

Current Status of Tractor Services in Karaman Province

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Abstract—They are the indispensable power source of agricultural production. Maintenance and repair of tractors used in almost all agricultural activities are of great importance. Especially in agricultural war mechanization, even for a short time, it brings with it great risks. In this context, the maintenance and repair of the tractors should be done on time and on a regular basis.

Although agricultural activities depend on the climate, the intensification of agricultural activities in certain periods of the year directly affects the use of tractors. In parallel, a number of faults occur in the tractors. In some times, it is seen that the services that have no work, and in some periods, live in large densities. This makes it necessary for tractor services to deal with some other ancillary work.

In this study, face to face interviews were conducted with 14 tractor service officials in Karaman city center. The 35-question questionnaire prepared in the interviews was applied to the service personnel in the enterprise. The average covered area of the services covered by the research was 273 m², all employees were male and the average work experience of the employees was 19.2 years. The data obtained were processed in computer environments. As a result of the research, it was determined that the common problem of the enterprises was the account of taxation, followed by the partial supply of spare parts and the lack of qualified personnel. The fact that the work is not dependent on time, working during weekends and day and night during the periods of intensive work, affects employees psychologically negatively.

Keywords—Tractor; maintenance and repair; Karaman

I. INTRODUCTION

They are the indispensable power source of agricultural production. Maintenance and repair of tractors used in almost all agricultural activities are of great importance. Especially in agricultural war mechanization, even for a short time, it brings with it great risks. In this context, the maintenance and repair of the tractors should be done on time and on a regular basis.

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Karaman consists of 6 districts together with the central districts. According to TURKSTAT, its population is 251.913 as of the end of 2018. Karaman area is 8,924 km², population density is 28 / km², population growth rate is 2,12% and 77,02% of the population lives in the center [1].

Karaman is a province based on agriculture in the south of central Anatolia, north of the Taurus Mountains. There are many biscuits, wafers, chocolate, bulgur and milk factories in the province. Rural people are engaged in agriculture and animal husbandry. In these enterprises, tractors and agricultural machines are used extensively. According to the data of Karaman in 2019, the number of tractors and harvesters is given in the table below [2].

TABLE I. TRACTORS IN TURKEY AND KARAMAN, HARVESTERS PARK.

Years	Turkey Tractor Park (Piece)	Turkey harvesters Park (Piece)	Karaman Tractor Park (Piece)
2016	1.273.531	16.247	11.776
2017	1.306.736	17199	12.096
2018	1.332.139	17.266	12.176

As can be seen from Table 1, Karaman is a city where agricultural tractors are used extensively. There are 14 tractor repair and maintenance services in Karaman. Some of these services are authorized by the manufacturer and some of them are self-employed enterprises. Both types of farms can repair and maintain tractors. The main problems of these enterprises are very similar. The companies that have their products serviced and repaired by the authorized services within the warranty period given by the company, have these services done at the end of these periods in the services which are not authorized but are working independently. Since Karaman is a

small city, some service owners may choose these services when they are recognized by the tractor owners in case of any maintenance or repair.

In this study, the condition, problems and solution suggestions of tractor maintenance and repair services in Karaman have been tried to be put forward. In addition, suggestions were made to solve the problems.

II. MATERIAL AND METHOD

In this study, face-to-face interviews were conducted with 14 tractor maintenance and repair service officials in Karaman province. The 35-question questionnaire prepared in the interviews was applied to the service personnel in the enterprise. In this study, tractor maintenance and repair services were taken into consideration, while agricultural machinery maintenance and repair businesses were not included in the study. During the preparation of the questionnaires to be applied to the service staff, 35 short questions were selected which are appropriate to the content of the selected study and will not take much time for the service staff. Questions include questions that are thought to be related to business structure, employee demographic characteristics and problems. The questionnaire questions were applied to at least one person working in all the services in the province. This person is primarily preferred to be the owner of the workplace, if not; it is preferred to be the most competent person in the enterprise.

III. RESEARCH RESULTS

Within the scope of the study, it is seen that the majority of the employees working in the services live in rural areas and live their lives from agricultural production and animal husbandry. On the other hand, a small segment stated that it had not been involved in such works in the past, but that it only did maintenance and repair of tractors.

The average total area of the 14 enterprises covered in the research was between 150 and 555 m², 273 m² on average, all of the employees were male, and the average work experience of the employees was 19.2 years.

The average annual working time of tractors is 570 hours; it is understood from the data obtained from the services. 800-1000 hours [3],[4]. Here, the average producer lifetime was lower compared to that of developed countries. However, the fact that some regions in the province are mountainous increases the wear of tractors. In worn tractors, structural loss of power, performance, torque and efficiency decrease while fuel consumption increases. Some of the tractors used in the plants have been purchased as new. Some small businesses have preferred to buy used tractors. 43.8% of the farmers buying tractors in Kayseri region bought new tractors, 56.2% preferred to buy used tractors [5].

