
NASA
SPACESTATION
LIVE

1
00:00:09,590 --> 00:00:06,650
we've been testing a variety of

2
00:00:12,140 --> 00:00:09,600
different crops to grow in veggie we

3
00:00:14,120 --> 00:00:12,150
began with leafy greens specifically

4
00:00:17,810 --> 00:00:14,130
this red romaine lettuce which was

5
00:00:20,089 --> 00:00:17,820
selected because of its small size its

6
00:00:25,040 --> 00:00:20,099
high growth rate

7
00:00:28,460 --> 00:00:25,050
it's excellent germination and also the

8
00:00:30,559 --> 00:00:28,470
lettuce has very low natural microbial

9
00:00:32,959 --> 00:00:30,569
levels associated with it so it would be

10
00:00:34,880 --> 00:00:32,969
safe for the crew to eat the astronauts

11
00:00:37,849 --> 00:00:34,890
harvested the lettuce that's been

12
00:00:40,009 --> 00:00:37,859
growing for 33 days and the harvest had

13
00:00:42,220 --> 00:00:40,019

two parts first they harvested some

14
00:00:44,330 --> 00:00:42,230
leaves from each plant for consumption

15
00:00:47,209 --> 00:00:44,340
and they had a little bit of a

16
00:00:50,209 --> 00:00:47,219
celebration and then they harvested the

17
00:00:53,599 --> 00:00:50,219
rest of the plants for our science so

18
00:00:57,979 --> 00:00:53,609
those plants were harvested into soil

19
00:01:01,399 --> 00:00:57,989
and frozen in the -80 freezer on ISS and

20
00:01:04,700 --> 00:01:01,409
they'll be returned to us to do analysis

21
00:01:07,610 --> 00:01:04,710
of that tissue in terms of how safe the

22
00:01:09,980 --> 00:01:07,620
food is we assessed that by first

23
00:01:12,800 --> 00:01:09,990
growing a set of lettuce in space and

24
00:01:16,030 --> 00:01:12,810
having it returned to Earth last year

25
00:01:19,190 --> 00:01:16,040
where we tested a number of different

26
00:01:21,620 --> 00:01:19,200
aspects of that crop we looked at the

27
00:01:23,630 --> 00:01:21,630
food safety of that crop and we didn't

28
00:01:26,330 --> 00:01:23,640
find anything that led us to believe

29
00:01:29,240 --> 00:01:26,340
that it wouldn't be safe to eat to grow

30
00:01:33,260 --> 00:01:29,250
enough food you know to support the crew

31
00:01:35,990 --> 00:01:33,270
takes up a lot of volume in a spacecraft

32
00:01:39,470 --> 00:01:36,000
where where volume is very expensive and

33
00:01:43,400 --> 00:01:39,480
it's limited you know we're trying to

34
00:01:45,980 --> 00:01:43,410
grow highly productive plants and plants

35
00:01:48,550 --> 00:01:45,990
that are a very small stature and so we

36
00:01:54,170 --> 00:01:48,560
select crops that have a very high

37
00:01:56,120 --> 00:01:54,180
edible proportion of their yield this is

38
00:01:58,640 --> 00:01:56,130

called the the harvest index the

39
00:02:01,250 --> 00:01:58,650
proportion of the the edible biomass to

40
00:02:03,650 --> 00:02:01,260
the total biomass for the first crew to

41
00:02:06,200 --> 00:02:03,660
Mars they're probably not going to have

42
00:02:08,480 --> 00:02:06,210
a lot of food processing or food

43
00:02:10,609 --> 00:02:08,490
preparation equipment and they may not

44
00:02:12,500 --> 00:02:10,619
even have cooking equipment and that's

45
00:02:13,730 --> 00:02:12,510
how it is on the space station right now

46
00:02:15,470 --> 00:02:13,740
they don't actually

47
00:02:17,360 --> 00:02:15,480
have an ability to cook any food up

48
00:02:20,240 --> 00:02:17,370
there so all of the food that they're

49
00:02:23,030 --> 00:02:20,250
growing is what we call pick and eat it

50
00:02:25,190 --> 00:02:23,040
has to be able to be eaten fresh so

51
00:02:28,010 --> 00:02:25,200
we've been looking at lettuce other

52
00:02:32,570 --> 00:02:28,020
leafy green vegetables dwarf tomatoes

53
00:02:35,150 --> 00:02:32,580
dwarf peppers radish potentially some

54
00:02:37,220 --> 00:02:35,160
herbs that can be picked and mixed in

55
00:02:39,320 --> 00:02:37,230
with a packaged diet and we're even

56
00:02:41,810 --> 00:02:39,330
starting to look at small fruit crops

57
00:02:44,180 --> 00:02:41,820
we've been testing some dwarf plum trees

58
00:02:47,300 --> 00:02:44,190
but again these are all things that can

59
00:02:49,730 --> 00:02:47,310
be eaten fresh once we are established

60
