



**CATHOLIC RELIEF SERVICES**  
**Near East**



PD-ABE-899

ISD 79882

INCREASED AGRICULTURAL PRODUCTIVITY  
PROGRAM (IAPP)  
SEMI ANNUAL REPORT  
GRANT NO. NEB-0159-5123-00  
01 OCTOBER 1988

## HISTORY

In April of 1985, CRS/JWB was allocated \$156,300 of an estimated \$1,456,931 from the Rural Development Grant No. 5123 to increase agricultural productivity in the West Bank and Gaza Strip. In 1986, two MENA multicroppers were demonstrated and field tested in Gaza during June and July to improve traditional post-harvesting methods. Farmer reaction to these machines was good and a demand was observed. Therefore, in January 1987, an agricultural specialist was employed as Project Manager to direct the multicropper program and further develop the Increased Agricultural Productivity Program (IAPP) by determining additional needs of the area.

In addition to employing a project manager, a driver from the CRS/JWB/VIP Program, grant No. AID/NEB-4068 was transferred to the IAPP to serve as an agricultural mechanization field agent. Employment positions for a secretary/bookkeeper and extension agent were planned for the next period.

In October of 1987 a field agent was employed by the (IAPP) to work on the Gaza Strip. Agricultural centers in Gaza and the West Bank were also established during this time to provide a meeting place for farmers during farmer information days and other agriculture-related events and to provide warehousing for machinery.

### SUBSEQUENT PROGRAM REPORTS:

Six semi-annual reports were written which contained the following:

- A discussion of each objective contained in the grant amendment.
- An evaluation of the progress within each objective.
- A list of objectives for the program to follow.

The sixth report, covering the period from 1 October to 31 March was submitted on 15 May, 1988.

### CURRENT ACTIVITY:

During this report period, the IAPP concentrated its efforts on fulfilling each objective contained in the April 1987 grant amendment. These activities will be listed, discussed, and evaluated to determine the progress achieved in each area.

Finally, recommendations will be listed to illustrate the direction each activity should follow:

Activity 1: The selection of three agricultural implements to increase dryland production, by improving harvesting, post-harvesting methods and field conditions.

CRS/JWB has been able to introduce and demonstrate six agricultural implements which include: A harvester/binder, winnower/thresher, rock picker, manure spreader, seeder/fertilizer, and sprayer. Each machine will be discussed below with the exception of the seeder/fertilizer which is a seasonal machine.

#### HARVESTER/BINDER

The harvester/binder was introduced into the Gaza Strip by CRS/JWB in the harvest season of 1987. At that time, CRS chose to cooperate with and support the Palestinian company of Transjordan Engineering by purchasing 3 machines and working closely with them in order to establish a sound relationship between Transjordan and the farming community.

The harvester/binder selected by Transjordan was a Spanish model named the Flax 400. This model was used until the end of 1987 at which time an Italian machine named Nibbi replaced the Flax 400. Transjordan's rationale for this change was twofold: first, the Nibbi had the capability to outproduce the Flax 400 and second the Nibbi was more durable, making it suitable for the rough terrain of the West Bank.

An additional model of the harvester/binder named Bertolini exists on the West Bank and is imported from Italy by an Israeli company. This machine has a long and successful history of high performance. CRS, however, chose to support Transjordan for the following reasons:

1. It is a Palestinian Company
2. Spare parts appeared to be available
3. Field service was guaranteed by the company within 24 hours of a breakdown.

To best summarize the results achieved by these machines, a chronological list of events has been constructed which describes both the 1987 and 1988 harvest seasons:

- April, 1987: After surveying the West Bank and Gaza Strip, a strong need was observed for a machine to harvest grain crops in the Gaza Strip. Current harvest methods were by hand which was very time consuming, or by combine, which was undesirable due to the large amount of straw left standing in the field after harvesting. CRS/JWB decided to purchase three Spanish Flax 400 harvester/binders and field test them in the Southern two-thirds of Gaza.
- June, 1987: The first season was completed with various problems encountered, some of which included: binding mechanism malfunction due to the machine not being calibrated from the dealer, spare part unavailability, lack of field service and a major breakage of one machine due to misuse by a farmer.
- August, 1987: CRS/JWB arranged a meeting with Transjordan to discuss the future of the machine and Transjordans commitment to field service and spare part availability. Results of this meeting were as follows: An estimated five-year supply of spare parts purchased by Transjordan and a verbal commitment was made by Transjordan to hire a field person to service the increasing number of machines on the West Bank and Gaza Strip.
- At this time Transjordan also informed CRS/JWB that an improved harvester/binder would be introduced in 1988. It was an Italian model named Nibbi which was supposedly more durable and capable of out producing the Spanish Flax 400 machine.
- October, 1987  
March, 1988: During this period CRS/JWB and Transjordan jointly staged 7 farmer information days throughout the West Bank and Gaza Strip. The purpose of these farmer information days was to increase the awareness of the farming communities of different machinery available to them through Transjordan. In addition, CRS/JWB offered a cost sharing plan to cooperatives and/or village cooperative efforts which would lessen the financial burden of the machinery cost to each group. This cost sharing plan is explained under Activity 2.

April, 1988: Two cooperatives and one village cooperative effort group approached CRS/JWB and expressed the desire to cost share 3 harvester/binders. At this time, one of the cooperatives suggested that the Italian made Bertolini model from Israel be purchased in place of the Nibbi model from Transjordan. CRS/JWB informed all three groups of the rationale behind the selection of the Nibbi, and left the decision up to each group. Each group decided to purchase the Nibbi.

Within one week, two of the Nibbi machines had suffered innumerable breakdowns including oil blowing out from one of the engines. CRS/JWB advised the other cooperative group not to use their machine. All 3 cooperatives approached Transjordan, returned their machines unsatisfied to Transjordan and, after CRS intervention, received refunds.

After receiving agreement of the three cooperative groups, CRS/JWB contacted the Israeli company and purchased three Bertolini models using the same cost sharing arrangements. The machines had to be ordered from Italy, however, and arrived after the season was over. Nevertheless, the cooperative groups were pleased to receive the new machines and work will begin with them in April of 1989.

In Gaza, the Flax machines from 1987 were employed and worked relatively well for the first week of the season. Four hundred farmers signed up to have their fields harvested by the machines. After the first week of work, however, the machines began to break down and half of each day was spent repairing and re-calibrating the harvester/binders. Farmers eventually became frustrated to the point of hiring out large combines to harvest their fields. Although the combines leave a significant amount of straw in the field and are not a desirable alternative, farmers felt they had no choice, but to employ the combines.

June, 1988: During the month of June, Scott Loney, US Food for Peace officer and Richard Whitaker, USAID official from Washington visited Gaza and the IAPP Project.

At this time, CRS/JWB relayed the history of the harvester/binder to them and explained the rationale behind the CRS selection of Transjordan Engineering's machines versus the already established Bertolini model from the Israeli dealership. They agreed that it was the job of CRS to take the risk of introducing new machinery and/or new models of old machinery and that despite the unfortunate events that occurred with the harvester/binder, CRS proved to the farmers that the Bertolini machine is the only viable machine available in Israel and the Territories.

The future of the CRS role with the harvester/binder machine will be as follows: The IAPP field agent in the West Bank will follow-up the new Bertolini machines cost-shared by 3 cooperative groups in the West Bank. He will provide technical assistance and advise each group on how to efficiently plan the scheduling of each machine to obtain the maximum economic benefit.

In Gaza, the history of the harvester/binder has been shaky. This has been attributed to the continuing breakdowns of Transjordan's Flax 400 machine. Despite this history, farmers are interested in the machine and one or two village cooperative efforts have expressed an interest to cost share the proven Bertolini harvester/binder.

After the 1989 season, CRS/JWB will phase out its involvement with the harvester/binder leaving farmers with an appropriate machine. CRS will concentrate its efforts on other machinery and/or other areas within the agricultural sector.

#### WINNOWER/THRESHER

In 1987, Ibrahim Haddad at the request of CRS manufactured and modified a prototype of the MENA winnower/thresher. The IAPP purchased three of these machines and field tested them in Gaza. The Haddad machine out-produced the original MENA model, but it still could not compete with the two West Bank machines; even after 4 further modifications.

During the winter of 1987-88, Haddad redesigned the entire machine to compete on the local market and to develop a winnower/thresher that would not strain tractors as much as the West Bank machines. He succeeded in doing this and sold 11 machines this past season. A photo of this machine can be viewed in Appendix 1.

Although CRS did not purchase any new machines from Haddad, the IAPP cost-shared one machine with a village cooperative effort. Plans are being made to organize a cooperative effort in a Gazan village to cost share a machine for the 1989 harvest season.

If the Gazan village decides to cooperate amongst themselves and cost-share a winnower/thresher, the IAPP will assist them financially, provide technical assistance and advise them on how to efficiently schedule the machine. If they choose not to cooperate, CRS will phase out its involvement with the winnower/thresher having been instrumental in making available an excellent machine and the manufacturer will become responsible for future sales and services of the machine.

#### ROCK PICKER

The rock picker has been the most difficult machine to implement on the West Bank. Initial reactions by farmers towards a machine that could remove rocks from fields was remarkable. Every farmer, when asked about this machine, responded positively. Once field tested, however, their opinions changed and the interest by farmers and cooperatives receded. The reasons given for this lack of interest were twofold: first, the farmers were not willing to pay the amount of money needed to clear their field and secondly, tractor drivers state that they can not earn enough money using the machine due to the time required to clear a dunum of land. Traditionally farm families assist in clearing fields of rocks by hand between planting seasons.

The IAPP visited a kibbutz near the West Bank town of Hebron to inquire about their rock picker which is a replica of Haddad's model. The kibbutz's agricultural foreman said that their machine cleared approximately 2000 dunums/year and that they have been using it for the past ten years!

CRS is continuing to search for individual farmers and/or cooperatives who are interested in using the machine. Three or four inquiries have been received by the IAPP this past month and plans are being made to deliver the machines to these areas.

#### MANURE/SPREADER

The manure/spreader is in the middle of its second season in the Gaza Strip. The demand for this implement has been very sporadic and not as strong as expected by the IAPP. Farmers were asked why they were not using it and the response was as follows: "Due to the political situation, most of our families are confined to the farm and hand labor is readily available; why should we spend our money on a machine when the family can do it?"

Despite this general attitude, there has been some interest by farmers to use the machine and field data has been collected which can be reviewed in Appendix II.

This past season plans were made to manufacture an additional machine for the West Bank. Due to the sporadic demand by farmers, however, it was decided to delay the manufacture and use the Gazan machine on the West Bank upon completion of the season in Gaza.

#### SPRAYER

During this report period, the IAPP was able to field test and demonstrate a sprayer manufactured by Ibrahim Haddad. This sprayer was designed to be mounted on a harvester/binder machine, thus increasing the potential use of the harvester/binder an additional 6 months per year.

The sprayer has been operating in Gaza and initial demand for its use has been light. A stronger demand is predicted, however, as the machine continues to receive more exposure. Initial field data of the machine can be observed in Appendix II.

#### Evaluation of Activity I:

It has been difficult to judge true farmer reaction to machinery the IAPP has introduced and field tested in Gaza and the West Bank. Every implement procured by CRS/JWB was based on farmer's interest and needs. These needs were determined after interviewing a large and varied group on the West Bank and Gaza Strip. Each machine has achieved varying degrees, with some machines requiring additional field time before a fair judgement can be made.

The IAPP feels the misconception by farmers that CRS/JWB will or should provide machinery free of charge has been a major obstacle to program implementation. Today this attitude still exists among farming communities, despite countless explanations of the objectives of IAPP and its approach to agricultural development.

Due to this misconception, the IAPP has decided to temporarily discontinue manufacturing and/or importing machinery unless a cooperative or cooperative effort group is willing to commit its self by cost-sharing a machine.