The question survey "What profession would you have chosen if you had not chosen this profession?" 4

people stated that they wanted to work in farming, 3 people in civil service, 1 person in medicine, 2 people in accounting, 2 people in bodywork or painting and 2 people stated that they would like to continue their work.

In the question of "What is your education? Enterprises, 11 people stated that they are primary school, 2 people are secondary school and 1 person is university graduate. A total of 42 people are employed in 14 enterprises in permanent status. This number may increase according to seasonal and work intensity. All employees have workplace certificates, mastership, and journeyman and service certificates. In addition, it is observed that each enterprise is registered to the chambers of industry and commerce and professional chambers.

While 10 of the 14 enterprises covered by the research are authorized services by the manufacturing companies, 4 companies are performing tractor maintenance and repair services freely. Maintenance and repair of all brands of tractors are carried out in all services, including authorized services.

In the research, the workload of the services starting with the spring months continues until the end of the autumn months. General maintenance of the tractors can be carried out during the period between December and April when agricultural activities are minimal.

In the survey, serves' "Do you have difficulty in the repair of new generation tractors?", 4 services answered yes, while 10 companies stated that they were not forced. They said that they had difficulty finding spare parts of such vehicles and that it could take a few days to obtain them.

While 2 of the services do not have a fault tester, 13 have at least one device that can detect all kinds of faults. Updates and professional training of these devices are carried out by the manufacturer companies at regular intervals. Service employees who participated in various activities organized by manufacturers during periods of non-intensive work, received the necessary technical training during these periods and also had the opportunity to see different places. They carry out their maintenance and repair works without any fault detection device with their experience gained in the past.

Within the scope of the research, it was seen that the companies visited were in compliance with the occupational safety rules and were wearing protective glasses, gloves and shoes. They stated that the necessary trainings were taken periodically from an authorized company.

In the question "Is income sufficient for you to do this job?" The majority of the employees stated that they are sufficient and that they do additional work outside working hours when they are not sufficient.

Maintenance and repair work is done to other tractor brands in the authorized services. From each brand the tractor can give chronic failures from time to time.

It was stated by the participants that the faultiest parts of the tractor were fuel pump, clutch and hydraulic system, while the electrical and brake equipments were generally checked in maintenance periods and their malfunctions, if any, were eliminated. It was determined that the defective parts were related to the production date of the tractor and were subject to wear or abrasion over time. The parts with the least damage are the PTO, the wheels, the gearbox, the engine and the differential. Similar results were obtained [6]. In a study conducted in two groups of enterprises in the province of Eskişehir, they found that the faultiest part in the tractor was the clutch.

IV. CONCLUSION AND RECOMMENDATIONS

Quality and quantity of agriculture can be achieved by using appropriate agricultural techniques. In addition, it is of great importance that the preferred tractors and equipment be maintained. Failure of the tractor, which is the main source of power in agricultural activities which are concentrated in certain periods of the year, can cause the work to stop completely. Since it is of great importance to maintain the tractor at certain intervals in this process, it appears as a complementary factor in agricultural production.

The employees of tractor maintenance and repair services, one of the invisible heroes of agricultural production, are of great importance in this sense. Concentration of agricultural operations in certain periods requires the maintenance and repairs of tractors to be completed in a short time. In this case, working in the trapped time becomes a stressful job for service personnel. Due to the increasing workload, various health problems may occur in employees who cannot allocate sufficient time to their family.

It was found that it would be appropriate to examine the problems expressed by business employees in the research subject in three parts. These are delays in the supply of spare parts, limitation of working hours and economic conditions.

Some new and improved tractors are not available from Karaman and the delay in supplying parts from other cities leads to disruption of agricultural activities.

Mobile call systems, which are created depending on the development of technology, are a separate problem. With these systems, service employees can receive mobile calls for repair and maintenance at any

time of the day. The biggest problem is that they have to be in the field in a short time as per the agreement with the producer companies. In these cases, the maintenance and repair in the field has a separate difficulty.

It is also seen as the biggest problem that the technical staff working outside the normal working time with limited equipment cannot get the wages they deserve or their receivables are shifted to certain periods.

It is seen that the problems listed above will not be solved in a short period of time. In order to avoid such situations, the owners of the tractors are required to maintain their tractors at regular intervals. Making the works done in the least period of work will minimize the problems mentioned above and maybe eliminate them.

Tractor manufacturers are constantly improving the human resources practices and by supporting the development of its employees in customer service "Our most important human capital" philosophy can announce that the entire universe.

V. RESOURCES

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