00:02:52,100 --> 00:02:49,740
on Mars and we have a long term base we

61
00:02:54,650 --> 00:02:52,110
may have more equipment to be able to

62
00:02:57,290 --> 00:02:54,660
process and cook food and so then things

63
00:03:00,980 --> 00:02:57,300

like sweet potatoes or white potatoes or

64
00:03:03,020 --> 00:03:00,990
beans could easily be grown and used to

65
00:03:05,450 --> 00:03:03,030
provide food for the diet so we're

66
00:03:07,070 --> 00:03:05,460
testing both types of scenarios but for

67
00:03:09,800 --> 00:03:07,080
now we're concentrating on what could be

68
00:03:12,830 --> 00:03:09,810
cooked or what could be picked and eaten

69
00:03:15,590 --> 00:03:12,840
without cooking so we've had a lot of

70
00:03:17,900 --> 00:03:15,600
feedback from different crew members who

71
00:03:20,480 --> 00:03:17,910
were on the space station during the

72
00:03:22,190 --> 00:03:20,490
first veggie test and also during the

73
00:03:26,090 --> 00:03:22,200
second test where they were allowed to

74
00:03:28,100 --> 00:03:26,100
eat the produce in the first test I

75
00:03:29,720 --> 00:03:28,110
think the crew actually really wanted to

76
00:03:32,960 --> 00:03:29,730
eat the lettuce but they were good they

77
00:03:35,270 --> 00:03:32,970
sent it all back to us but the the

78
00:03:38,360 --> 00:03:35,280
consensus was that we need to be growing

79
00:03:39,980 --> 00:03:38,370
more vegetables and space station that

80
00:03:42,430 --> 00:03:39,990
they really want to grow things that

81
00:03:46,100 --> 00:03:42,440
they can eat more than ornamental crops

82
00:03:47,870 --> 00:03:46,110
and that this is something that the

83
00:03:51,260 --> 00:03:47,880
different astronauts really couldn't

84
00:03:53,630 --> 00:03:51,270
imagine going for longer or farther into

85
00:03:56,030 --> 00:03:53,640
space without without having this little

86
00:03:59,300 --> 00:03:56,040
slice of Earth there to remind them of

87
00:04:01,760 --> 00:03:59,310
home they all really enjoy the first

88
00:04:04,310 --> 00:04:01,770

harvest of lettuce all the astronauts

89
00:04:08,000 --> 00:04:04,320
and cosmonauts were around watching and

90
00:04:09,620 --> 00:04:08,010
taking photographs and we had numerous

91
00:04:12,110 --> 00:04:09,630
comments and photos throughout the

92
00:04:14,180 --> 00:04:12,120
growth cycle about how much they enjoyed

93
00:04:16,880 --> 00:04:14,190
watching the plants grow in helping to

94
00:04:19,010 --> 00:04:16,890
mark the passage of time in this grill

95
00:04:22,330 --> 00:04:19,020
out again we had a lot of really

96
00:04:24,590 --> 00:04:22,340
positive feedback from the crew

97
00:04:26,900 --> 00:04:24,600
basically they were all there for the

98
00:04:27,350 --> 00:04:26,910
harvest except the Russian cosmonauts

99
00:04:30,350 --> 00:04:27,360
who are

100
00:04:32,360 --> 00:04:30,360
on an extra vehicular activity and the

101
00:04:34,249 --> 00:04:32,370
astronauts saved some of the lettuce for

102
00:04:36,619 --> 00:04:34,259
the cosmonauts to eat for when they

103
00:04:40,100 --> 00:04:36,629
finish their Eve ei which was really

104
00:04:42,409 --> 00:04:40,110
wonderful when they ate the first batch

105
00:04:44,959 --> 00:04:42,419
of lettuce their comments were very

106
00:04:46,339 --> 00:04:44,969
supportive and enthusiastic and they

107
00:04:49,279 --> 00:04:46,349
seemed to really enjoy it

108
00:04:51,589 --> 00:04:49,289
so that just made me feel wonderful that

109
00:04:54,260 --> 00:04:51,599
I was able to help be part of a team

110
00:04:57,140 --> 00:04:54,270
that could provide them with with such a

111
00:05:00,760 --> 00:04:57,150
source of enjoyment one thing we really

112
00:05:03,320 --> 00:05:00,770
hope is that the crew will be able to

113
00:05:05,119 --> 00:05:03,330

pick which types of plants that they

114
00:05:08,089 --> 00:05:05,129
want to grow in the future so we're

115
00:05:11,029 --> 00:05:08,099
working to develop a crew Garden

116
00:05:13,219 --> 00:05:11,039
mentality where they can select which

117
00:05:15,890 --> 00:05:13,229
crops that they'll want to grow and then

118
00:05:18,290 --> 00:05:15,900
eat them so we have you know a lot of