This method has worked well with the winnower/thresher and harvester/binder machines. No one has approached CRS, however, to undertake a cost sharing venture with the rock picker, seeder/fertilizer, manure spreader or sprayer. If this status quo exists after the fall of 1989, the IAPP intends to transfer its energies to other areas of agriculture.

Activity 2: The utilization of agricultural cooperatives and individual farmers to assist in introducing the IAPP into the West Bank and Gaza Strip.

The purpose of introducing farm machinery through individual farmers and cooperatives is twofold: first, to examine the economics of each implement to determine if the machines will generate enough income to be affordable by farmers, and secondly to evaluate each group on their effectiveness in service to small farmers.

The past two years have shown that the machinery sector of the IAPP should be introduced and/or field tested through cooperatives or cooperative group efforts. Farmers insist that the cost of each implement is too expensive an undertaking on an individual basis.

This past season CRS/JWB decided to offer the option of cost sharing machinery with cooperatives or cooperative efforts that were willing to meet CRS terms. The terms, simply stated are as follows: 1/3 of the cost of a machine will be provided up front by the cooperative; 1/3 of the cost will be provided as a grant by CRS; and 1/3 of the cost will be provided as a no-interest loan by CRS, payable 2 years after the signing of the contract. In addition, each group must allow CRS to examine their records and operate the machine using the manufacturer's and CRS performance standards.

Two cooperatives and one cooperative effort group decided to cost share 3 harvester/binder machines. Unfortunately, the harvester/binders proved to be defective, and a different model was purchased and did not arrive until after the harvest season. Thus, the machines were not used this year.

The cooperative group effort (as opposed to an official cooperative), however, decided not to immediately purchase the harvester/binder, but instead cost share a winnower/thresher from Haddad Manufacturing. CRS agreed and the cooperative group purchased a machine, worked the season with no problems and returned to CRS/JWB the loan portion of the machine cost. In addition, they approached CRS to cost share the harvester/binder. The IAPP plans to use this group as a model for other villages to emulate.

CRS/JWB decided to lend the two rock pickers to various cooperatives without the stipulation of cost-sharing. This was due to the difficulty in trying to implement the machine in the West Bank (farmer reaction has not been very positive due to the economics involved with the machines). The IAPP will continue to promote the rock picker this year. If a lack of interest still exists, however, the machines will be stored in the warehouses and will be lent out to individuals who want to clear their land.

Although the IAPP decided not to use individual farmers for introducing or field testing machinery, an exception was made in Gaza. This was due to the lack of cooperatives in the area and to the severe effects the political situation has had on Gaza. Therefore, two farmers were selected to operate CRS' Flax 400 harvester/binders during the harvest season.

As previously mentioned, the Flax machines were plagued with problems and this season's results were undesirable. The farmers, however, still were impressed with the concept of a harvester/binder and the IAPP has received verbal requests from two cooperative effort groups to cost share the Bertolini model. In addition, there has been a verbal request from a third cooperative group effort requesting to cost-share a Haddad winnower/thresher. The requests will be reviewed by the IAPP this winter and a decision will be made on whether or not to support these groups.

#### Evaluation of Activity 2:

The concept of cost-sharing CRS field-tested machinery is proving to be a good avenue for providing machinery, services and community development within poorer villages on the West Bank and Gaza Strip. By having the cooperative and cooperative group efforts contribute to the cost of machinery, a sense of responsibility is assumed and greater care of the machine occurs.

Activity 3: The coordination of agricultural activities with agricultural implement dealers and farmers through farmer information days and on-the-farm demonstrations to further develop the private sector and meet farmers needs.

Ibrahim Haddad Manufacturing and Transjordan Engineering are two agricultural implement dealers CRS has selected to assist in introducing machinery into the West Bank and Gaza Strip. The criteria used for their selection includes the following:

- Both offer a 1 year guarantee on machinery
- Both offer maintenance service in the field
- Both are West Bank (Palestinian) small business enterprises.

Ibrahim Haddad accompanied CRS/JWB to Gaza this season to demonstrate his new winnower/thresher and to see if farmers were interested in purchasing any of his other agricultural implements. The IAPP has been encouraging both Haddad and Transjordan to establish a dealership in Gaza so that the farmers could have easy access to their machinery. In addition, the farmers would be able to see any new machinery that is being produced or imported.

Although Haddad has stated several times that he is interested in expanding his business, he has been very reluctant to establish a dealership in Gaza. The IAPP questioned him on this point and the answer given was "Lack of trust towards the Gazans".

As a follow-up to the Haddad winnower/thresher, CRS/JWB designed an extension bulletin to act as a guide and operational manual (Appendix III) when using the machine. Haddad plans to change some of the illustrations since he redesigned the machine after the bulletin was completed.

Relations between Transjordan Engineering were strained this past season due to the problems encountered with the harvester/binder. It appears that Transjordan is unwilling to devote the needed time and effort to the agricultural sector of their organization. In addition to the 3 cooperative groups CRS helped cost share the Nibbi harvester/binder, 4 other farmers experienced problems with this machine. Transjordan has not accepted responsibility for these problems. CRS/JWB suggested that Transjordan contact the manufacturer in Italy and have their field agent come to the West Bank during next years season. No definite reaction to this suggestion has been forthcoming.

#### Evaluation of Activity 3:

Haddad manufacturing stated that he is not interested in establishing a dealership in Gaza due to the lack of trust he feels towards the Gazans. Haddad has two dealerships on the West Bank and now appears to be doing quite well without further assistance from CRS in demonstrating his new machinery and holding farmer information days. Therefore, the IAPP has decided to support Haddad only with machinery requests that come from cooperative groups who are willing to cost-share machinery with CRS. The testing of any new Haddad machinery and future interventions into the Gaza Strip will be done directly by Haddad himself.

CRS/JWB has suggested that Transjordan Engineering bring in a field agent from Italy to address the problems that the Nibbi harvester/binder experienced this past season. If Transjordan does this and demonstrates this next season that they have a

genuine interest in the farmers, the IAPP will attempt to cooperate with them in various agricultural undertakings. If not, the IAPP will examine other machinery dealers with which to work.

Activity 4: The increase of agricultural activity in lesser-developed areas of the Gaza Strip.

Seven dryland demonstrations were implemented in Gaza last season to demonstrate the technique of using a mechanical seeder (drill) versus the traditional method of broad-casting seed by hand.

The Gazan farmers in the villages of Khaza' and Abu San Kabir stated they had never used a seeder before and that they would be willing to experiment with it this year to compare the yield results of the machine versus their own method of planting.

The reasons for introducing a seeder into Gaza were twofold:

1. To complement the harvester/binder and winnower/thresher in the IAPP approach to increase dryland production through the use of machinery.
2. To apply seed in organized rows so that optimum utilization of moisture by each plant will occur.

The results of the demonstrations were positive, although, the yield differences were not too significant. Each plot contained a large amount of weeds which reduced yields in general and prevented distinct visible differences between the two planting techniques. The weed infestation was due to the inability of the IAPP to apply herbicides during the season. Unseasonal rains and the civil unrest in Gaza precluded the IAPP entering the fields. Results of each demonstration can be reviewed in Appendix IV.

During the previous reporting period an irrigation project involving over 50 farmers and joint cooperation between CRS and UNDP was proposed by the Gazan village of Abasan. Upon future investigation into the water rights of the village, it was found that the farmers supplied both CRS and UNDP with erroneous information concerning the amount of available water to which they were entitled. In order to increase their water supply, an approval from the Israeli Government is required which is extremely difficult to obtain. Consequently the project has been abandoned.

An improved drip irrigation system and mini-sprinkler system has been installed in a farmer's field near the village of Khaza'a.

The project was delayed due to the failure of the local well's pump and engine. In addition, it was found that the reservoir pump was incapable of producing the required pressure for the sprinkler system. These problems were resolved, the demonstration is now on schedule and field data will be available during the next reporting period.

In the West Bank, 4 dryland demonstrations were implemented last season using a new seeder which can apply seed and fertilizer in one operation. Although some farmers use a seeder in the West Bank, the fertilizer mechanism was new for them to observe. Each farmer appeared to be impressed by the fertilizer mechanism, although, they questioned the design of the seeder. Their major concern was that the seed was not going into the ground deeply enough and that birds were consuming the grain. It was suggested that a small plow mechanism be welded on to the frame of the machine to adapt it to the West Bank terrain.

The results of the demonstration were questionable with yield differences being insignificant. In one instance, the farmer's plot out-yielded the IAPP's adjacent plot. Reasons for these yield differences are as follows:

1. As with Gaza, weeds infested the plots which severely reduced yields. The IAPP was able to apply herbicide to each plot. Rain showers occurred, however, within 4 hours of the application. The active ingredient in the herbicide requires 12 hours of moisture-free conditions. Consequently the application was washed off. Weather conditions then prevented the IAPP from entering the fields a second time. It should be noted that Israel experienced these same problems and had a 25% reduction in grain yield this year.
2. The seeding rate was also a reason for the difference in yield. The IAPP selected a rate of 10 kilos/dunum which was based on the average amount of rainfall each season. The traditional method is to use 15 kilos/dunum. Under normal climatic conditions, grain yields are reduced due to insufficient moisture per plant when the 15 kilo rate is used. This years rainfall was remarkable so that moisture conditions could support the 15 kilo/dunum rate, thus fields flourished.
3. Finally, a considerable amount of the 4th demonstration plot was under water which in turn reduced its yield.

Field data on each of these plots has been recorded in Appendix V.

#### Evaluation of Activity 4

Three farmer information days were staged in the West Bank and Gaza Strip and results from the demonstration plots were discussed in detail. Farmers were asked to evaluate the value of continuing work with dryland and irrigation demonstration plots. The overwhelming response was yes and each farmer volunteered his own land for IAPP use. This was very encouraging since the results from this past season's plots were mixed. Plans are being made to concentrate on wheat variety trials this season and demonstrate the advantage of using good quality seed versus planting old seed year after year. Hopefully climatic conditions will be such that herbicides can be applied and the infestation of weeds can be prevented.

Activity 5: Continue assessing current farming practices to determine additional machinery requirements for the area.

The IAPP has been going through a transition stage in which more emphasis is being placed on horticulture and agronomic crop production versus agricultural machinery. This transition began last reporting period when CRS/JWB investigated irrigation systems on the West Bank and Gaza Strip. At this time, many questions arose from farmers concerning irrigation scheduling, plant diseases, soil fertility, water quality and fertigation methods.

To best address these question the idea of a pilot farm was proposed and approved by CRS/JWB. Ten dunums of land in the Gaza Strip will be rented by the IAPP to demonstrate the following:

1. A drip irrigation system that contains the necessary equipment such as pressure regulators and proper filtration systems to operate efficiently.
2. A mini-sprinkler system as an alternative to drip irrigation. This is primarily for the benefit of farmers located near the coast of Gaza where the water source is undesirable for drip irrigation due to algae build up in the water (lines become plugged, restricting the flow of water to plants).
3. Plant protection program in order to educate farmers on the native diseases in vegetables grown in Gaza, control measures to combat these diseases and proper procedures for the use of chemical pesticides.

4. Crop diversification to encourage farmers to grow more than one or two crops in their fields at one time. This practice may lessen the severity farmers face with fluctuating prices in the market on specific vegetables, i.e. tomatoes and watermelons.

In order to determine the prevailing attitudes towards the above areas of agriculture. West Bank and Gaza Strip farmers are being surveyed with a short informal survey. The results of this survey will allow the IAPP to demonstrate new techniques at a level which farmers will understand.

To assist the IAPP in providing improved cropping techniques to growers in Gaza and the West Bank, contacts have been established with the following organizations: The Ministry of Agriculture in Tel Aviv, Ben Gurion University of the Negev, Hazera Seed Company, Haifa Chemical Company and Na'an Irrigation.

