Abstract
Noise is one of the most important environmental factors that affects health and efficiency of workers. As a result noise can have direct and indirect affect on workers health some of it’s affects are: tiredness backache anger nausea carelessness and soon. It seems that the people who work on farms are faced with some noise sources but dangers of noise for the people work in such places for may years haven’t been cleared completely. On the basis of scientific data it has been distinguished that noise has negative affect on worker. In this relation new rules is the rule of controlling noise. This rule says that exposing to high noise during a certain period of time can affect humans health so it emphasizes that hours of work should based on the level of noise.

Key Word
rate of noise, environment, agricultural machines, MF285 tractor

Introduction
Noise is one of the most important environmental factors that affects health and efficiency of workers. As a result noise can have direct and indirect affect on workers health some of it’s affects are: tiredness backache anger nausea carelessness and soon [1, 2, 3]. It seems that the people who work on farms are faced with some noise sources but dangers of noise for the people work in such places for may years haven’t been cleared completely. Since 1960 noise of agricultural machines has attracted so much attention. May researches have been done in this field. On the basis of scientific data it has been distinguished that noise has negative affect on worker. In this relation new rules is the rule of controlling noise [4, 5, 6]. This rule says that exposing to high noise during a certain period of time can affect humans health so it emphasizes that hours of work should based on the level of noise. Ability of the driver of a tractor for recognizing the source of sound was studied by talamo. On the basis of the research it was cleared that the possibility of hearing “attention” by the driver was very low when the distance was more than 3 meters. Stayner studied the level of allowed noise produced by a tractor [7, 8].

Celen and Arin studied sound intensity of a tractor. Results of the researches showed that the highest sound intensity was near its exouse and the least one was near the seat where the driver sat. Hong and Bing studied the sources of sound in the front part of a diesel. It was cleared that by using measuring sound intensity method finding sound source would be possible. Noise characteristics and its effects on the drivers health was studied by Dewangen et al. they studied sound pressure level of 4 kinds of tractors. Two tractors with high power (18.7 kw and 20 kw) and two tractors with low power (6.7 and 4.6 kw) were studied. It was cleared that sound pressure level (SpC) increased with increasing engine round and its speed while working. They found that sound level of studied tractors was higher than standard level and as a result a worker couldn’t work with them for 8 hours. 8 hours working a day was the standard of I so and OSHA. this can have harmful effects for the farmers in long-term [9, 10, 11].

Level of sound pressure and the time that the driver could bear the noise of the tractor was studied in three cases: tractor without cabin tractor with original cabin and the cabin made by Aibeck et al. on the basis of the results of the research allowed time that a driver could work with the tractor in different cases was cleared. The effect of cabin was decreasing sound intensity up to 18db. (4-18 db) [12, 13].
Purost et al separated noise of motor combustion from noise of mechanical processes of engine. They found that both engine round and engine power had affect on noise intensity also they suggested that anyway the researches should continue so that they could find that in which situation sound pressure and noise led to hearing loss. In researches by Yildrim and Eski and Paulaj it was distinguished that nervous system model could be used for predicting sound intensity of a car so Emam used nervous system model for predicting sound level of a tractor. The model used in the research has been shown in the following figure. Also he studied noise level of the tractor indifferent rounds of the engine. As it is seem considered factors are as following [14, 15, 16]: The site of sound recording engine speed main and auxiliary gear. The above factors have been input of system. Its output has been level of sound of tractor. The results of this research showed that nervous system model could be used well to predict sound level produced by a tractor. So nervous system model can be used for predicting sound level of tractor in different engine speeds that haven’t been measured yet. This can save time and money. In this way it was cleared that nervous system model could be used for choosing optimal engine speed for producing the least sound level [17, 18].

**Figure 1:** the model made by Emam for predicting sound level of a tractor

**Materials and Methods**

Experiments are done in one level of tractor (MF 285 tractor) and seven levels of tools (two kinds of ploughshare cultivator cyclthing plough share centrifuse seeder a poison sprayer that is used behind the tractor and a thresher) whit three repetitions. The noise of the tractor indifferent cases is studied and at last allowed time for working with the tools by the driver is found. Collecting data in different cases and conditions will be done using SLM. In this way sound intensity in certain conditions will be cleared. For performing the tests of this study an open site. In agricultural fields around Qazvin has been chosen with the following characteristics and of course according to the standards. This site of the test has been an open and flat one. The distance between the recorder and the machine has been 7.5 meters. So there isn’t anything that can reflect sound such as: building tree car and metal fence. Figure 3 shows a kind of noise dosimeter and a kind of sound level meter [17, 18, 19].

![Figure 2: dimension of sound measuring site](image)

**Figure 2**

![Figure 3: A: Noise Dosimeter Model TES-1354  B: TES-52 Sound Level Meter](image)

**Figure 3, A: Noise Dosimeter Model TES-1354  B: TES-52 Sound Level Meter**

**Results**

The basis of scientific data it has been cleared that noise has negative effect on worker in this direction new rules have been made for controlling noise. One of these rules is the rule of controlling sound. This rule says that exposing to high noise for a long time can affect mans health. It has been proved that sound energy can loose hearing and damage it. If a person exposes to different volumes of sound during 8 hours of working then average balance is gotten that is equal to the effect of different noises for getting
allowed time of exposing to sound the following formula is used:

\[ D = \frac{9}{2} - \frac{8}{3} \]  

(1)

In this formula D is allowed time of exposing to sound.

According to results of this research and as it is seen from data, increasing motor round increases sound level in the two positions. So we should pay attention that for protectors from ear for a long time, we should use engine in low rotational speeds if it is possible. For using engine in high rotational speeds may cause sensitivity in the ears or if it is used in correctly it may cause health problems for the ears.

CONCLUSION

It seems that the people who work on farms are faced with some noise sources but dangers of noise for the people work in such places for may years haven’t been cleared completely. Since 1960 noise of agricultural machines has attracted so much attention. May researches have been done in this field. On the basis of scientific data it has been distinguished that noise has negative affect on worker. In this relation new rules is the rule of controlling noise. Aying attention to the abov mentioned cases it has been cleared that producing noise is one of the main problems of agricultural machines. It should be considered that masi fergousen tractor (285) is one of the commonest one that is used in Iran. Usually it is used without cabin. So everything should be done to decrease its noise.

According to results of this research and as it is seen from data, increasing motor round increases sound level in the two positions. So we should pay attention that for protectors from ear for a long time, we should use engine in low rotational speeds if it is possible. At first the sources of the sound should be recognized and researched. By finding main sources of producing noise and changing the design of the machine it would be possible to decrease the noise of tractor.

REFERENCES


