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Pigs: A Demining Tool of the Future?

"Pigs are one more means of fighting against the garbage of the war," says Giva Zin, an animal trainer from Israel whose research on the landmine detection capabilities of pigs is receiving widespread recognition from the mine action community. This article highlights his research on the use of pigs for mine detection.

by Jennette Townsend, MAIC

The Beginning

Pigs may be the newest addition to animal-assisted landmine removal efforts. Israeli animal trainer Giva Zin started his research with pigs about a year ago and has seen promising results.

Giva began with one pig named Chavisa. "She is very smart," says Giva, "and she enjoys what she is doing." Giva first noticed that pigs have a natural "talent" for landmine detection while he was in Croatia, working with the Israeli organization Mazorim. "While dogs can detect landmines on the surface of the ground, they have difficulty detecting mines buried deep in the ground," says Giva. It seemed more logical to use pigs for detecting mines because pigs naturally root for food under the ground.

Giva began his career as an animal trainer in the Israeli army where for two and a half years he used dogs to detect mines and booby traps along roadsides in Gaza and Lebanon. After the army, he went to a canine training center in Huntsville, Alabama, and learned more about being a dog trainer. He emphasizes that pigs are not like dogs. The time it takes to train a pig seems to depend on the pig, but at this point, it appears that training pigs takes half the time that it takes to train dogs. Giva attributes this difference to the fact that pigs enjoy searching for mines because it is their innate trait to root. Giva imagines that if Chavisa could talk she would say, "Not only am I doing something that I enjoy, but Giva pays me as well."

The Training Process

Once Giva realized the pigs were good animals for demining he bought five more female pigs. He always uses female pigs because males are very aggressive. They are almost impossible to train," says Giva. "They want to fight because they think that I am the leader."

In comparing dogs to pigs, Giva says, "Dogs are suitable. They are not as focused as pigs are. Pigs are always focused on eating and sleeping. They are very calm and relaxed animals." The most difficult part of training pigs is that the trainer cannot use the same training techniques with pigs as with dogs. He cannot spoil food. The trainer must be quiet—almost completely silent—and relaxed. The trainer cannot

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encourage the pig by saying “good boy, good job.” “The pig wants to find the mine more than you do because he wants food,” says Giva. “This was very difficult for me because I like to speak to the animal during training. But when I speak to Chavito, she knows me at a glance as if to say, “Shut up! Don’t talk. Let me do what I need to do!”

In the first stage of training, every time the pig detects the scent of the explosive, she is rewarded with food. In the second phase of training, the pig must find the explosive with her nose—without seeing the explosive in grain. In this phase, Giva places the pig at the bottom of the mine below where the ground and the pig is rewarded when she finds the mine, indicated by normal rooting behavior. In the final stage of training, Giva teaches the pig that when she finds the mine she must sit. This is difficult because it is not a natural response for pigs to sit. Sitting leaves the pig’s rump exposed and open to predators—in nature, pigs are prey, versus dogs, which are predators.

“Also,” says Giva, “you can never punish the pig—only reward her with food.” You can teach a dog by punishing him—but by pulling the leash. But, if you use any type of force with a pig, she runs away. While a dog trainer can physically encourage the dog to sit, he/she cannot do the same with a pig. Giva was bit three times when he began the training process and attempted to use force.

Does a fully trained pig ever fail to detect mines? “Sometimes she doesn’t find the landmine,” says Giva. Also, on those occasions the pig “denounced” the mine with her nose. Giva uses a defined mine that makes a sound when it is “launched.” “Like everything, this is not 100 percent reliable,” says Giva. It is also important to note that research is not complete—Giva is currently learning something new about pigs.

One of the challenges that Giva has dealt with is the loss of three pigs. At this point, he is uncertain of the reason for the deaths. Present conditions are very good and clean. Each pig has a cage and they run in a large area that was used for horses in the past. Giva mentions that the pigs were not born in Israel—be that perhaps the problems they have had are related to the location and difficulty acclimating. It is difficult to get pigs that are born and raised in Israel. Lahav and Kibbutz Mitzu, in the Yezof Valley, are two of the few kibbutzim that have pigs.

The Future of Pigs as a Demining Tool

“Pigs are for the demining field,” says Giva. “Pigs cannot take the job from the dogs in the airports because they are unnatural. Dogs are beautiful and clean. Also, dogs are good for detecting explosives that are above the ground.”