#### Evaluation of Activity 5:

Work with the irrigation demonstration in Gaza has shown that there exists areas in crop production which can be improved. Farmers seem eager to welcome a pilot farm which would address the four previously-stated agricultural production practices. In addition, the IAPP will have more control over rented land versus private farms when demonstrating new techniques. This should increase the success rate of the demonstrations.

#### FUTURE ACTIVITIES

The following list reflects the ongoing objectives of the IAPP:

- Increase field tests on machinery to maximize exposure and obtain additional data on the economic and technological feasibility of each implement.
- Continue to work with co-operatives, individual farmers and agricultural institutions to introduce machinery and improved agricultural techniques to small farmers.
- Continue extension activities such as on-the-farm demonstrations and farmer information days to further develop small farmers on the West Bank and Gaza Strip.
- Encourage farmer organization and co-operation to increase efficiency of machinery usage.
- Ongoing assessment of farmers' needs in order to assist in developing an extended agricultural program for the West Bank and Gaza Strip.
- Continue examining different kibbutzim to obtain new agricultural ideas applicable to the West Bank and Gaza Strip farmers.

CRS/JWB 4D-006

RURAL DEVELOPMENT PROJECT

GRANT NO. NEB-0159-G-SS - 5123

(INCREASED AGRICULTURE PRODUCTIVITY)

PROGRAM: JERUSALEM, WEST BANK & GAZA STRIP  
 MONTH: SEPTEMBER 1988

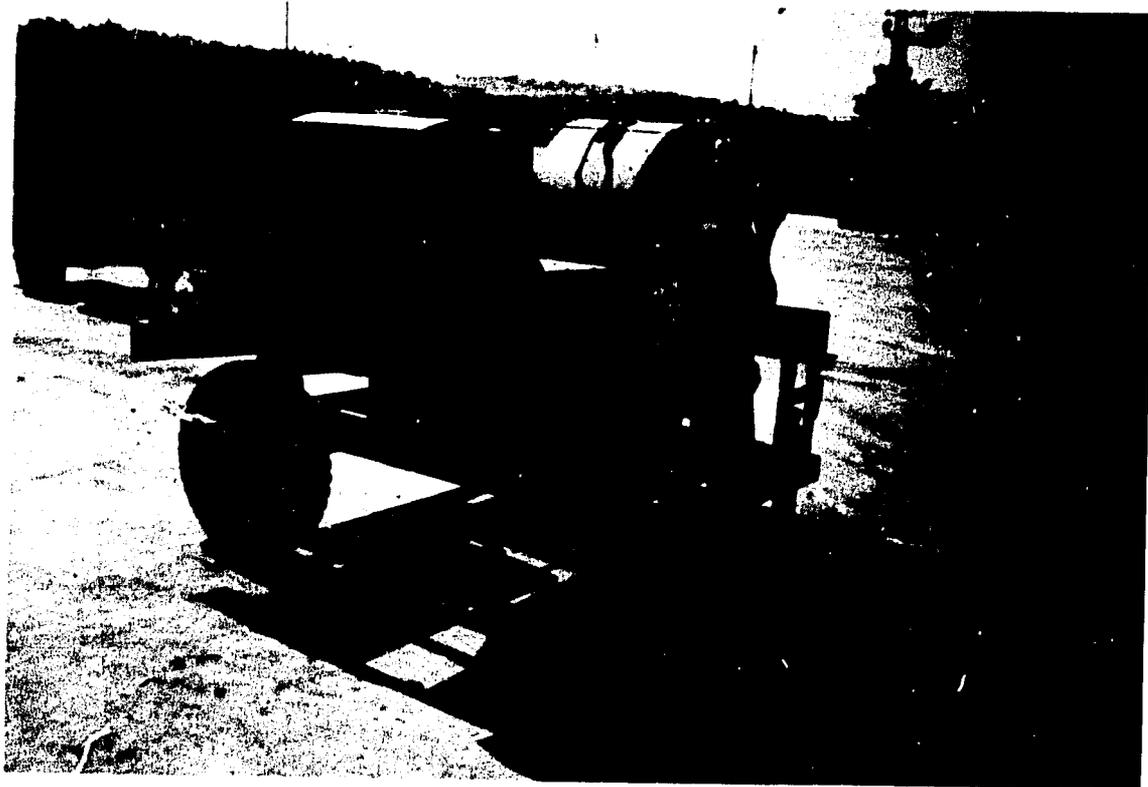
BUDGET EXPENDITURE STATEMENT: Reporting Period 04/01/88 - 09/30/88

GRANT	APPROVED BUDGET 04/03/85 12/02/90	AMOUNT EXPENDED THIS PERIOD	BUDGET EXPENDITURE TO DATE	BALANCE
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	US \$		US \$	US \$
1. INCREASED AGRICULTURAL PRODUCTIVITY	304,300		231,914.62	72,385.38
A. Salaries		23,737.21	78,272.55	
B. Travel		5,515.97	31,653.73	
C. Vehicles		-	7,686.98	
D. Non-expendable equipment		-	442.66	
E. Office Rent & Utilities		1,062.09	4,097.40	
F. Expendable supplies		153.15	2,697.04	
G. Field Agent Training		1,013.87	4,101.66	
H. Agricultural Machinery		24,142.59	99,749.78	
I. Agricultural Equipment Fund		962.49	3,212.82	
J. External Evaluation		-	-	
	-----	-----	-----	-----
	304,300	56,587.37	231,914.62	72,385.38
	-----	-----	-----	-----
	\$ 856,621	-	-	856,621.00
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TOTAL	1,160,921	56,587.37	231,914.62	929,006.38
	=====	=====	=====	=====

\* \$856,631.00 obligated according to Amendment of August 9, 1988.

APPENDIX I:

Photographs of the Ibrahim Haddad 1987 model winnower/thresher and the sprayer adapted for the harvester/binder



A side view of the Ibrahim Haddad winnower/thresher



The sprayer in action in the village of Khuza'a, Gaza

## Appendix II

DATA SHEET  
MANURE SPREADER

Village	Number of Farmers	Number of Dunums	Average Area of Land (Dunums)	Working Hours of the Machine	Average Dunums Hour	Manure Spread Cubic Meters
RAFAH	3	17	5.67	9	1.9	27
KHAN YUNES	2	10	5	6	1.6	18
ABSAN	8	30	3.75	24	1.25	72
KHUZAHA	3	9	3	9	1	27

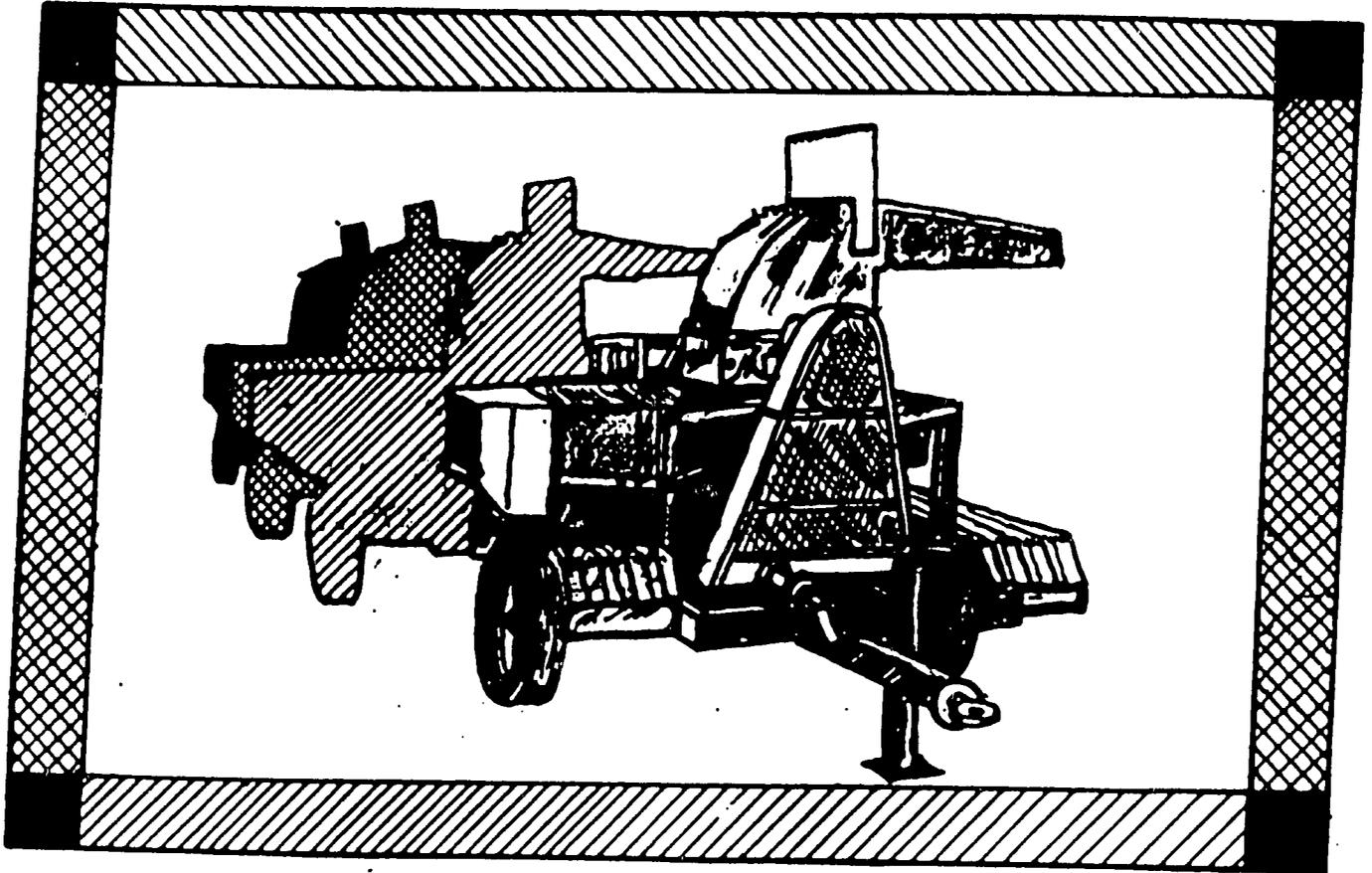
## SPRAYER

Village	Number of Farmers	Number of Dunums owned	Average Sprayed Area of Land (Dunums)	Working Hours of the Machine	Average Dunums/ Hour	Crops Sprayed
KHUZAHA	6	18	3	30	0.6	Olives, Tomatoes, Beans and Squash
ABSAN	10	30	3	60	0.5	Olives, Tomatoes, Beans and Squash

BG/sk.

17

# Haddad



THE IBRAHIM HADDAD  
WINNOWER/THRESHER

IN CO-OPERATION WITH  
CATHOLIC RELIEF SERVICES  
JERUSALEM - WEST BANK

## FORWARD

This bulletin is the result of the combined efforts of the Catholic Relief Services (CRS) staff in Jerusalem, West Bank and Gaza Strip (JWBGS), and Ibrahim Haddad Manufacturing. Ideas and suggestions for the bulletin format were contributed by J. A. Murphy, Assistant Country Representative CRS/JWBGS, Issam Said and Jaber Abu Rjele, Extension Agents for CRS/JWBGS and Ibrahim Haddad. Lillian Bajjali and Gaby Abboud developed, organized and translated the contents of this bulletin.

Written by:

William John Grealish

Illustrated by:

Dan Young

DATE: 01 June 1988

## INTRODUCTION:

Winnowing and threshing of cereal crops is a necessary agricultural operation for farmers in the West Bank and Gaza Strip. Local winnower/thresher machines are available, but require large horsepower tractors, are relatively expensive and lack maintenance centers for repairs and spare parts.

