserving Madura cattle. The differences in arguments can be caused by various factors, such as social capital, natural capital, financial capital and the cultural asset of the cattle.

In Sapudi, Waru and Lumbang/Tongas farmers are very much in favor of conserving Madura cattle. The most obvious factor these districts have in common are the cultural events and value attached to Madura cattle: in Sapudi and Lumbang/Tongas the Karapan races and in Waru the Sonok contest. Farmers like these events and find them important in the first place because of the cultural asset, directly followed by economic reasoning. The cultural asset of the events are high due to tradition; people grew up with it and these events are a marker of the Madurese identity. Herewith, since many generations grew up with these traditions, their whole lives and styles of farming are organized around it; the farming style attached to Madura cattle is part of their cultural repertoire. These farmers do not need crossbreeds; they have excellent results with Madura cattle which results in good financial capital. These farmers secure their position in the market with maintaining Madura cattle. It can be concluded that in these areas the cultural and economic asset of Madura cattle are very high. However, this is in its turn determined by several factors, such as performance of the cattle, the social networks these farmers have, and in some instances the feeling of connectedness to Madura or government intervention. As mentioned before, the performance of cattle plays an important role regarding the cultural/economic asset of cattle. There are varying criteria amongst the districts: in Sapudi and Lumbang/Tongas the bulls have to be very fast while the criteria in Waru

are more about the performance and occurrence of the cattle (big, dark red, black around the eyes are a few of the criteria). In the latter crossbreeds have never been introduced by the government and Sapudi is officially appointed by the government as preservation area of Madura cattle. In Lumbang/Tongas, many farmers still like Karapan because with this tradition they are able to show their Madurese identity, and they are proud of it. In all these districts, farmers regard themselves as having a good or high social status due to the performance of Madura cattle. When they were asked how they would feel when keeping crossbreeds, they said they would not be happy because crossbreeds are often referred to by these farmers as being ugly or scary and not useful for Karapan or Sonok.

However, not all interviewed farmers are so much in favor of Madura cattle. The farmers in Kademangan and Langeran are happy to maintain crossbreeds instead of Madura cattle. In both districts farmers argued that the performance of Madura cattle was very low, and they were not useful for cultural purposes. As a result, the economic asset was low too, and thus their financial capital. During the period this farmers kept Madura cattle, they were not proud and felt their social status was low. These homogeneous opinions and farming styles in districts are the result of the shared absence or presence of capitals. For example, the absence or presence of fodder of good quality, the absence or presence of knowledge about crossbreeds are determining factors for maintaining Madura cattle or not.

In Kademangan, farmers have the choice to choose for crossbreeds or Madura cattle already since a long time, some farmers only keep crossbreeds, some both and some Ongole. Madura cattle is mainly kept for reproduction of crossbreeds, and Ongole because the selling price is good. However, most farmers prefer crossbreeds. The reason is that these animals have a higher body weight and a selling price, which leads to an increased financial capital. In this district, most farmers feel happy when keeping crossbreeds because of the size and performance of the animal which lead to an increased sense of well-being and social capital. Farmers are also happy because of the easier maintenance of crossbreeds, it is easier to comply with the fodder needs and they are able to feed their cattle the biggest amount of fodder of all districts, due to the fertility of the soil in East Java. Only some farmers mentioned Madura cattle as an important marker of the Madurese identity, opposed to the farmers in

Lumbang/Tongas who al found Madura cattle a very important marker. Although most of the farmers watch Karapan, they do not feel the urge to keep Madura cattle themselves; as one farmer described: '*when one lives in Madura, one has to have Madura cattle, but when living here, it is not necessary*'. It seems that this indicates 'being a mixed person' with respect to cattle keeping very well: Karapan is still seen as important because of the Madurese identity, but maintaining Madura cattle themselves is not important. The difference between Kademangan and Lumbang/Tongas is to a large extent determined by natural capital; Kademangan is close to the city and easy to reach by the inseminators, while Lumbang/Tongas are far away from the city in an upland area with bad roads. Since the reproduction of crossbreeds requires Artificial Insemination, this is possible in Kademangan but not in Lumbang/Tongas, therefore many farmers in the latter district prefer local breeds which only need natural mating.

