

# TECHNOLOGY TRANSFER FOR IMPROVING SUNFLOWER PRODUCTION IN BRAZIL

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Summary: Technical efficiency and economical viability are important objectives of sunflower production technologies by the research institutions. Concurrently to technology generation, the validation and transferring strategies have to be well planned and executed to reach the objectives. However, the non-evaluation of technology adoption and the little understanding of the factors influencing it are major constraints to the whole process. In order to improve technology generation, validation and transfer efficiency, a methodology called "Training & Visit"(T&V) was applied by the National Soybean Research Center (Embrapa Soybean) together with Caramuru, a private sunflower crusher corporation. In the first phase of the T&V, a committee of specialists (including Embrapa's Soybean researchers and Caramuru technicians) was formed. The sunflower season was then divided in four periods, for which period a set of specific technologies were recommended. Three technicians involved were periodically trained. In the second phase, each one of them trained a group of 10 additional technicians. In the third phase these additional 30 trained field technicians covered an area of 20.000 ha of sunflower farmland, where recommended technologies were transferred to the farmers. To efficiently evaluate the whole process, the rate of technology adoption due to the T&V program and agronomic and economical performance of the sunflower crop will be performed after harvest in July/99.

## INTRODUCTION

Improvements in the way of living have occurred, during all the history of humankind through the application of new knowledgies.

Man is capable of learning and adapting to cultural, social, economical, professional, and political changes, since these proposed changes fulfill his interests or the interests of his family or community.

Information is one of the basic supports of all research process, and at the same time, it is the basic support of the product it generates.

To Bressan (1995), the technology transferring consists in the organization of all available products, services and processes, and the dissemination of information through processes of communication and marketing. Its efficiency depends on various factors, research, technical assistance, and rural extension as and also, the relationamong them.

The effectivity of the technology transfer is higer when production conditions, market limitations, infrastructure, availability, and etc, are taken into account.

Fujisaka(1994) stated four reasons that could lead a farmer **not to adopt** a new technology: 1) the transfer of technology did not reach its target the farmer; 2) the technology was not strategical to the farmer; 3) the immediacy of the farmer; and 4) the technology to be transferred does not work under the conditions in which it was proposed.

The transfer of technology is based on results obtained from a research program. The passing of technologies generated or adapted by research is performed through the traditional methodologies such as: courses, speeches, meetings, trainings, campaings, visits, seminars, folders, posters, demonstration plots, observation plots, and field days, among others.

Evaluation of technoly adoption has to be performed to measure the implementation of these technologies and the agronomical and economical results achieved by farmers. The weak point on the transferring processes is that most of the technologies are transferred without through evaluation of the adoption level. The factors invoved in whether or not the technologies is adopted are not considered.

Embrapa and Caramuru Company, a grain prosssing corporation, stabilished in the 98/99 crop season, a partnership aiming to improve sunflower technology transfer. Training & Visit was the methodology chosen to transfer and validate recomendet technology to sunflower.

## MATERIALS AND METHODS

The work was developed in central Brazil (an area denominated ``cerrados" or savanas) and started in October, 1998 when Embrapa and Caramuru signed a partnership agreement to develop the methodology for transference of technology denominated Training & Visit.

The T&V system works basicaly by training rural extension specialists (CE). Those specialists, in constant contact with Embrapa researchers, organized and trained groups of field technicians (FT) who, then transferred this knowledge to organized groups of farmers (F).

The work developed during the 98/99 growing season was:  
Creation of a specialists committee (CE) composed by Embrapa researchers and Caramuru technicians who leveled the knowledge on the technologies recommended for the sunflower crop, dividing the crop cycle into periods, defining the technologies to be transferred, scheduling the activities, following the crop development and evaluating the results obtained.

Formation of the field technicians group (FT): each CE formed a FT group, transferred a number of previously defined technologies, followed and evaluated the performance of the FT group.

Formation of farmers group (F): each FT formed a F group, transferred the technologies defined by crop periods, followed and evaluated the results obtained by the F group.

After harvesting, a meeting to evaluate the results was held among CE and FT. During this meeting the negative and positive points of the work were evaluated, and the new research demands for the next growing season were elaborated.

## **RESULTS AND DISCUSSION**

During the 97/98 growing season, the Caramuru Vegetal Oils fomented a sunflower production program and the results obtained (Table 3) were far below expectations. The main factor for this failure was the lack of knowledge and inadequate application of the available technology by farmers and technicians.

After this unsuccessful event, Caramuru looked for a partnership with Embrapa trying to motivate farmers to invest on the crop using the technologies recommended by research institutions.

The Training & Visit methodology was adopted considering the 97/98 growing season as the starting point. A levelling training meeting on the sunflower crop was performed with CE and FT groups. After this training, the crop cycle was divided into activities as shown on Table 1. FT groups were trained and accompanied during all the crop cycle by the CE. In this Training & Visit 3 rural extension specialist (CE) and 23 field technicians (FT) were trained.

FT group transferred theme technology to the farmers or F groups (Table 2) promoting a higher adoption of the technologies recommended by research. The field technicians (23) transferred the technologies to 103 farmers during the 98/99 crop production.

Presented in Table 3 show the advances which occurred in relation to the 97/98 growing season. These results characterize the efficiency of the T & V methodology in promoting yield increases with the adoption of low cost and high efficiency technologies.

## **CONCLUSION**

The use of methodologies which favor the transfer of technologies to the farmer leads, besides increases in productivity, the welfare of farmers. The use of the T & V program promotes higher institutional integration, higher compromise of farmers with the transferred technology, permanent capacitation and accompaniment of field technicians, systematic flux of information, better evaluation of new technologies, adoption levels, and impacts of the new technologies, higher credibility to field technicians, and creation of new demands to research.

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Table 1. Chart of activities developed during the 98/99 sunflower growing season.

	Activity
November	training on sunflower crop management
January	training on fertility and nutrition of the sunflower crop
January	training on adjustments of planters
February	field visits by specialized technicians, field technicians, and farmers
May	field visits by specialized technicians, field technicians, and farmers
May	training on adjustments and adaptations of combines
August	meeting for results evaluation

Table 2. Activities of field technicians developed with farmers

Activity	Percentage of farmers assisted
Soil sampling	100
Soil compaction measurements	90
Fertilizer recommendation	100
Boron fertilizer recommendation	100
Insecticide and herbicide recommendation according to the management	100
Seed planters adjustments	100
Adjustments and adaptation of combines	100
Supply of disks for seed planters	95

Table 3. Results obtained during the 97/98 and 98/99 growing seasons

	97/98	98/99*
Sowing at the proper time	15.8%	40%
Use of boron fertilization	88%	98%
Use of nitrogen fertilization	60%	70%
Soil analysis performed	20%	100%
Number of farmers	63	103
Assisted area (ha)	4.616	17.000
Average yield (kg/ha)	866	1266

\* with the use of the T & V methodology

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