

Training Requirements in Agricultural Mechanisation and Machinery for Rural Women: An Empirical Study from Egypt

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1 Introduction

The Agricultural Mechanisation Training Centre (AMTC) in Alexandria has been working for many years on integrating women in their courses, as it was clear that women participate to a great extent in agriculture. This has met with little success. The courses are offered "gender neutral" - if a woman wants to attend a course she can do so. Unfortunately the number of women taking part in courses is too few to mention. Approaches have been made towards integrating women more, with some good ideas as the Training of Trainer (TOT), but which have never been realised.

The Government has admitted to the neglect and disadvantages of women also. Programs and institutions have been set up in order to reduce these and support women.

Women in the villages participate in almost all work that men do. The more financial means available to the family the less a wife has got to work. Almost 50% of women perform hard work, such as ploughing, levelling, furrowing and harvesting¹. Therefore different suggestions on how to support women have been made and some put into practice by government and non-governmental-organisations.

Education is recognised as the biggest restriction in economic and social life. Due to their position in the family, much higher drop out rates occur for girls. This caused the Government to support them with training programs. Still the women are those who profit the least from this opportunity.²

So far the first source of information for women was found to be neighbours, relatives and the family then followed by the extension worker.³ The biggest problem is considered to be that only confident women approach an extension worker. The extension

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¹ Mansour, 1995

² CAPMAS aprox. 1992

³ Zainab, 1991

staff itself is only to a small extent represented by women, which is a big hindrance to support women.⁴

However it has been recognised that the woman is the one who brings up the children and places the morals and anchors. She is therefore regarded to be the most important factor in social and economic development. "The educated woman is certainly more able to push the wheel of development forward and elevate her community."⁵

The results are gained by the author from a survey in Egypt carried out during a period of 6 months. The research method used was Participatory Rural Appraisal. With participation seen as a most essential means to gain a best possible understanding of and durable effect on the situation. This research was a joint work between the AMTC-GTZ Co-operation and the Dept. of Agricultural Engineering in Witzenhausen (University of Kassel, Germany).

2 Requirements in machinery

In order to give an understanding on the requirements of training, first it is important to look on the requirement of machinery and the problems women face concerning mechanisation.

Table 1 summarises different problems in specific work performed by women. Weeding and soil cultivation can be seen as being most difficult. Whereas soil cultivation is hard physical work by itself, the weeding, including the weeding between plants, is so too, and also takes much time. In general it can be said that women find the kind of work particularly hard where they have to bend all day, use heavy tools, work in wet and cold fields and work which take up much of their time. Mechanisation is important to many farmers to relieve women from the drudgery of work. The required machines can be seen in Fig. 1. Important to note is that this does not show the same ranking as the problems in work, as the machines required are dominated by what is known to the women and might possibly be made available.

The separator, for example, is available to some women already, but others do still separate by hand as can be found in Fayoum. The reason for the harvester ranking first in the list of wanted machinery is that mainly women do this labour intensive job and they know about the combine and its performance. It does not matter if the man or the woman runs the machine, the main issue to the farmers is to get some relief from this work. Important to note, also, is the requirement of mechanisation for weeding which, although known to only a very few farmers, has a very high priority. Machines however are required to be small enough to be transported with a donkey drawn trailer and easily carried into the small fields by women themselves. For most farmers it also needs to be small if to be used by women themselves, and to be socially acceptable.

⁴ GTZ / WID 1994

⁵ Mansour, 1995

“Things have been changing since the last few years concerning the opinion about women and machinery, and we see that changes have to come by if we want to improve our situation” argue several women in the villages. For most women there is no higher priority found for an income generating sewing machine than for agricultural machinery. If this is going to change, it can only enhance the requirement of agricultural machinery though, as women would need even more time and have increased financial means.