At the request of Catholic Relief Services/Jerusalem-West Bank-Gaza Strip, Ibrahim Haddad Manufacturing in Jenin developed a light-weight, economical winnower/thresher. Haddad's machine carries a one-year guarantee, spare parts are available and the machines can be serviced throughout the West Bank by any of Haddad's dealers. This bulletin describes and illustrates the requirements, tools, maintenance and operational procedures needed for the winnower, thresher.

REQUIREMENTS TO OPERATE THE  
WINNOWER/THRESHER

1. A tractor with a horsepower between 45 and 65. (Figure 1)
  
2. A power-take-off to rotate the belts of the winnower/thresher. (Figure 2)

Figure "1"

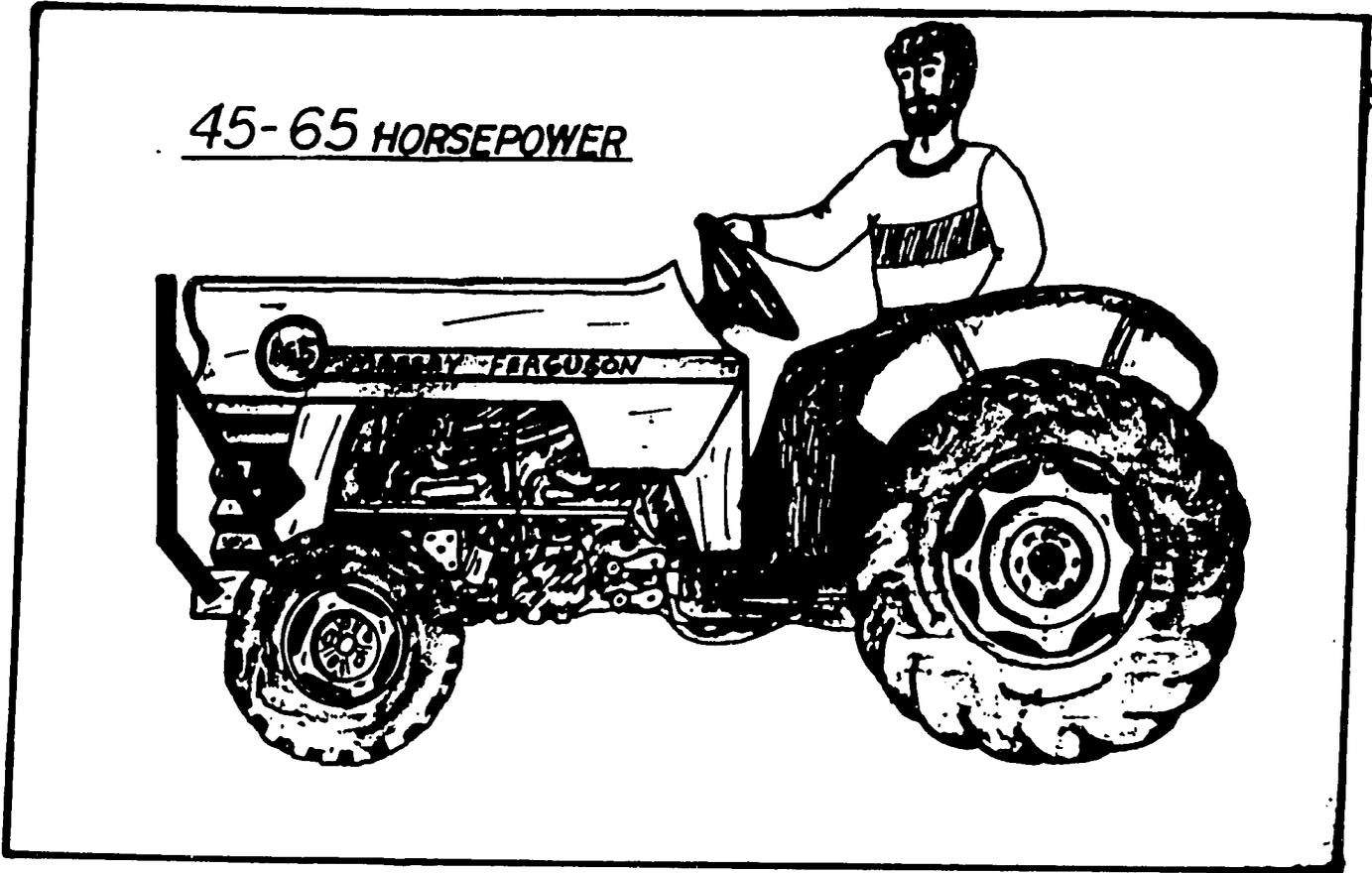
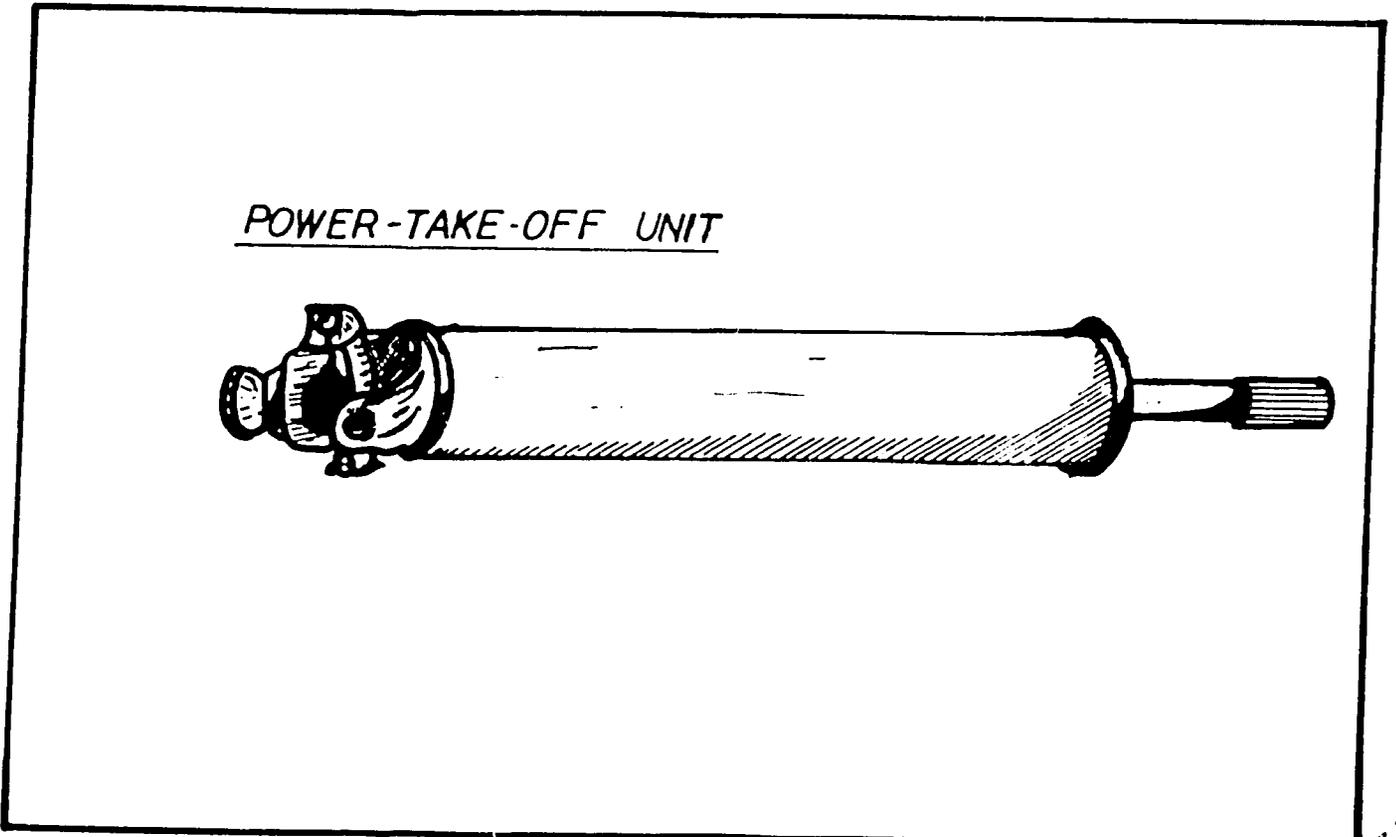


Figure "2"

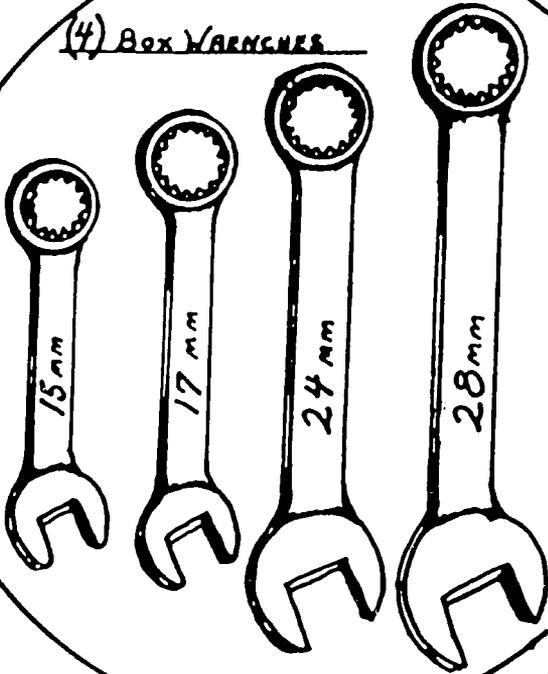


TOOLS REQUIRED (Figure 3) FOR  
THE WINNOWER/THRESHER

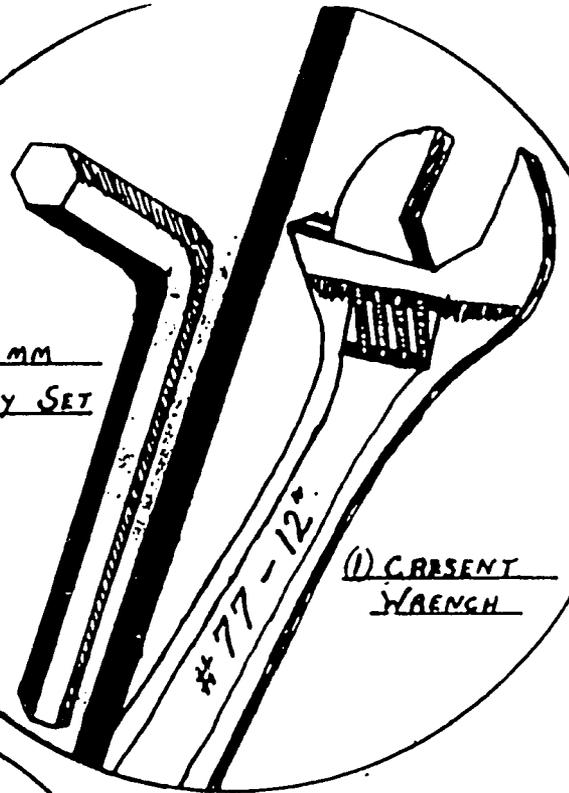
1. A set of 4 box wrenches, 15mm, 17mm, 24mm and 28mm
2. A 4 - 10mm Allen wrench set.
3. A Crescent wrench (No. 77 - 12").
4. A screwdriver (200mm x 8mm).
5. A medium-weight hammer.
6. A grease gun