Pigs, like dogs, could be used for quality assurance in areas where there are metal pipes and metal detectors cannot be used. Another option for their use is to detect mines with plastic and wood components. As present machines and dogs are used for quality assurance in the future pigs and machines may also be used. The value of pigs, like dogs, is that they do not tire of searching for landmines as humans do. Pigs have a lot of endurance because searching for mines is so closely parallel to their instinctual habits.

Giva is in the process of looking for foundations that are interested in his research. A lot of people who are interested in the business side of his research have contacted him and want to be involved in the project. With the publicity that his research is receiving, he is confident that funding will come in. “In one day, TV stations in 60 countries published my research project.”

Presently, the Institute for Animal Studies at Kibbutz Lahav funds Giva’s research. The kibbutz supplies the facility, the money and the advice needed to complete the research. “We don’t mind to get rich as a result of this project. This is a humanitarian project,” says Giva. He mentions that the others who are working on the project, such as the vet, help with the research because they believe in it. “They want to give something to the world. People like to help humanitarian causes.”

The Future of Pigs in Israel

“This project is not for Israel,” says Giva. “It is for places like Angola.” Giva spoke with two officers in the Israeli army who are experts in the field of animal training. While they agreed that there is a future in Giva’s research, they told him that his findings are “good for the world, not for Israel.” Also, at this point, companies in Israel are looking for research that will help them to detect suicide bombers.

“Also,” says Giva, “few don’t like pigs. Even Jews who are not religious have a strong aversion to pigs.” Many in Israel are opposed to Giva’s research. He has even been told that he is stupid for working with pigs. Giva realizes that it is a natural human response to doubt and that it is difficult to convince others to give anything so new a chance. He is confident that those who sell him his project is doomed will eventually support his research. Giva cites a fisherman as an example. “He detected my research at the beginning. He felt that nothing would happen,” says Giva. “But, as the months pass, he is becoming more and more interested in what I am doing. When I began my research, he would ask me questions about my research at the end of the conversation. Now the questions come at the beginning.”

Giva continues to hold on to the idea of pigs being used for explosive detection in Israel. He can see where pigs could be useful, for example, with the search for mines on the border with Lebanon. He mentions that the Jewish religion is not against touching pigs or looking at pigs—only against eating pigs. “I believe that even God likes my idea,” says Giva, “because I am using the pig for a good reason. Maybe in the future, after pigs have been used successfully in other regions, or after research confirms that pigs can be used for demining, Israelis will accept them for use on their own land.”

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The MineWolf Toolbox System: Ground Preparation to Mine Clearance

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The MineWolf Toolbox System, which operates in minefields near Sarajevo, is a mine clearance device that has been used to improve efficiency and effectiveness in demining operations. This article discusses the benefits of the MineWolf Toolbox System and compares it to other demining machines and technology currently used to clear minefields.

by Heinz Rath, Project Manager, RTS

Introduction

MineWolf is a joint German-Swiss mine clearance concept developed through the collaboration of an industrial machinery manufacturer based in Herborn, Germany (the AHUW), RUAG Land Systems, based in Thun, Switzerland, and the Safety Technology Systems (STS) in Germany. In our detailed discussions with the Mine Action Centre (MAC) in Bosnia and Herzegovina (BiH) as well as in Croatia, we learned that the emphasis of future demining activities is on the large areas of minefields and suspected fields. Croatia has 1,630 sq km with approximately 700,000 mines and items of UXO, and BiH has 2,080 sq km of suspected areas. The ratio of suspected fields to mined fields is about 10:1. Obviously, demining these areas is a challenge that can only be met with the use of improved mechanical demining machines (in terms of cost and time). We asked the users, the MACs and the non-governmental organizations (NGOs) whether today’s technology met their requirements, and have come to the conclusion that today’s tiller or BRL machines need to be improved.

Performance Comparison of Today’s Mechanical Demining Systems

The present tiller systems are too heavy (up to 55 tons), too large in size (with vegetation and the need for intensive quality assurance (QA) with manual dog-demining.

The MineWolf System

Clearance Methodology

Clearance of mined APIAT minefields is divided into two phases. First, the tiller system detonates or breaks up the AP and AT mines. Then, with a ground penetration depth of 30 cm, the tiller system breaks up the remaining intact mines and reduces the size of components left by the tiller.

Description of MineWolf Technology

MineWolf Technology combines the strengths of the tiller and tiller systems to create a more efficient and effective demining system. The following list describes some of the important characteristics of the MineWolf System.