Mars Meat

written by Steven Wintergerst on July 07, 2003

Humans need plants to survive. We can go off into space for a few weeks with activated carbon, or some other stuff scrubbing the air, and piles of Spam and tang, but to really go on about our business, to build cities and raise children, growing plants for our air and food makes a lot more sense.

NASA has realized this for quite a while, as have the Russian space agency. Experiments involving a number of plants have been conducted, and several companies have fabricated possible designs for greenhouses to be used on mars.

Meat is a little less critical. There are people on earth who have sworn off meat, eggs, dairy products, gelatin, and anything else which comes from an animal. You can live on just plants.

Living on plants alone, however, can get to be a bit boring. Some people prefer meat products for the flavor, or the higher protein content, or whatever. Once astronauts get settled on Mars, and can grow their own salads, make their own fruit punches, and cook their own vegetables, someone might start craving some of the old NASA Spam...

I doubt anyone will turn to Soylent green for their cravings, but odd desires, or bizarre fetishes might crop up. I, among others feel that it will be quite suitable, oxygen levels permitting, to allow our colonists a bit of fresh meat in one form or another.

As early as the Sixties, space buffs had suggested taking Goats with them, and some of the earliest Sci-Fi stories include caged chickens and rabbits for food. With the sorry state of refrigeration, it might have been safer at the time to bring live animals.

Even Robert Zubrin points out that meat might be a good addition to the diet. After all, you can't eat every part of every plant you bring.

With this in mind, one might immediately look for a live "garbage disposal unit," like the pig, or the goat as a primary food source, a way to convert inedible hay, or rotten cabbages into food. However, there are other concerns at hand here.

Lets suppose NASA decides to send goats. After all, they'll eat anything. A few raspberry bushes might need trimming; maybe they've got a cherry tree on Mars, all the hay... Given time, a goat could eat it all.

Now, we can't allow the goat to just roam around the space ship, it could start nibbling on wires, or chew up a space suit, or poke a hole in the thing with it's horns. So we also need to send a cage.

The goat has to eat on the way to mars, so unless we're growing plants during the trip, we'll need a bundle of hay.

We can't just send a Billy goat, so NASA might send a breeding pair, although I'd rather suppose they send a female and some goat sperm samples rather than incur the weight requirements for two goats.

The Female will need to be milked, and if it has kids on the journey, they'll need to be cared for. Once we reach mars, the goat, and it's potential kids might need some sort of crash couch....

Oh, and nobody to my knowledge has studied the effects of zero G on a goat!

So, we get the goat to Mars, and... It’s cold on Mars. Goats are warm blooded. It will eat, and use that food to fuel its body. It's body will sue that fuel to heat itself, and very little of that food will be converted to goat meat, or goat milk. Most of it, instead, will be converted to goat shivers and goat manure.

Robert Zubrin has noted all of these factors, and has come up with a general list of requirements for space meat. Space meat animals should be:

1. Herbivores

2. Small

3. Cold-blooded

4. Easily portable

Mr. Zubrin also suggests a meat animal he feels is more appropriate, the Tilapia. The Tilapia is a family of air breathing fish. When conditions in the water are bad, they gulp in a bit of air from the surface to get by. They can live in very polluted waters; they eat seaweed, and have been known to take a hook baited with peas. Aquarium owners have raised them on lettuce, cucumbers, and Taro leaves. They are cold blooded. There are many different species of Tilapia, several of which are fast breeding, and several of which grow to only a few inches in length, though others may reach a few feet. Various species of tilapia live in fresh water, or salt water, and some can live in both.

Obviously, Tilapia are herbivores, cold blooded, and small. Water is an excellent shock absorber, so the tilapia will not need crash couches, and they won't have a chance to eat wiring.

I do have a few reservations about tilapia being better than a goat. Tilapia live in water, not on land. One on Mars, you could chain a goat up in the middle of a greenhouse dome, and it would munch up the grass and twigs without any supervision, and fertilize that area by itself. Tilapia will need their own aquarium, and you will need to put whatever plants they eat into the aquarium for them. Then you have to get the tilapia manure back to the greenhouse floor.

Goats also have a number of useful materials. You can carve the horns, bones, and hoofs into buttons. You can make glue from these products. You can make yarn or thread from the hair, you can make leather from the skins, and various sturdy threads from the intestines, and you can get milk for cheese from the females.

Tilapia skin is not a good leather, or fertilizer, they have no hair, the only bone useful for buttons is the vertebrae; all the others are too small for carving, except perhaps the skull. The intestines are not useful for string. Some females may lay eggs, suitable for caviar.

The use of fish has always included a tradition of disposing of the "guts" skin, and head. Generally this is "thrown back" where carnivorous, or scavenger fish will eat it. Are we going to bring those too? If not, some other solution must be made.