Table 1: Problems with work

Work	Problems
Weeding by hand with hoe	takes time, hoe is heavy, have to bend
Planting rice	wet + cold condition, hurting back, knees + feet, all day long
Harvest (wheat)	hot, have to bend all day, blister hands, sickle hurts back + knees, hard, takes time (corn with axe -> heavy)
Manure	hard, heavy, smells, bad on the health, brings insects
Picking Cotton	hurts back, neck + shoulder, bending, all day, early in the morning, hurt + blisters hands, scratches hands, legs and arms
Levelling	have to bend, use axe, heavy
Cleaning Ditches	heavy, have to use axe (necessary with vegetable)
Cutting Bersim	tiring back, takes time, bend all day
Using Axe (for soil cultivation)	heavy to carry and to use
Separating (butter)	hard work, long time of shaking (see Picture 4 + 5)
Plant Potatoes	bend down, hard on body
Preparing Dough	takes much time, tiring, hard on arms
Carry e.g. Straw	heavy, dusty
Collecting Snails	there are many destroying the plants. disgusting to pick
Threshing Corn	takes much time
Picking Strawberries	long time in field, sit on knees or bend down, tiring on knee
Chemicals by hand	hurts shoulder
Seeding	done by little girls
Spraying	vegetable. grows big, hand sprayer need a lot of strength
Drying Onions	lift up on roof, is heavy and inferior
Picking Peas	tiring
Milking + Cheese	takes time, hard effort
Thinning + Replanting	effort
Milling	hard to use, 2 stones (Fayoum)
Cous-Cous	hard to press through sieve
Feeding Animals	heavy
Labour	not enough in peak times
Peeling Corn	tiring

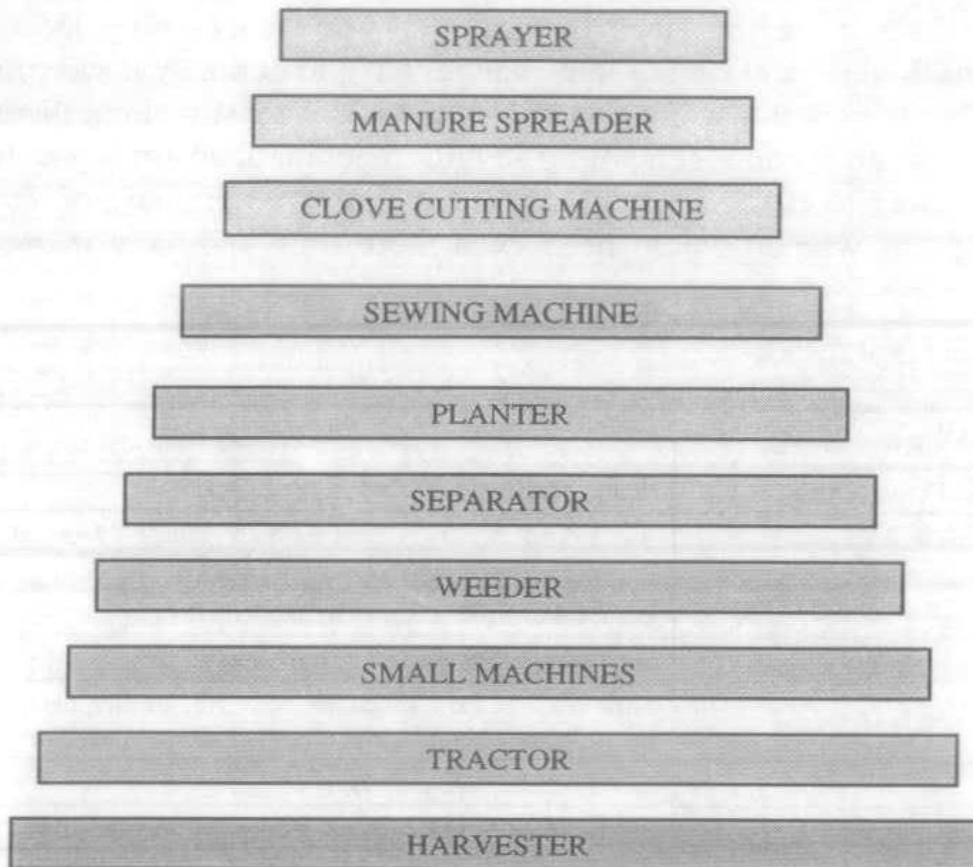


Figure 1: Ranking of Machinery Required by Women

3 Obstacles

Women face several obstacles in getting machines. Some do not differ from the problems men face, but quite important ones are restricting women more severely than men. Fig. 2 ranks the reasons for not getting, having or using machines.