Figure 3

(4) BOX WRENCHES



(1) 4-10 mm  
HEX KEY SET

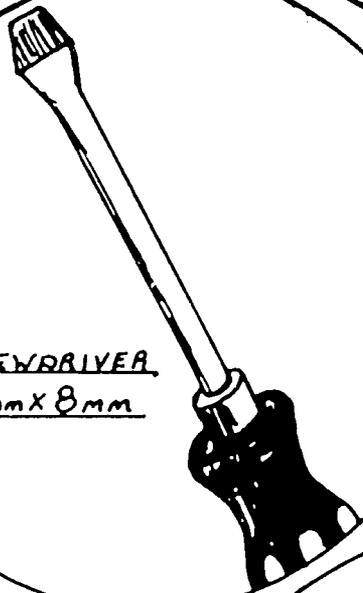


(1) CRESCENT  
WRENCH

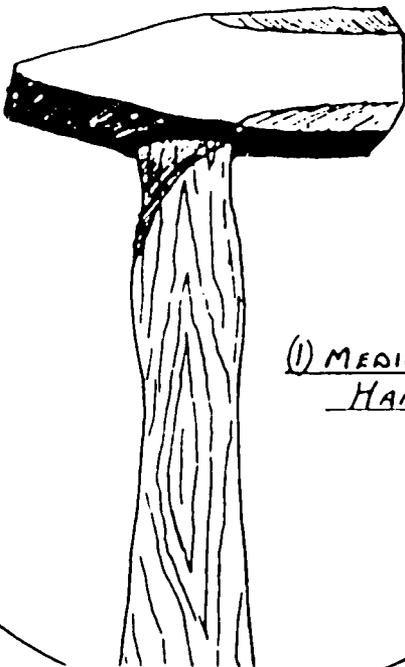
TOOLS

REQ'D

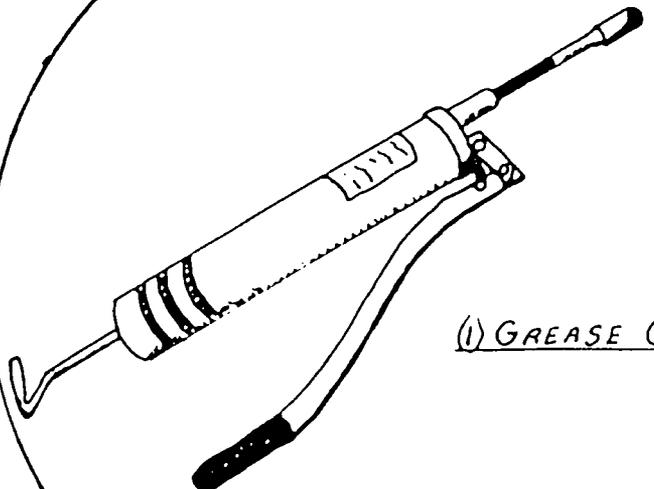
(1) SCREWDRIVER  
200mm X 8mm



(1) MEDIUM WT.  
HAMMER



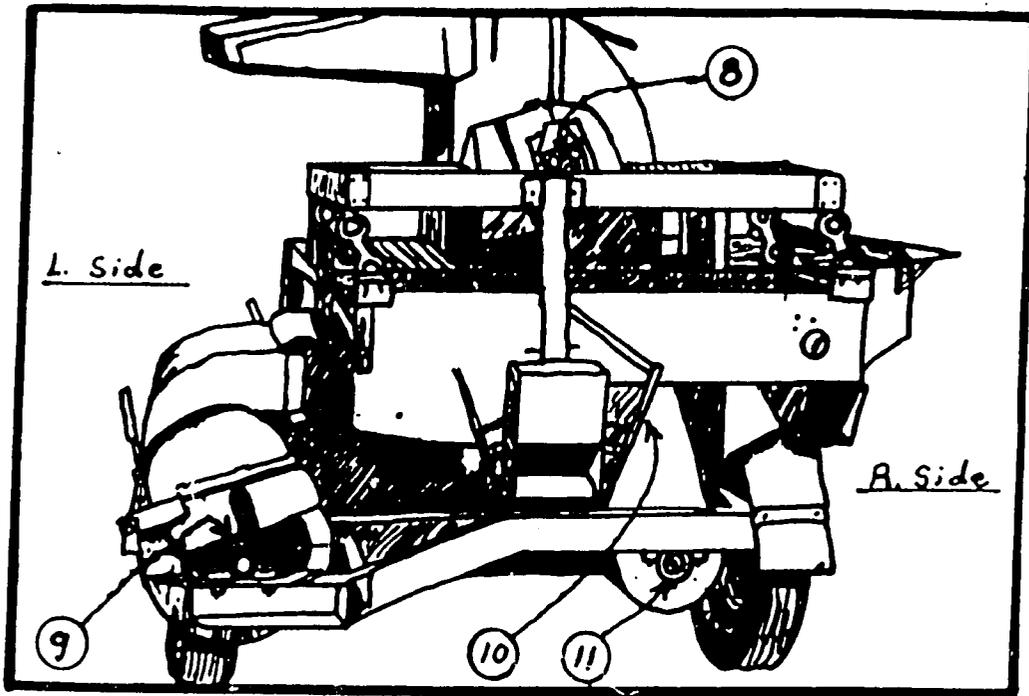
(1) GREASE GUN



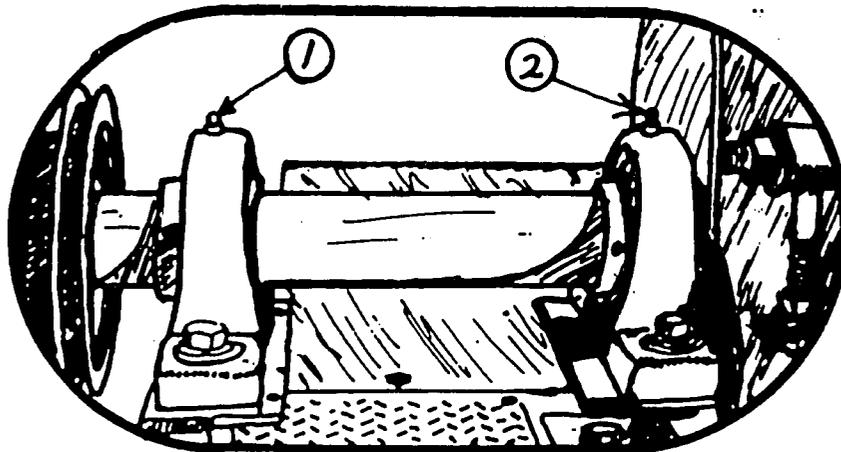
DAILY PREOPERATIONAL CHECK-UP  
AND MAINTENANCE PROCEDURE

- 1- Grease the machine at every grease point (Figure 4).
  
- 2- Examine the conditions of each belt: Are they loose? Do they need replacing? (Figure 5).
  
- 3- Tighten nuts and bolts (Figure 6).

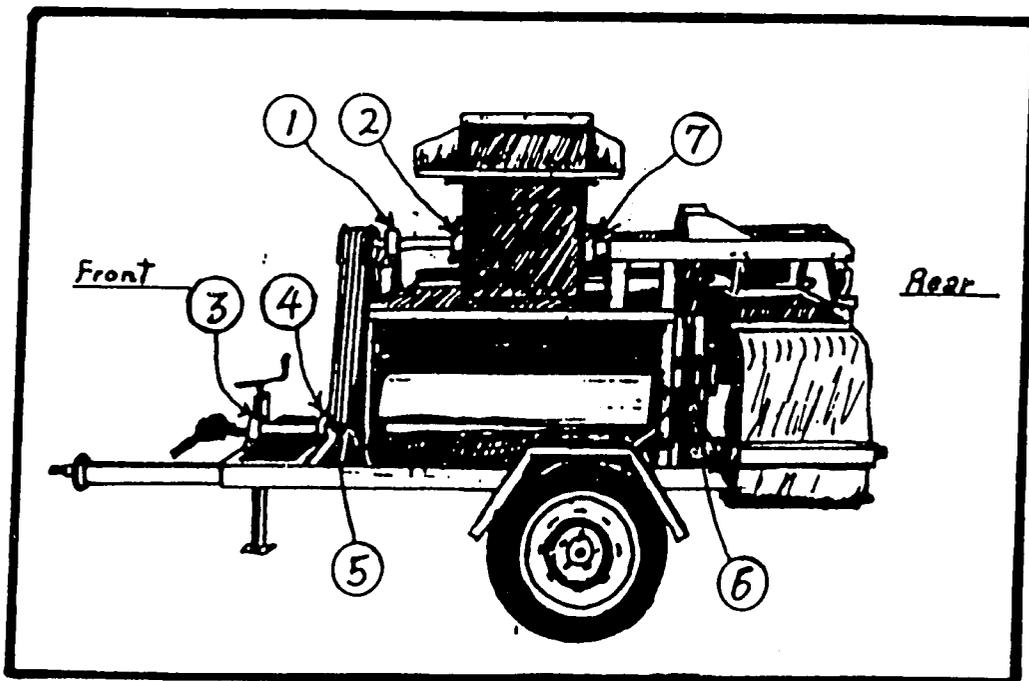
**GREASE DAILY AT ALL GREASE PTS.**



REAR VIEW



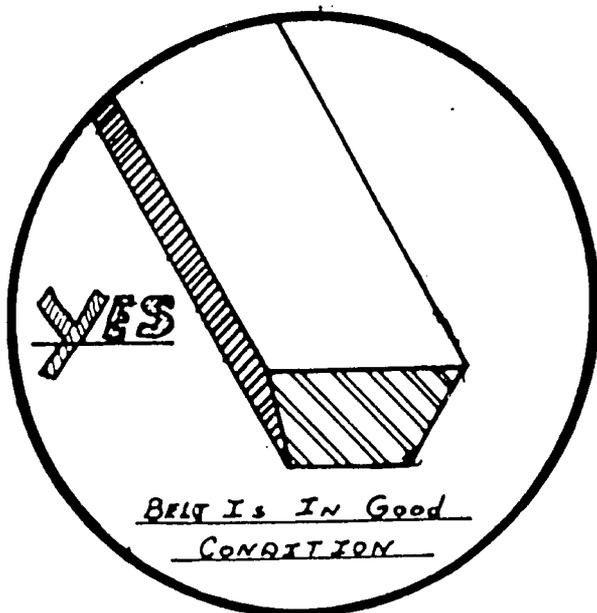
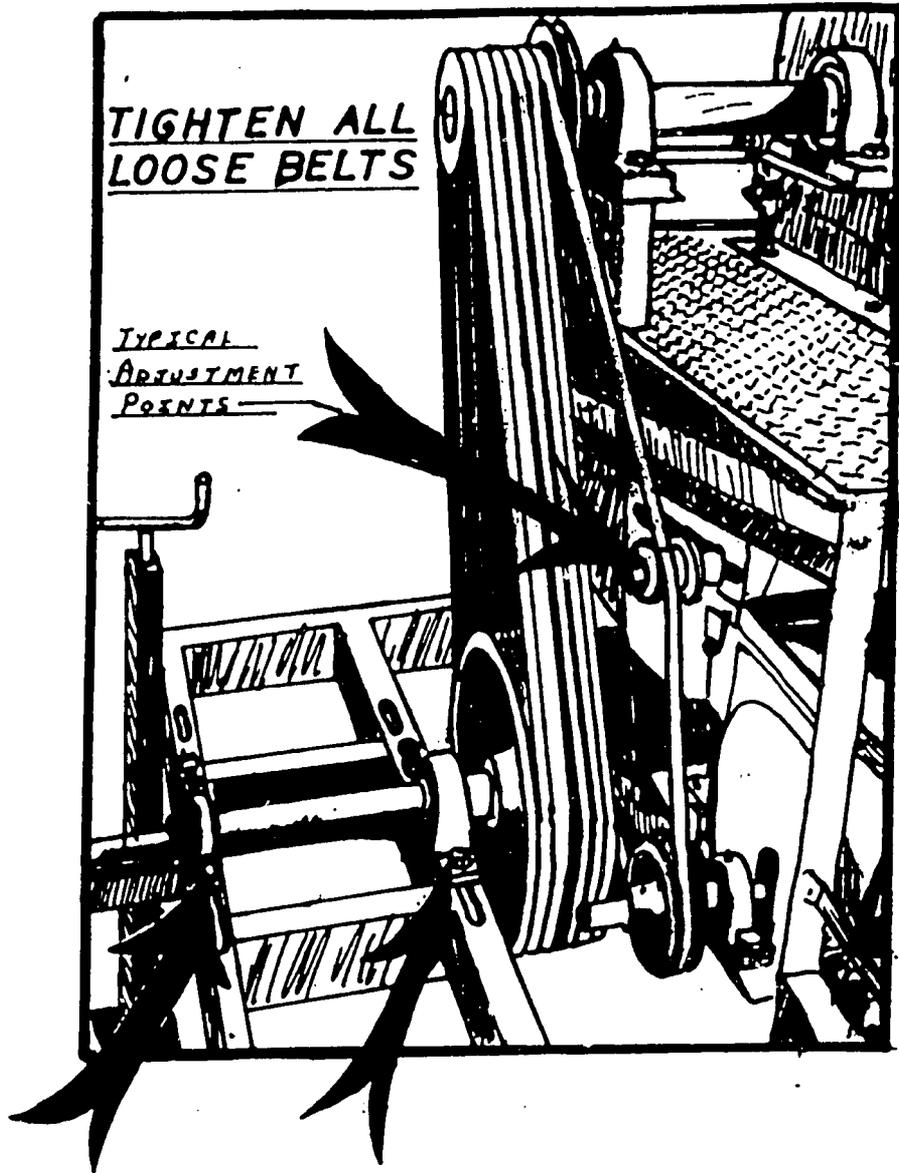
DETAIL VIEW  
TYP. GREASE PTS.