In Langeran, farmers only recently changed to crossbreeds. Also in this district, financial and social capital increased since the introduction of crossbreeds. The position of these farmers in the market changed as a result of keeping crossbreeds; they had to reposition and find their way to the market because not all traders wanted to buy crossbreeds at first. Overtime, traders began to buy crossbred cattle too and now farmers face no or hardly any problems anymore with selling their cattle to the market. However, there is an important difference between Kademangan and Langeran. In Kademangan, crossbreeds are of no cultural asset, they obtain the owner status because of the good performance, but not due to a specific event. In Langeran, farmers started to organize a contest comparable to the Sonok contest which is called the Madrasin contest. Before this contest, the value of crossbreeds was already higher than Madura cattle, but since the start of the contest, crossbreeds also became of cultural importance. With this contest, farmers are able to increase their financial and social capital.

Striking is that the styles of farming vary among these two districts. In Kademangan, the farmers maintain cattle only for production of meat, in Langeran, it seems that farmers have adopted crossbreeds in their 'old' style of farming: originating from Sonok. In my opinion this is caused by the different integrated sets of practices farmers deal with: Langeran is located in Madura, next to a district with Sonok,

Kademangan is located in East Java where Sonok is not held; only Karapan is organized in a district close by. However, Karapan cannot be done with crossbreeds since they miss the hump needed for the equipment; whereas a form of Sonok can be done with crossbreeds since this is about the performance and not about the speed. Next to this, the context might influence the style which is applied to crossbreeds. Madura is known for its cultural events regarding Madura cattle, there are two events. In East Java, there are no cultural events attached to Madura cattle, except Karapan which is from Madura. As a result, farmers in Madura might be more interested in cultural events attached to cattle.

9.3 Perceptions regarding crossbreeds

The role of crossbreeds in Madura and East Java is slightly different. On Java, Ongole is regarded as local cattle, because it has been there for so long now, since the Dutch were in Indonesia in 1853 (Barwegen 2005). Also crossbreeding with exotic breeds from Australia became already common in the 1970's. Thus in East Java crossbreeds are in most instances very much embedded in the daily practices of farmers. In Madura the situation is rather different because crossbreeding is only allowed since 2002, and nowadays it is strongly encouraged by the government in some districts. Amongst the various research sites, there are many different perceptions towards crossbreeds. Important determinants of the perception are location of the farm, knowledge of the breeds, social networks, and the cultural asset of breeds.

In Sapudi and Waru, there is only little knowledge about crossbreeds, since they have never been introduced here. Most of the farmers only know that they are big and need a lot of fodder. Also, because of the different appearance, they are often referred to as ugly and not suitable for Karapan or Sonok. In Langeran, Lumbang/Tongas and Kademangan farmers know very well about crossbreeds. Langeran because of the recent introduction and the enthusiasm of the inseminators and farmers who adopted them first. Here, the farmers see the crossbreeds as rescuing their livelihoods because it was not going well with Madura cattle. With the crossbreeds farmers feel proud again to be a farmer because of the better performance of crossbreeds. Adopting crossbreeds meant that they had to change their market strategies, their breeding priorities, their fodder supply, practices like ploughing and husbandry practices. However, it did not bother them that they had to change their strategies, since the

better results they expected to achieve with crossbreeds. For them, it was more important to increase their financial capital in order to maintain their livelihoods. In Kademangan, crossbreeding has been done since a long time, so many farmers perceive this cattle just as normal cattle, for them there is nothing special about crossbreeds. In Lumbang/Tongas, farmers have much knowledge about crossbreeds because the districts are located on Java. However, most of the farmers here prefer Madura cattle because of the difficult accessibility of the districts regarding Artificial Insemination (which is needed for crossbreeds) and it enables them to show their Madurese identity with the Karapan races.

The knowledge farmers have is determined by the location of the farm (natural capital), relatively isolated or not, and the social networks (social capital) farmers have. On Sapudi, there is rather limited contact with people outside the island and the contacts they have are mainly with farmers from other districts who want to buy bulls for Karapan. This is the main reason why the government appointed the island as official preservation area for Madura cattle, so crossbreeds have never been introduced here. The networks farmers have are all centered around Karapan, which maintains the high cultural and economic valuation of Madura cattle and Karapan. Therefore, farmers are not interested in crossbreeds and the perceptions they have about crossbreeds are mostly negative since business is going well with Karapan and because of the stimulation of the government to maintain Madura cattle. In Waru, the same reasoning is applicable due to the Sonok contest, and the fact that crossbreeds have never been introduced in this area by the government. The perceptions towards crossbreeds in Langeran are very positive as a result of their social networks: contact with the inseminator and indirectly with the government who provides Artificial Insemination with semen of Limousin. The cultural asset and economic asset of crossbreeds is high compared to Madura cattle, and social and financial capital still increase due to the Madrasin contest. It is partly trough events like this which are developed by farmers that the perception of farmers towards a certain breed are positive or negative; whether the cattle posses a high cultural asset in their opinion or not which result in high social and financial capital.