Figure 2: ranking of problems women are facing in order to get machinery

Although there are initiatives to support women and provide them with financial means, it is of little use. There is hardly any access to these sources, especially for the poorest and remote farmers. The Village Extension Workers (VEWs) are generally rather poorly informed themselves, even less the farmer. In addition there is a lot of paperwork required, which women cannot usually do by themselves. Besides the fact that the machines available are not appropriate to the women and their work, there are too few of the ones which are available. In peak times only the one who can pay most is going to be able to use it. Farmers also often fear lower harvest quality using machines. This applies especially with harvesting and weeding, as plants can be damaged easily. There is hardly any information on mechanisation possible and appropriate for female farmers and their work. Even less they know the costs for purchasing, maintenance and repair. And even more they lack information on how to obtain and where to get trained on it. Machines which are available in the villages are too big and not economical for the small field plots of women's' subsistence production. Field sizes are, on average, 2-4 feddan (1 feddan = 0.4 ha). Women who would use the machines available can not get any training as they do not know of any training offered. Most women can not afford training at the centre nor can they stay at the centre over night. If training is held in the village it is only offered to men, although women asked particularly to be trained as well. There was only one very exception, where the head of the Gamaia trained some women in the New Lands on agricultural machinery himself. Therefore women think there is no-one who will to train them.

However, financial support together with good information and training, is most essential to female farmers in order to make use of machinery.

Other Problems Mentioned

- ⊗ Spare parts are not available or expensive
- ⊗ Some women do not want machines as the family is big enough and they have enough people to do the work
- ⊗ Women do the work in order to save money ('money')
- ⊗ Chemicals would be preferred to machines (for weeding) if it is cheaper
- ⊗ Government impose obstacles, it is hard to get a machine as much paperwork is to be done to get support for a machine
- ⊗ Can not use machine themselves, but drivers, which are not experienced and expensive have to be hired with machines.
- ⊗ Machines are owned private, which is too expensive (the machines would need to be at the Gamaia)
- ⊗ Women need to see machines and need to be convinced
- ⊗ Women would not want to hire out machines as they fear misuse,
- ⊗ Some work can not be done by machine (manure: houses narrow + steps)
- ⊗ Graduates are not taught at the University how to use machines

Important Consideration for the Implementation:

- ⊗ Machines need to be available in peak times
- ⊗ Machines need to be small and affordable and have possibly a multi-use
- ⊗ Machines for women need to be promoted with sufficient information
- ⊗ Training needs to be offered and available in an appropriate way to women.
- ⊗ The machine first might best be introduced with one woman who has a key role in the village. If women are convinced and can afford the machine, the news will spread quickly.
- ⊗ A general introduction and presentation at the Gamaia (Co-op) can be announced either in illiteracy classes, as many women attend such courses or even through the mosque
- ⊗ Financial advice Some women are able to contribute to the costs to some more or less extent. However at least some financial contribution by women is essential
- ⊗ The Village Extension Worker (VEW) need to support the female farmers on the obstacles, women are facing (like filling in forms the Gov. asks for)

4 Training Requirements

Although the majority of farmers can imagine and want (women) to use machines by themselves and therefore to get trained on it, most farmers can not imagine and do not want (women) to drive and operate big machines. Exceptions to this are some innovative women in the Old Lands and some graduate students in the New Lands, which really hope to be able to drive or operate big machines by themselves, but do not get the chance to get trained on them. Some of them are annoyed by the fact of having a machine which a man has to drive but is not doing it properly and therefore sold the machine and will only buy it again when being able to use it themselves. This is important to consider when offering training. A small tractor, like the available small 4-wheel Kobota, is considered as a small machine by farmers.