LEFT  
SIDE-VIEW

Figure "4"

Figure "5"

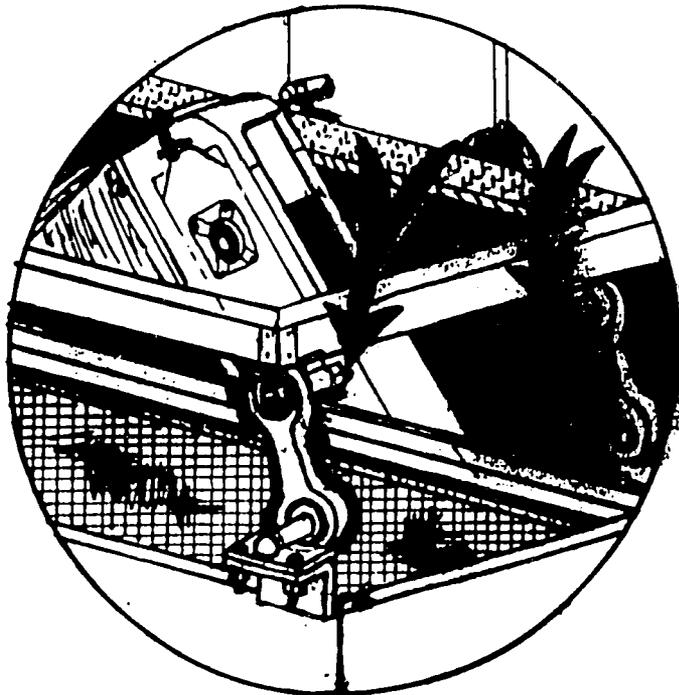


**CHECK CONDITION OF BELTS  
DAILY!**

Figure "6"



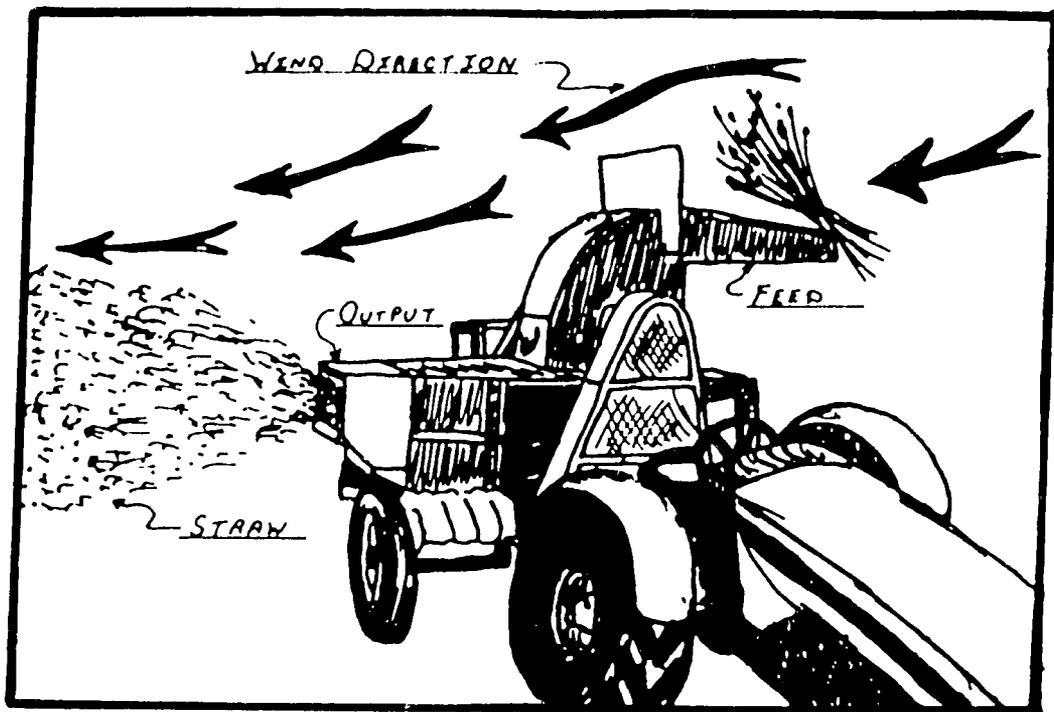
*TIGHTEN BOLTS DAILY!*



## OPERATION PROCEDURE

- 1- Position the winnower/thresher so that the wind will blow the straw away from the machine during operation (Figure 7).
- 2- Attach the PTO to the machine and the tractor (Figure 8).
- 3- Adjust leg support so that the machine is level with the ground at the PTO connection (Figure 9).
- 4- Attach a bag to the grain output opening to collect the grain after it has been threshed and winnowed (Figure 10).
- 5- Start the tractor allowing it to operate the winnower/thresher before you put anything in it. The speed must be between 1100 - 1600 Revolutions Per Minute (RPM) (Figure 11).

Figure "7"



POSITION W/T  $\dot{\epsilon}$  TRACTOR SO THAT WIND BLOWS STRAW AWAY FROM MACHINERY.

Figure "8"

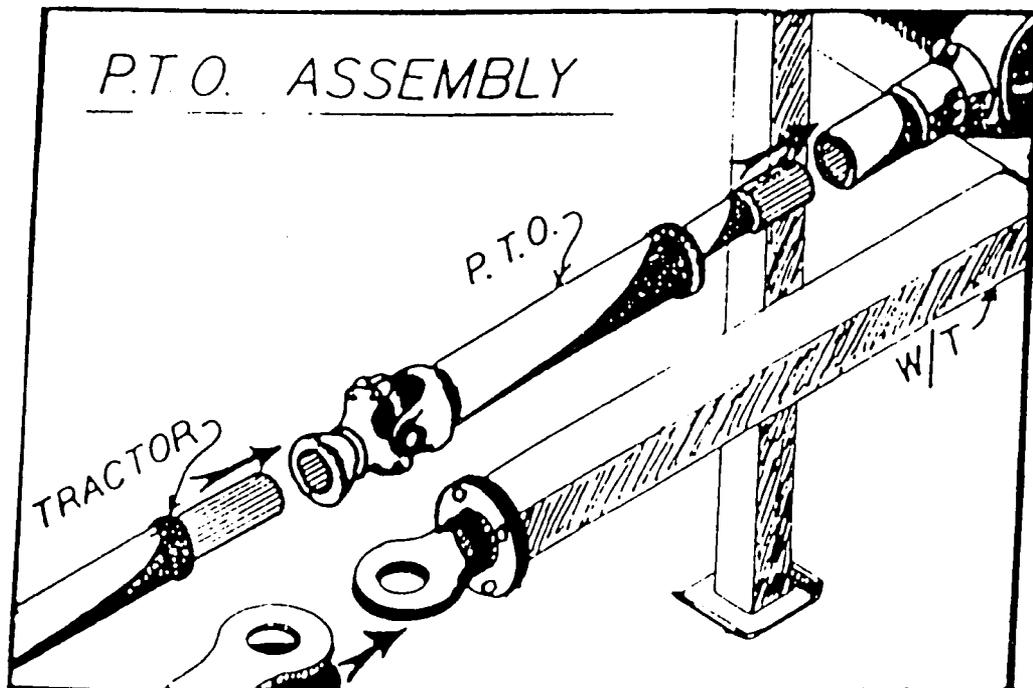


Figure "9"

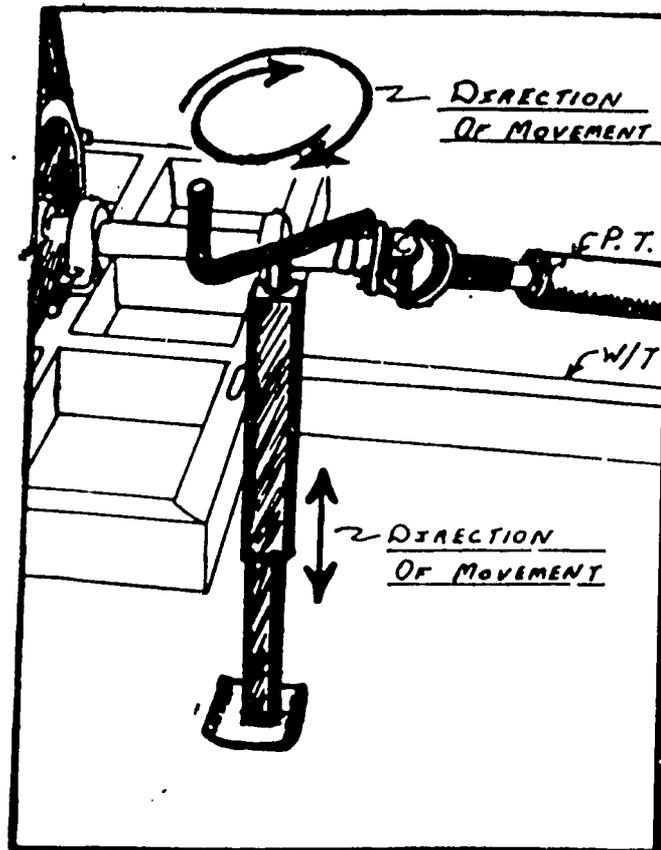
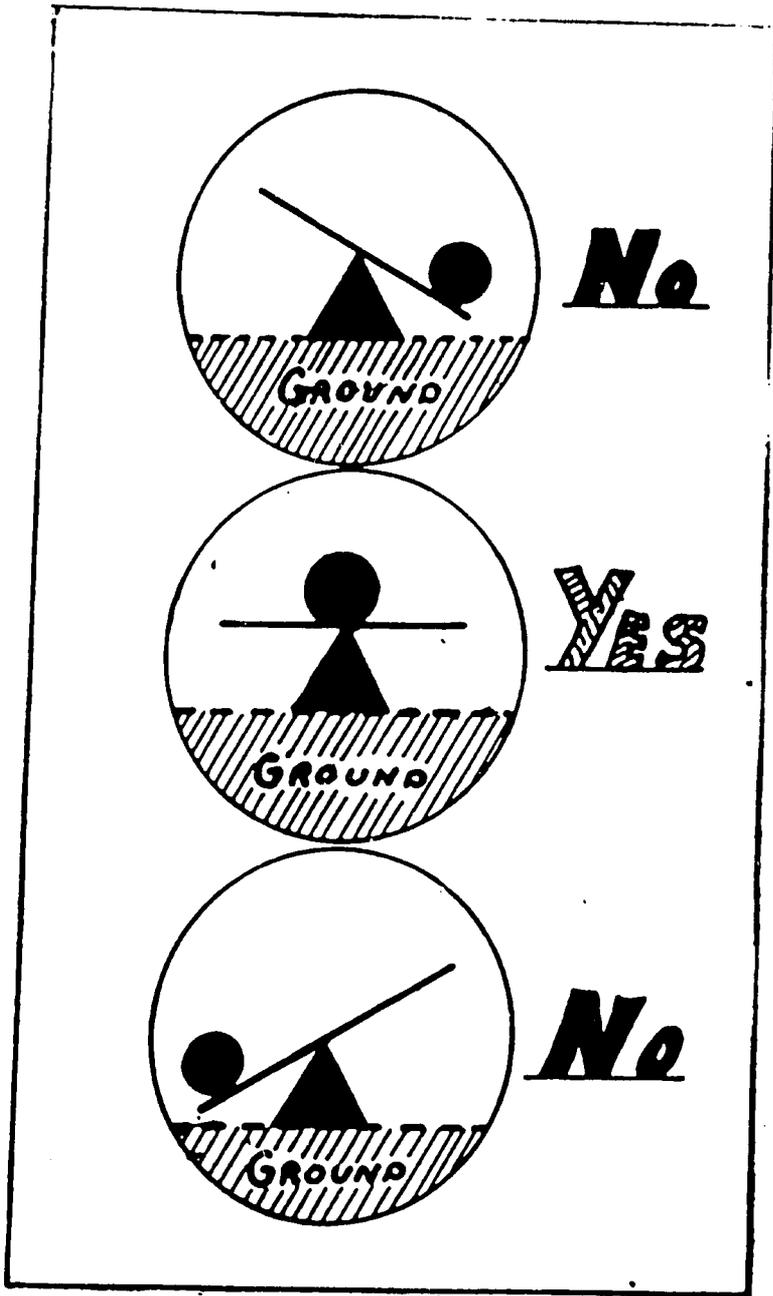