The results show similarity in the perceptions of inseminators and farmers towards crossbreeds. The inseminators provide the knowledge about the Madura cattle or

crossbreeds. The inseminator in Waru has much knowledge about Madura cattle and is positive about this breed. In Langeran however, the inseminator received a lot of knowledge from the government about crossbreeds which he in his turn gives to the farmers. The perception of the inseminator is positive, and so are the farmers.
In Kademangan, de perceptions of farmers towards crossbreeds are positive, the farmers have good results in terms of social and financial capital with crossbreeds, better than with Madura or Ongole cattle. In Lumbang/Tongas, the cultural and economic asset of Madura cattle is in general higher than the value of crossbreeds because of natural (location of the districts) and social capital. However, not all farmers are negative towards crossbreeds. In Probolinggo the perceptions of farmers towards crossbreeds seem to vary more amongst the districts compared to Madura. Sukamdi *et al* (2000) wrote that the relationship of the migrants with the area of origin is influenced by various factors like the socio-economic level, education, marital status, the number of dependents, the duration of separation and the distance between the origin and destination area. In my opinion, the mixed identities and the connection with Madura explain the various breeds and perceptions farmers had about these breeds: some farmers might hold on more to the Madurese identity due to the above mentioned factors of Sukamdi, some more to the Javanese identity.

Homogeneous farming styles and well-being

The notion of well-being is often grounded in broader collective dimensions rather than individual preferences. This collective dimension results in a socially, culturally and contextual constructed feeling of well-being which is subjective, although it might seem objective to the involved people/networks. Subjective since culture in this context is a set of norms, values and rules developed by a community in relation to their natural and social environment (Gough 2004). The people who continue to maintain Madura cattle, value this breed and the farming style; it is what they hold to be good. However, the high valuation of Madura cattle amongst these farmers is not so much an individual perception, rather it is a shared perception of the networks these farmers live in. Also in the districts where farmer keep crossbreeds, most farmers have the same perception towards crossbreeds. In all districts, there are some farmers with a somewhat divergent view regarding cattle. Yet, they mostly maintain cattle conform the ‘norm’ of the network they had. These data show homogeneous farming styles as a result of shared absence or present capitals in districts. Due to

these shared absent or present capitals, farmers face rather homogeneous contexts in districts. As a result of these homogeneous contexts, farmers have shared experiences, knowledge, insights and interpretations of the context which is part of the styles of farming concept. These shared insights and interpretations are very much interwoven with the collective dimension of the well-being concept. The financial and social capital which are related to these shared and collective dimensions; in my view it explains why the data are homogeneous for districts.

9.4 Conclusion

Analyzing these results, I conclude that Madura cattle in itself might not be so important to the farmers, but the cultural events, social and financial capital which are attached to good performing cattle. A good example of this is the district Langeran: Madura cattle performed bad in terms of growth, the farmers changed to crossbreeds which perform better and with this it is possible again to organize an event which is related to cattle. It did not seem to bother the farmers that they do not keep Madura cattle, instead they are happy with the crossbreeds because of their increased social and financial capital. Also, these farmers found a way to deal with the lack of natural capital which they faced with Madura cattle. Thus, with engaging in new opportunities they increased their feeling of (subjective and material) well-being. These farmers are more focused on the production potential of crossbreeds which in general is higher, because meat production was the only reason why they kept Madura cattle since the animals in these districts did not perform well enough to be valuable for events. As a result of the shift, the livelihood practices and styles of farming changed amongst the farmers. They started to focus more on meat production, and did not continue with the traditional way of keeping cattle. I did expect these changes, but what was quite surprising was the newly developed Madrasin contest by the farmers. Before I started the research, I expected that the farmers who would adopt crossbreeds would not be interested in cultural events, since they preferred a higher production potential and financial capital above the cultural attached to Madura cattle. However, the results show that financial capital and the cultural asset of cattle cannot be seen as being separate; they are interwoven.