A machine like the tractor is often available to someone in the family. A tractor gives a wide range of opportunities for use, which is one of the most important aspects for women. The requirement of training on a harvester does not refer to a combine harvester but to a smaller solution. As shown in Fig. 3, the requirement of training on milking machines is rather low. The reason for this is the uneconomic use of milking machines, as most farmers have only 1-3 animals. Still there are farmers who have more than 10 dairy cows and who would like to be trained on a milking machine if a machine can be made available to them. However, one even more important reason for not using a milking machine is the cutting off of electricity. This would reduce the output of milk as the process of milking is interrupted. Separators, on the other hand, need to be made more available together with training. A woman can separate for others, while she is getting paid with milk. This is practised already. The chopper has been

introduced to farmers, but only to men, as it is believed that women are not allowed to operate such a machine. First chopping is in the area of animals which belongs entirely to the women. Second, some women are operating the machine already.

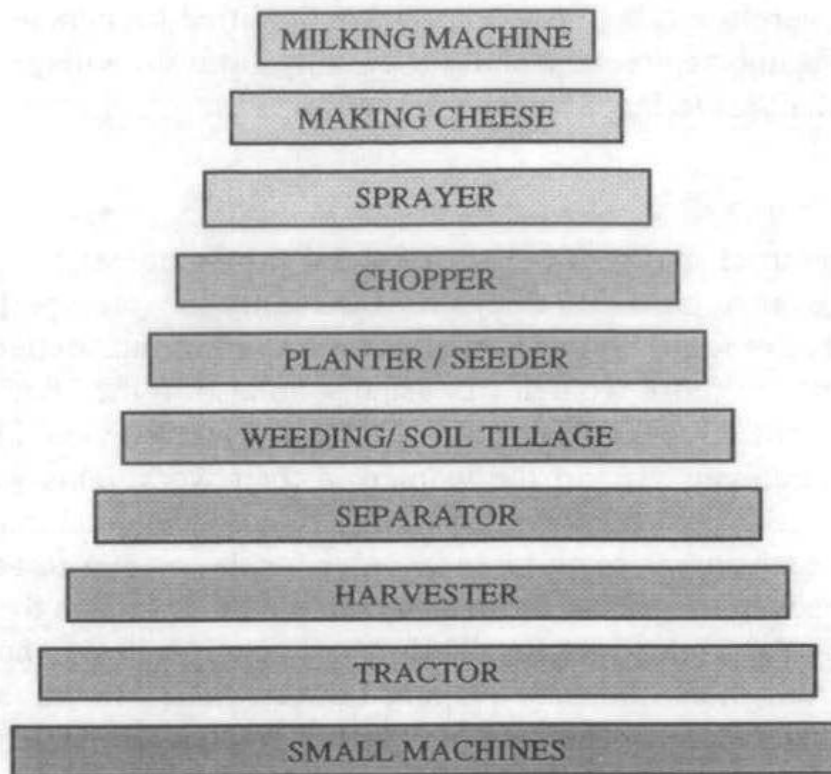


Figure 3: ranking of machinery and mechanisation training is required for rural women

It is required and important, if the chopper is introduced, to offer training to women and not to men, and especially not to men only. Cheese making is an area where women can generate their own income. Training on more hygienic production is required. Most women do not want to be involved in irrigation.

Training for women is to be offered in a different way as practised so far from AMTC, which is mainly focusing on courses which are held at the centre over a period of several weeks. The following are the specific requirements for women.

4.1 Place

There are some women who can stay at a centre for training. Those are mainly VEWs or some initiative females. Training held at the centre has many advantages. So has the training offered in the villages by TOT or AMTC. Most women could only learn in the villages and therefore it is most essential for women that training is offered there. But for several reasons it is also important to offer it at the centre for those who can travel for the training.

4.2 Trainer

For most farmers it does not matter what kind of sex the trainer is, as long as he or she is qualified. Some women would prefer a man as trainer as in their opinion men are

more qualified in this subject. Some farmers have a preference for female trainers, as they would feel more at ease. It is important therefore to have a female trainer as well. A professional trainer is highly preferred. Few farmers do not mind being trained by a neighbour or relative. And a small number of farmers prefer and wish to be trained by people they know. Therefore it is important to have qualified trainers in the villages. A TOT who is trained at the centre, especially if coming from the village, can best meet the requirements and adjust to the villagers' situation.