I feel that animals, which can live on land, would be a much better solution. There has traditionally been a very short list of cold-blooded herbivorous meat animals that live on land. The only thing that comes to my mind immediately is the endangered Galapagos tortoise, which can grow to be 500 pounds.

Supposing one could obtain access to raise the Galapagos tortoise for slaughter, it would at least be no trouble to transport, so long as you found a small one. Sailors used to stack them ten high in the holds of their ships. They could thus be carried for almost two years, surviving by licking things on the ship: splinters, tar, hemp, and salt. This probably wasn't the healthiest diet, but surely we could improve on it. A crash cuch for something that can hide in it's own shell should probably be a bit easier to design than that for a goat.

Once on Mars, the tortoises might eat twigs, sticks, lichen, and grasses, among other possible things... Of course, we've never raised Galapagos tortoises for food, but perhaps the American, or other deserts have a more agreeable tortoise species...

However, I've got a few other suggestions. We'll need to compost our plants in any event. Composting animals are quite small. Their nutritious benefits have been recommended by survivalists, and they are accepted in some countries. I wouldn't personally be too keen on chomping down worms, grubs, and beetles, but perhaps ground to a paste, or made into some sort of soup I could do it...

One creature used in composting, however, is universally considered a delicacy, real gourmet food: The Burgundy snail of French cuisine. Burgundy snails can be found still alive in some markets. The snails have a habit of sealing their shells in particularly dry weather. In this case, they can stay alive for a year, sometimes two. You could fit a good two dozen in a shoebox. No need to feed them at all during the journey, just take them into the greenhouse, and sprinkle some water on them to get them out of their shells. If this is too much space, you could also keep them for a month or two as eggs, each about the size of a pearl. These, however, must be kept damp.

Burgundy snails will of course try to eat any plant, and tend toward the juicer parts, just as we do. You can, of course, seal them in a box, and toss in the "hay" or other stuff as you see fit, or wait till after harvest to drop the snails in. A careful inspection should be able to reveal most of the snails in a dome prior to the next harvest. Snails are cold-blooded, so that most of the food they eat is converted to food. You can find a lot of recipes for escargot.

Snails, however, are bad at eating wood. If we grow bushes, or trees, another animal might be needed.

In some parts of Asia, there is a common wood-eating creature that is considered a delicacy. Us westerners generally feel that Termites are pests, not food. Nonetheless, some proponents claim they have a creamy center, like a Cadbury egg, or a shrimp, perhaps.

Termites definitely eat wood. They are a colonial animal, so that by killing the queen, one destroys the whole hive. You could just set up a dome for them, and take all the tree trimmings to it, shovel off the debris every now and then... Or you might be so daring as to place them in a working greenhouse. Some discretion is advised, especially if the colonists intend to make wood furnishings.

It seems that termites are a bit better suited to continuous work, rather than seasonal activity. However, there is another wood eating creature.

The Israelites of old considered Locusts to be an excellent food. Some have likened the grasshopper relative to lobster. Modern people rarely eat locusts, although the insect has made a slight comeback in the chocolate-coated food industry.

Locusts lay very small eggs, about the size of sand. They lay thousands of these eggs, which can lie dormant for fourteen years. Shoebox? You could probably send your full herd up on the back of a stamp.

Locusts are a seasonal occurrence. They lie dormant for a while before rising out, when conditions are right. Then they come in swarms, eating everything thinner than a 4x4. Locusts can also dispose of unwanted meat products. Once a dome is done for the season, you can seed it with the eggs. Once they eat the stuff down, take out the oxygen. There's your locust supply.

Some people however might not want to eat locusts. Not to worry, there is also a well-known lizard, the iguana. Iguanas have meat similar to chicken. They can grow up to six feet long. Their skin can be made into leather. They lay eggs. Would you eat iguana eggs? I don't know how they taste. The iguana can eat locusts, and other small animals, which might not be so tasteful to us. Iguanas, like other lizards will loose their tails if

you grab by them by it. I'm certainly not going to suggest that we raise iguanas to harvest their tails, PETA would have a fit, but in an emergency, such a thing might be possible.

Having discussed the consumption of our cold-blooded brethren, I would like to reconsider the warm-blooded animals.

Sure warm-blooded animals don't turn all their food into meat, but if you want feather for down, or fur for clothes, or milk, you need a warm-blooded animal. No way around it... without genetic manipulations, but I suspect that any such manipulations are far in the future.

Rabbits, Guinea pigs, and chinchillas are all here right now. All rodents eat a bit of wood now and then. Rabbits have excellent skins, with very warm, smooth fur, almost as good as that of the baby seals that suffered such barbarisms. Rabbit meat likewise is well flavored.

Chinchillas are not usually used for meat, but their fur can e used to make thread, or used for those fur coats old women seem so fond of. Making thread, though not often done, seems the better use for these.

After all, our "Martians" will be a bit far from Sears.

Works Cited:

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