In those areas where the financial capital with Madura cattle and satisfaction are still high, there are (hardly) no impacts felt by the farmers and they have no motivations

to start with crossbreeds. They are still very much in favor of Madura cattle and have in general a negative perception about crossbreeds. This finding tells us that the cultural asset of the animals is very much linked with economic asset and the performance of cattle; good performing Madura cattle have cultural asset whereas poor performing animals have no cultural asset. When the animals have no cultural asset, as a result the economic asset is low and thus the financial and social capital. Before the start of the research, I did not expect this. I expected that Madura cattle was only kept because of cultural motivations and that the economic asset would be low. Unlike this expectation, the economic asset of Madura cattle remains to be very high in those areas where the cattle perform good. Economic asset and cultural asset are very much interwoven since the performance of the cattle has to be good in order to be able to participate in the events. The economic asset in Madura and East Java is only not related to the production potential (meat) of the cattle, but to the performance at Sonok or Karapan. Therefore farmers do not need to adopt crossbreeds which have a higher body weight in all districts in order to increase their social or financial capital.

9.5 Recommendations

I have shown that there are many different breeding priorities and styles of farming amongst the districts. Even within Madura there were many differences, despite the relative small size of the island. The question which we can ask ourselves now is: how to maintain the current situation, and, is this even possible? It is likely that farmers, especially in Sapudi, will face the drawbacks of inbreeding in the near future. Also in Probolinggo, some farmers paid no attention to breeding and the pedigree of cattle. Some of the following recommendations are developed in order to continue the various farming styles and breeding purposes. The recommendations were topics which have been discussed about with Widi during the fieldwork; which helps to be of relevance for the future.

1. Inbreeding will cause problems in the future of cattle breeding in Madura and East Java. Some farmers are very much aware of the pedigree of their cattle, for some farmers the pedigree is of no importance; only the performance counts. A good example are cattle in Sapudi, the animals are getting smaller during the years due to inbreeding, but the farmers do not mind because they

are only interested in the speed of the bulls. However, these farmers are aware of inbreeding but it might be that they are not aware of the possible problems it might cause on the long term. I recommend that inseminators create more awareness about the future consequences of inbreeding; the local government should play a bigger role in the selection of good bulls. The inseminators have much knowledge about breeding, contact with the local governments and are trusted by the farmers for advice. In order to increase the quality of the cattle in Sapudi, the inseminator should promote Artificial Insemination with semen not only from Sapudi but also from Madura.

2. To get more insight in the use of semen and bulls in various districts, inseminators might start to record data about used semen and bulls by farmers. Often the inseminator knows much about the pedigrees of cattle of the farmers they visit. With this shared knowledge by inseminators, there might be more clarity in possible inbreeding patterns.
3. Next to these possible options to limit inbreeding, farmers might examine their strategies and ideas they have regarding the cultural events and breeding priorities, how do these influence their own future and the future of cattle breeds in a negative or positive way? This evaluation can be done through meetings with an independent person who can discuss give relevant advice.

9.6 Used concepts

During the whole research, three concepts were used to analyze the data. The first concept which is used is the livelihoods concept with the five capitals. Using this concept gave insight in the relations between different capitals; there were strong relations to be found between social, financial and natural capital. The second approach which is used is the well-being concept. This concept helped explain certain data which was not applicable to the livelihoods concept. A good example of the well-being concept were the weekly meetings farmers have; it is important to them to show their cattle to increase their sense of well-being. During these meetings, farmers chat, discuss and have a cigarette. Aspects like these make that farmers feel they are ‘living a good life’ which can be categorized under the subjective well-being. The third approach which is used is the styles of farming concept. The fact that districts are rather homogeneous regarding their farming style and shared insights is explained well by using this concept. However, because of the collective dimension which is

also used by the well-being concept, it was difficult to be able to position the styles of farming concept in a proper way. Yet, the mentioned homogeneity in farming styles and positions of farmers could not be explained well with the other concepts, which made also the styles of farming a useful concept in this thesis. However, I faced some difficulties in understanding the 'goal-oriented' and 'chosen positions' of farmers. From the data it was not always clear whether farmers always based decisions upon their rationales or on day to day decisions.