Figure "10"

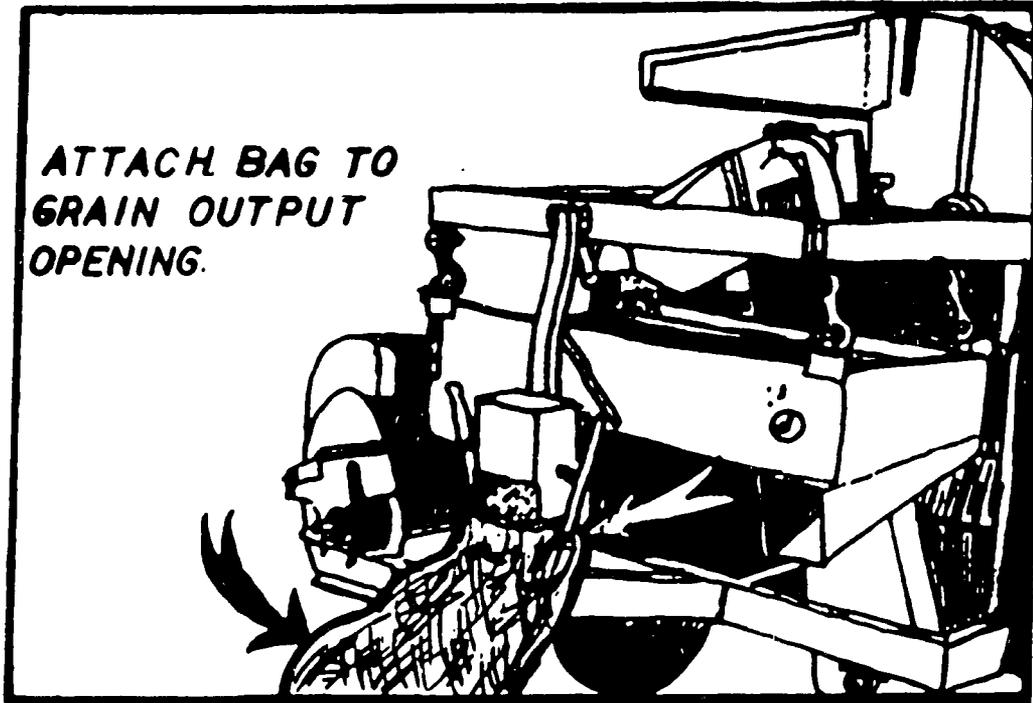
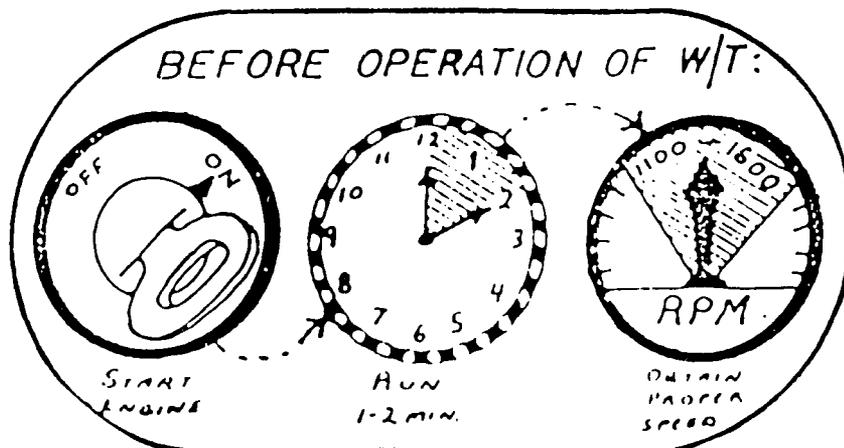


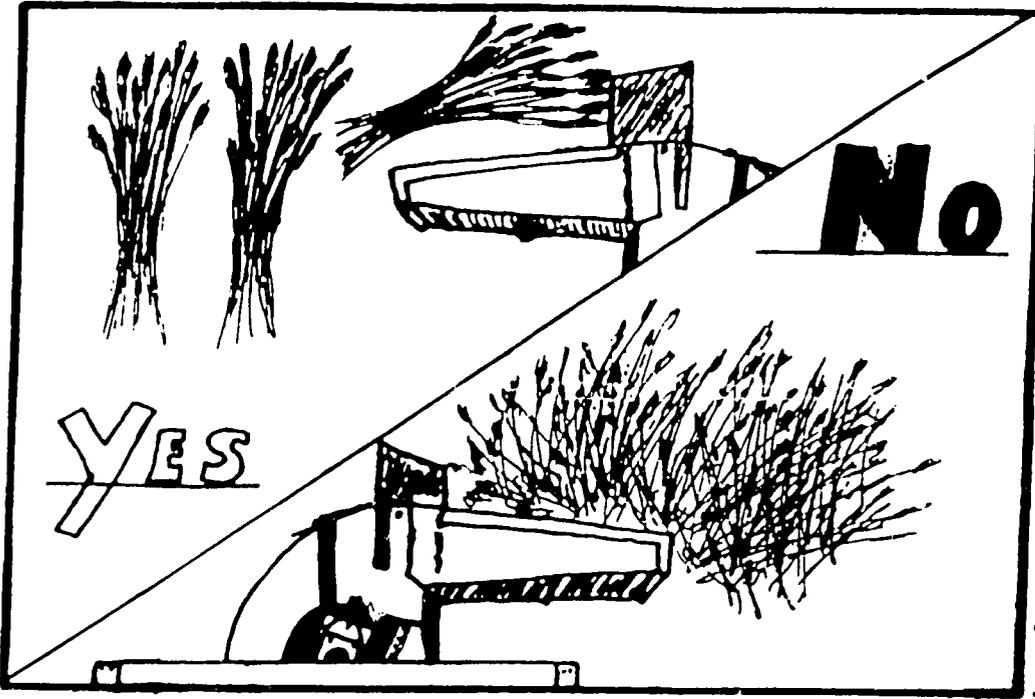
Figure "11"



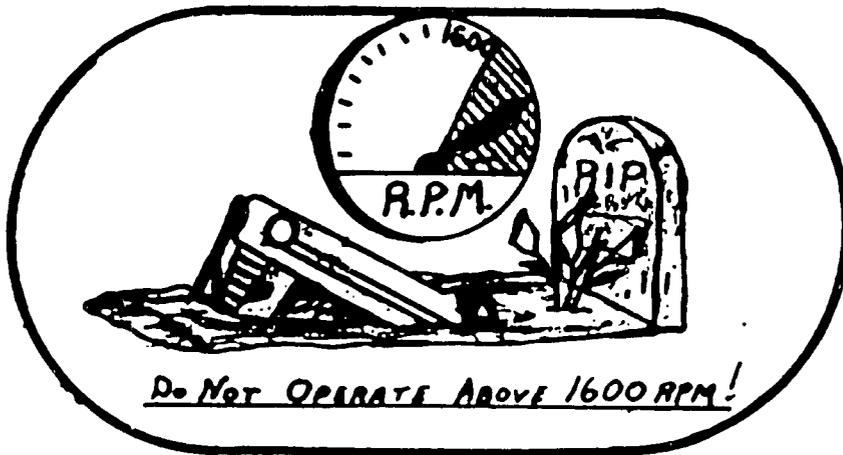
OPERATION RULES (Figure 12)

- 1 - DO NOT OVERFEED THE MACHINE! If the tractor hums at a constant level, the feeding rate is correct. If the engine sound lowers, slow down the rate.
- 2 - DO NOT OPERATE THE TRACTOR FASTER THAN 1600 RPM. This will damage the engine, reducing the life of the tractor.
- 3 - KEEP HANDS, TOOLS AND OTHER THINGS OUT OF THE MOUTH OF THE MACHINE DURING OPERATION!

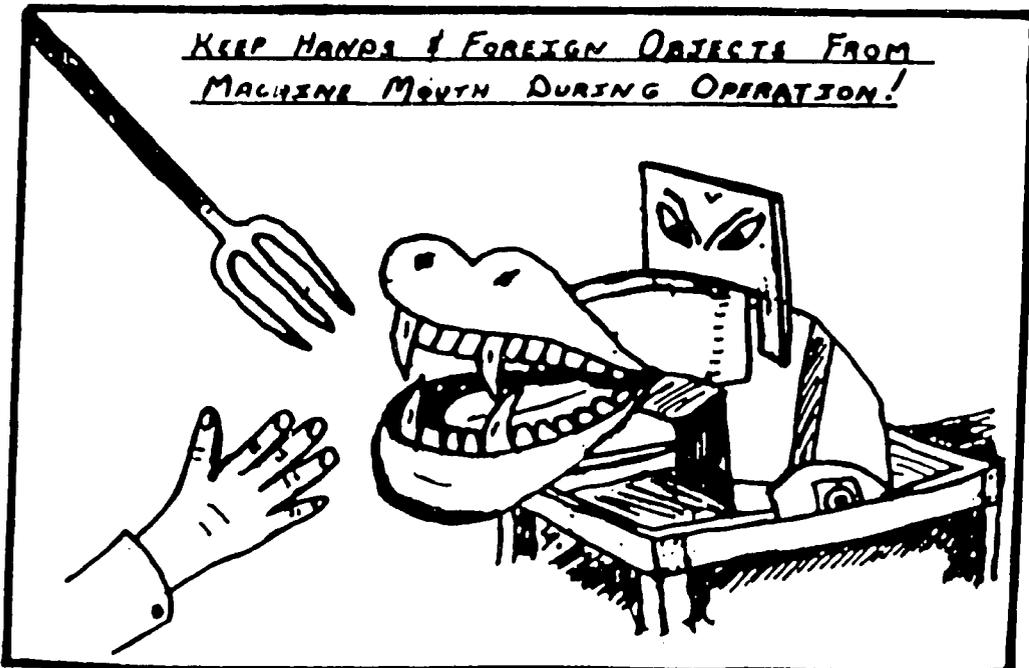
Figure "12"



DO NOT OVERFEED!!!