4.3 Times

Times which are preferred during the day differ only to some extent from farmer to farmer. The more a woman has to do things for the family the more preferred is a time which is later in the afternoon. Some women prefer the morning. Better concentration can be expected then. But those women can usually do also in the afternoon. Needless to say that training needs to be out of peak times. Most preferred would be school holidays though, as children can support the women in their work. This way they would find it not as hard to take time off for the training. No recommendations can be made on supporting to take advantage of children in order for the mother to get trained. And therefore training needs to be offered at times which would not make the women abuse the children for doing the work neglected. This means also it is best to have the training at different times from their domestic responsibilities, hence in the afternoon. The training is to be only for some 3-4 hours a day as the women are not used to teaching, especially concerning theoretical issues.

4.4 Training method and contents

However women are not used much to machines so far, so the training should concentrate on the operation and simple maintenance of machines rather than on theory of complicated techniques. Some theory is essential to be trained though. Here particularly on economics, possibilities and restrictions of mechanisation for specific work, conditions and of specific machines. With theory it is important to consider that most women do neither read nor write and for better understanding and recall the material is to be in a picturised way.

In general training needs to cover the areas as shown below. Women should get especially more and better information on mechanisation and machinery regarding what is available, what is suitable and how can it be affordable. The training of the VEWs and TOT on this is most essential.

4.5 Machines available

In general the following machines can be made available to women immediately:

- | | | | |
|-------------|--------------------------|----------------------|-----------------|
| X Weeder | X Tractor (small one) | X Ditch cleaner | X Seeder |
| X Chopper | X Harvester | X Irrigation machine | X Corn thresher |
| X Planter | X Implements for tractor | X Milking machine | X Sprayer |
| X Separator | | | |

Further, three machines are suggested for investigation and to be made available if found to be suitable.

A kitchen machine can relieve women of a regular work which takes up much time and is heavy to do. Additionally a woman can use the machine for some economic activity. The size would need to be much larger than common kitchen machines, appropriate to the family size and for economic concern.

Areas required in training for women

- ⇒ Different types of mechanisation, as well as different mechanisation and options for one operation
- ⇒ Advantages and disadvantages, possibilities and restriction of different mechanisation
- ⇒ Economics of mechanisation, like the bigger the fields, the more economic is the use of machines and the importance of sharing machines or to cultivate the fields together⁶
- ⇒ How to operate, especially the machines available in the villages
- ⇒ Maintenance: How to maintain and the importance of maintenance of the machines which are going to be used by women
- ⇒ Safety instructions on machinery
- ⇒ Dangers, hazards and the appropriate use of chemical fertiliser and pesticides
- ⇒ Alternatives (like bio-technology instead of spraying)
- ⇒ Environmental issues and encouragement in using mechanisation with a minimum of burden on the environment but still maximising production and relief of work in agriculture.
- ⇒ Training on hygiene aspects, e.g. like not using carpets in making cheese, but material which can be boiled, milking, separating, animal fodder and household machines which need to be cleaned properly
- ⇒ Space for discussion of own ideas of women and for a possible adjustment of techniques to the needs of women
- ⇒ Where and how to get financial support (TOT)
- ⇒ The importance and how to assess the needs of women (TOT)
- ⇒ The importance of approaching all farmers, especially the poorer and suppressed ones (TOT)

⁶ women were found to be open towards a common use of mechanization, when they were explained the advantages

The extended use of donkeys - from transport to light field work - is recommended. There are several advantages and disadvantages, it is important to note that the small plots of subsistence production would usually not allow the use of a tractor, also such machines would usually not be economical, but a donkey drawn implement may be. Sufficient weeding with a donkey drawn tool would relieve women from their work load considerably and also give rise to production. The donkey is already used for transport and available to most farmers. Some women, though, might find a tractor inferior to using a donkey drawn tool. Especially if large machines are available for men. It has to be found out in more detail under specific conditions to what extent the use would be possible and useful.