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Appendices

I. Chi-square test about ploughing

The following results are the data which are put in SPSS. With this program, we can see whether results are significant or not. The results do not show in which districts the results occur, but makes a distinction between farmers who had crossbreeds or Madura cattle. The first table shows the amount of interviewed people who were asked about ploughing with their cattle. The second table shows that the results of farmers who maintained crossbreeds almost all maintained Madura cattle (38,1% vs. 3.1%) and no crossbreeds. The third table shows that the results of this test were significant with 0.000

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Crossbreed * Ploughing	97	100.0%	0	.0%	97	100.0%

Crossbreed * Ploughing Crosstabulation

			Ploughing		Total
			No	Yes	
Crossbreed	No	Count	30	37	67
		% of Total	30.9%	38.1%	69.1%
	Yes	Count	27	3	30
		% of Total	27.8%	3.1%	30.9%
Total		Count	57	40	97
		% of Total	58.8%	41.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	17.489(b)	1	.000		
Continuity Correction(a)	15.673	1	.000		
Likelihood Ratio	19.822	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	17.309	1	.000		
N of Valid Cases	97				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.37.

II. General individual farmer interview

Part of the questions were developed by Widi, some by me. We put our interviews together to cover all the items we both wanted to know. Not all questions were always asked when they were not relevant for the farmer.

General Background
Area :
District :
Village :
Farmer group :

General information:

1. Name of farmer :
2. Age :
3. Education :
4. Family size :
5. Main occupation :
6. Off-farm income :
7. Experience of cattle keeping:
8. Land size :

Type of land	Size (Ha)	Status	Utilization	Yield per year ton	Remarks**
Field					
Backyard					
Forages	Type of forages which are planted for feed:				

** owned or rented ** for instance, cost of renting the land per year.*

9. How many cattle do you have

Composition	Age	Breed
Adult		
1		
2		
3		
Young		
1		
2		
3		
Calf until yearling		
1		
2		
3		

**if no recording can also by measuring teeth condition*

*** if there is crossbred, please mention with what exotic breed? (ex: Simmental, Limousine, Angus, etc.)*

10. What other livestock do you keep ?

Other livestock	Composition	Total number

11.Time consumption and responsibility tasks in livestock keeping

Activities	Family members who are responsible	Time allocation (hour/day)
Cleaning the cattle		
Cleaning the barn		
Browsing forages		
Offering feed		
Reporting estrus to insemenator		
Mating the cattle		
Reporting sick animal		
Giving a treatment to sick animal		
Buying breeding stock		
Cattle marketing		
others		

II Role of cattle

1. What are the reasons of keeping cattle

Reason	Ranking
Saving	
Income	
Workload	
Utitilizing byproduct	
Manure	
Social status	
Culture	

III Characteristics

IIIA Cow

Criteria	Characteristics
Age	
Posture	
Breed	
Calf or heifer	
Other criteria	
1	
2	
3	
4	
Avoided criteria	
1	
2	
3	

IIIB Bull

Criteria	Characteristics
Age	
Posture	
Breed	
Calf or heifer	
Other criteria	
1	
2	
3	
4	
Avoided criteria	
1	
2	
3	

1 Where did you buy the **Madura cattle** and how did you buy it?
2 Where did you buy the **crossbreed** and how did you buy it?
3 Where did you buy the **bull** and how did you buy it?
4 What was the price of the **Madura cattle**?
5 What was the price of the **crossbreed**?
6 What was the price of the **bull**?

IV Feeding

Feed Rain season		Amount (kg/day)	Price per kg
Forage	1		
	2		
	3		
Concentrat	1		
	2		
	3		
Other	1		
	2		
	3		

Feed Dry season		Amount (kg/day)	Price per kg
Forage	1		
	2		
	3		
Concentrat	1		
	2		
	3		
Other	1		
	2		
	3		

2 How to get the feed
Rain season: Dry Season:
3 How many times do you give feed to the cattle?
Calf: Cow: Bull:
4 How many times do you give drink to the cattle?
Calf: Cow: Bull:
5 Do you conserve?
If yes, what?
When did you start with it?
How do you do it?