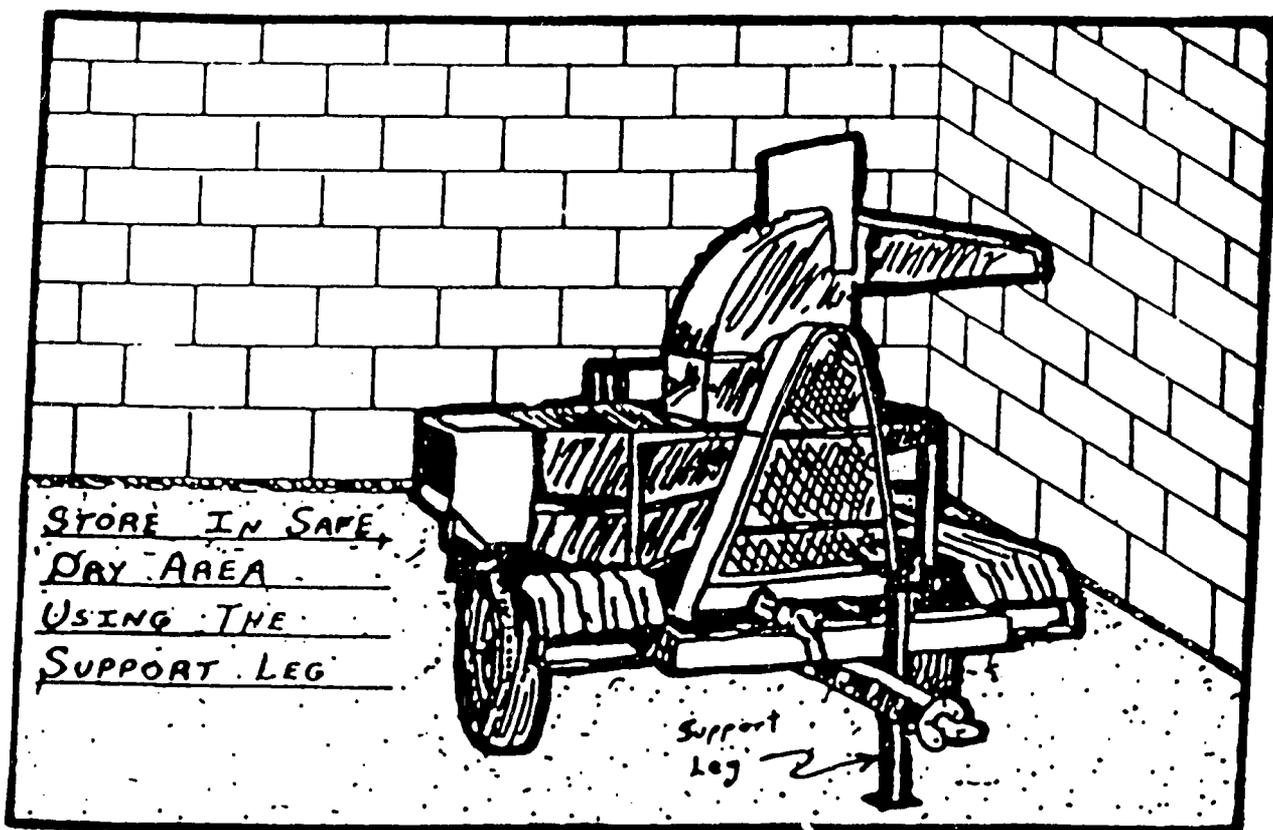


Do Not Operate Above 1600 RPM!



KEEP HANDS & FOREIGN OBJECTS FROM  
MACHINE MOUTH DURING OPERATION!

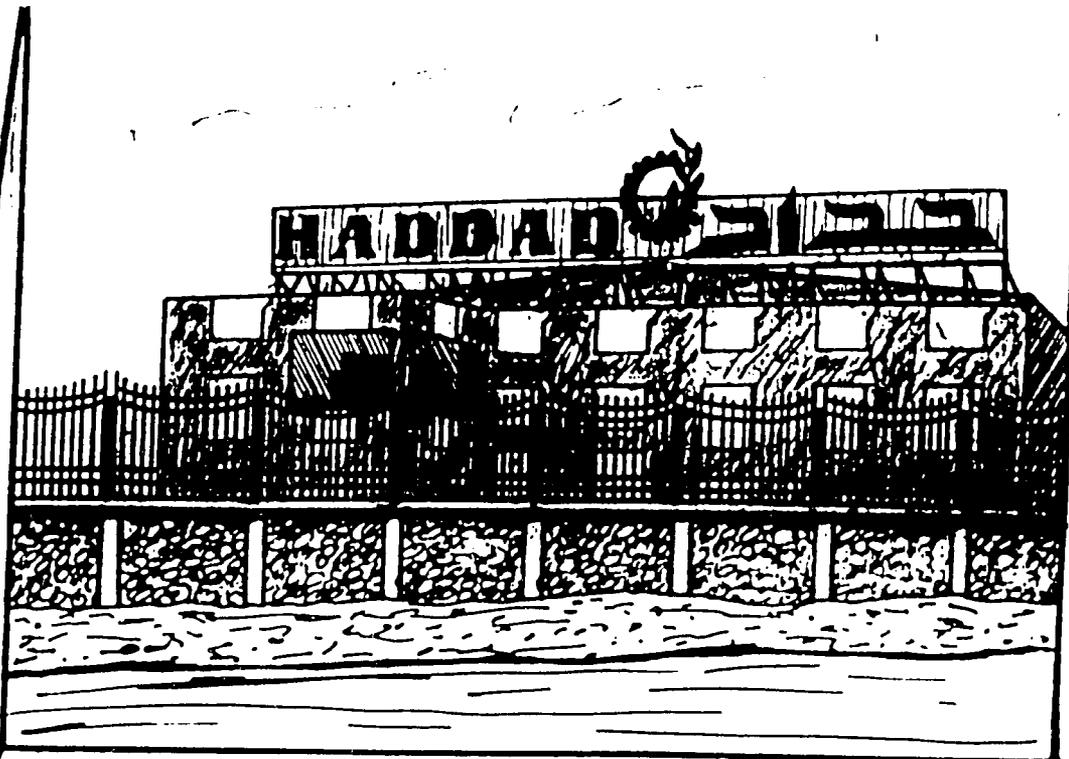
Figure "13"



### STORAGE

Store the machine in a safe place using the support leg when not in use (Figure 13).

Figure "14"

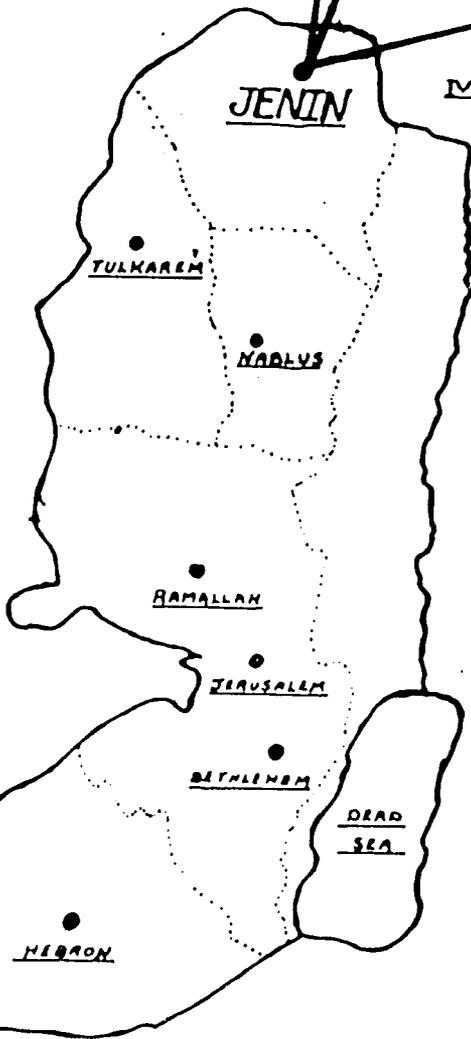


MAINTENANCE AND SPARE PARTS

If for any reason there is a breakdown or spare parts are needed, contact Ibrahim Haddad Manufacturing in Jenin (Figure 14).

Telephone No. 065-95544

Address: Industrial Area  
Nazareth Street  
Jenin



Appendix IV: Dryland Demonstration plot results from Gaza

	Planting date		Method of Planting and Kilos/dunum		Fertilizer-Kilos/Dunum (4)		Weed Control (3)		Yield/Dunum (kilos)	
	Traditional (Trad.)	New Technique (NT)	Trad.	NT	Trad.	NT	Trad.	NT	Trad.	NT
GAZA										
PEAS 1 (1)	11/6/1987	11/6/1987	Hand/9.4 Kilos	Seeder/8 Kilos	5N. 15P	5N. 15P	--	--	29	29
PEAS 2	11/6/1987	11/6/1987	Hand/10 Kilos	Seeder/8 Kilos	5N. 15P	5N. 15P	--	--	104	124
Lentils (1)	11/6/1987	11/6/1987	Hand/8 Kilos	Seeder/6 Kilos	5N. 15P	5N. 15P	--	--	52	91
Chickpeas (2)	11/6/1987	11/6/1987	Hand/13 Kilos	Seeder/12 Kilos	5N. 15P	5N. 15P	--	--	--	--
Wheat 1	11/6/1987	11/6/1987	Hand/9 Kilos	Seeder/10 Kilos	15N. 15P	15N. 15	--	--	112	222
Wheat 2	11/6/1987	11/6/1987	Hand/8.7	Seeder/11.5 Kilos	15N. 15P	15N. 15	--	--	204	244
Barley	11/7/1987	11/7/1987	Hand/10 Kilos	Seeder/9 Kilos	15N. 15P	15N. 15	--	--	110	220

- 1) The Lentil and peas 1 demonstrations were harvested intermittenly by farmers and it was difficult to control the results obtained by farmers. Consequently these results are questionable.
- 2) A virus effected the chickpeas and destroyed 3/4 of the plot. No results were able to be obtained.
- 3) Rain showers and the political situation prevented the IAPP using weed control measures.
- 4) N denotes Nitrogen and P denotes Phosphorus

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Appendix V: Dryland Demonstration results from the West Bank

	Planting date		Method of Planting and Kilos/dunum		Fertilizer-Kilos/Dunum		Weed Control		Yield/Dunum (kilos)	
	Traditional (Trad.)	New Technique (NT)	Trad.	NT	Trad.	NT	Trad.	NT	Trad.	NT
	WEST BANK									
AQABA WHEAT 1	12/20/1987	12/3/1987	Hand/15 Kilos	Seeder/10 Kilos	10 kilos Urea	25N 25P	--	200CC 2-4D	250	250
JALKAMUS WHEAT 2	12/2/1987	12/2/1987	Hand/15 Kilos	Seeder/10 Kilos	10 kilos Urea	25N 25P	--	200CC 2-4D	320	380
MISSILYA WHEAT 3	12/2/1987	12/7/1987	Hand/15 Kilos	Seeder/10 Kilos	10 kilos Urea	25N 25P	--	200CC 2-4D/ Dunum	280	280
ZABABDEH (1) WHEAT 4	1/18/1988	1/13/1988	Hand/15 Kilos	Seeder/10 Kilos	10 kilos Urea	25N 25P	--	200CC 2-4D	250	90

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