A motor scythe would give the chance to perform quite a range of tasks women have to do in a much shorter time than it is done now. It is light to be carried easily into the field. There are several problems associated with it though. The power of such a little engine is very limited and rather noisy. Other problems would be the displacement of individual attachments, the life of such a machine might be rather short and tools might be less stable than on a single purpose machine. For sustainability therefore the question arises if replacement would be possible. Although being rather inexpensive, investigation into an economic and pragmatic use of such a machine is needed.

5 Promotion and Information

It is most essential if training is to be made available to women, to promote it. The question is how to reach women best. Here it is required to approach them through existing structures in the specific village. This is generally the Gamaia first, but as well other organisations like SHROUK, which is a government Integrated Rural Development Project. Most organisations work together with the Gamaia and therefore can be reached through them. It is more vital, however, to reach the Gamaia through other organisations at work in the village, e.g. to promote courses through VEWs. To farmers the information from VEWs is more qualified and helpful than the other given means like television, husband or trader. Farmers want personal contact with someone they can ask questions and trust in. The VEW can explain in a down to earth way, and farmers can understand them as usually coming from the same surroundings and understanding the farmer and their situation. In addition the farmers usually trust the Gamaia services, as they know it supports them. Whether women are approached or supported depends very much on the specific villages' Gamaia and its manager. Many farmers are not contacted by the VEW and, on the whole, women are not approached at all. Male extension workers need to know about mechanisation for women as well as the female extension workers, as they can reach women through their husbands. Television and radio can make people aware of specific issues, especially through the programme 'Secret of the Land' as it is watched by many farmers. A women responsible at the training centre for training women and to stay in touch with the farmers in the villages is important if training is to meet the requirements of women.

6 The importance of training for women

Training is most important to women in order to get more acquainted with machinery, and to feel more confident to use it. Some of the restrictions in education women face can be compensated for. Some will be able to apply what they have learned by using a machine available (e.g. with a relative) and give an example to others, showing that it is possible for women to operate machinery as well. But also to have the chance to use a machine, if available. Women, however, can be less dependent on men to get their work done, which they otherwise would have to do by hand. The use of machines by women might not happen quickly, but experts and organisations as well as the local staff must consider the fact that women can and have to be included with respect to mechanisation and the training on the same and machinery. Requirements of women need to be met in order for them to take advantage and to be of use. Women, especially, have to be approached themselves, and appropriate machines with training needs to be made available in the villages.

Die Wichtigkeit der Ausbildung für Frauen an landwirtschaftlichen Maschinen und dem Prozeß der Mechanisierung

Die Ausbildung ist in erster Linie wichtig für Frauen, damit sie mit dem Umgang mit Maschinen vertraut werden und sicherer damit umgehen lernen. Auf diese Weise können manche Einschränkungen denen Frauen in der Bildung ausgesetzt sind ausgeglichen werden. Manche der Frauen werden die Möglichkeit haben, das Gelernte auch praktisch mit vorhandenen Maschinen (z.B. bei Verwandten) anwenden zu können und somit ein Beispiel für andere Frauen darstellen um zu zeigen, daß es für Frauen auch möglich ist, Maschinen zu handhaben. Aber auch um ihnen die Möglichkeit zu geben, Maschinen zu benutzen, wenn sie vorhanden sind. Frauen können so, wie auch immer, weniger abhängig davon sein, daß ihre Arbeit von einem Mann erledigt wird, oder sie diese aber sonst von Hand tun müssen. Es braucht vielleicht seine Zeit bis Frauen Maschinen benutzen um ihre Arbeiten damit auszuführen, aber Experten und Organisationen genauso wie Mitarbeiter vor Ort müssen die Tatsache einplanen, daß Frauen in den Prozeß der Mechanisierung und der Ausbildung an Maschinen einbezogen werden können und müssen. Es ist jedoch wichtig daß eine Schulung auf die Bedürfnisse der Frauen ausgerichtet ist, so daß Frauen auch Gebrauch von dem Angebot machen können. Frauen müssen vor allem selbst angesprochen werden und die Schulung muß für geeignete Maschinen in der dörflichen Umgebung angeboten werden.

7 References:

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