V How is the cattle kept

1 A in the barn B in the pasture C in the morning and evening in barn

2 What is the barn made of

3 Are the cow/calf/bull kept seperatly?

4 When did you build the barn and what where the cost?

VI Manure

1 What do you do with the manure? A Sell B Self use C partly

2 Do you make compost?

3 For what price can you sell it?

4 If use all by yourself, does it reduce inorganic fertilizer?

6 How much do you have every day?

VII Usage of cattle

1 Do you use the cattle for ploughing?

Yes, why

No, why not

2 Other work?

Yes, why

No, why

3 Which sexe do you use for drought power? A Bull B Cow

4 What is the age you start using them?

5 How many hours per day you use them?

6 How big is the plot?

VIII Health

1 What are the common diseases?

2 If they are sick, how do you treat them? A Traditional B Veterenarian

3 Is the cow recovered after the treatment or still sick?

VIIII Marketing

1. Which one do you prefer (RANKING):

A save money in bank ( )

B save money in land ( )

C jewerly ( )

D buy cattle ( )

2. In which season you do sell cattle?

3 What is the price of cattle you sold?

Cow: Calf Heifer

Bull

X Perspective breed

1 When did you start with this breed?

2 Why did you start with this breed?

Ranking:

Local cattle	Crossbreed
(…) Need less feed	(…) Higher sale price
(…) For draught power	(…) Better production
(…) Limited capital	(…) Big appetite
(…) status	(…) status
(…) culture	(…) most knowledge
(…) most knowledge	(…) time allocation
(…) time allocation	(…) adaptation to environment
(…) adaptation to environment	

3 If changed to the crossbreed, what has changed?

What has changed	hours/rupiah	higher/lower
Breed		
Income/capital		
Status		
Time allocation		
Better performance		

4 If changed to other breed, what has changed in work allocation in the family?

Type of work	Man	Woman
Feeding the cow		
Feeding the other animals		
Cleaning the barn		
Household		

5 What are your breeding priorities? (RANKING)

Colour ( )	Strong hoof ( )
Strength ( )	
Size ( )	
Price ( )	

6 Is it important to you to have local cattle?
A No, why not?
B Yes:

	Ranking (very important=1 , not so important=4)
Culture	
Status	
Work load	
Income	

7 When you started with this breed you had expectations, can you say now (after … years) that the expectations were realistic?

	Expectation	Practice
Time allocation		
Income		
Status		
Costs		
Feed needs		

8 From whom did you get the knowledge about farming/the breeds?

Family	
Extention worker	
Community	
Own trial and error	

9 Is there enough labor in the family?
A Yes
B No people money other

10 Are you happy being a farmer?

	Yes + Reason	No + Reason
Workload		
Status		
Income		

11 Do you know about Sonok or Karapan?
A Yes, what?
B No

III. Extra questions Karapan

1 Since when do you know about the Karapan races?

A Since I was a child C Recently

B 10 -15 years ago

2 Why do you like the Karapan race?

A Because karapan is a marker for Madura people

B Karapan is one of events to conserve Madura cattle

C Karapan is heritage tradition which must be conserved

D There is a bet every race which is important

E No specific reasons, just follow the others

3 What do you feel when you take part in the Karapan races?

A Satisfied/happy, because it is entertainment

b Proud, because I can bring my good cattle to the race

c Nothing special, just a tradition

d I don’t know

4 How much do you exercise with you cattle to prepare them for the Karapan race?

A 1 time a week C 1 time per 2 weeks

B 2 times a week D 1 time per month

4 What is the kind of entertainment which is common in your area?

A television C Live shows E Other

B theatre D Karapan race

5 What do you think, will Karapan races still exist in the future and might be more developed?

A Yes, reason:

b No, reason:

c I don't know

IV. Extra questions Sonok

1 Since when do you know about the Sonok contest?

A since I was a child C Recently

B 10 -15 years ago

2 Why do you like the Sonok contest?

A because Sonok is a marker for Madura people

B Sonok is one of events to conserve Madura cattle

C Sonok is heritage tradition which must be conserved

D There is a bet every race which is important

E No specific reasons, just follow the others

3 What do you feel when you take part in the Sonok contest?

A Satisfied/happy, because it is entertainment

b Proud, because I can bring my good cattle to the race

c Nothing special, just a tradition

d I dont know

4 What is the kind of entertainment which is common in your area?

A Television C Live shows E Other

B theatre D Sonok contest

5 What do you think, will Sonok contest still exist in the future and might be more developed?

A Yes, reason:

b No, reason:

c I don't know

V. Extra questions Madurese Migrants

1 Do you still feel closely connected to Madura?

– No
– Yes:

Language	
Specific habits	
Close community	
Specific symbols	

2 Is it important for you to maintain the Madurese culture?

3 Why don't you have Madura cattle here?

Price	
Performance, size	
Environment	
No culture	

4 Are the events like Sonok and Karapan still important to you, and why is it not here?

5 Is there a Madrasin contest here? Is that important to you?