WORMS IN VARIOUS FEEDS MAINTENANCE

Abdurazakova Ikbolkhan Abdurakhmanovna

Assistant of the Department of medical and Biological Chemistry, FJSTI

ANNOTATION: In this article, the development of agriculture in many regions of the Republic of Uzbekistan, the fact that agricultural products are the main source of food and providing the population with high-quality, environmentally friendly products should be the basis of scientific production, in this regard, the soil maintaining fertility, the harm of chemical fertilizers, types of organic fertilizers, the importance of biological natural fertilizers are widely covered.

KEY WORDS: Worms, biotechnology, earthworms, temperature, taking care of, types of reproduction, biochemistry

INTRODICTION: The role, biology and physiology of the California red earthworm in increasing soil fertility, the optimal temperature, types of food, etc., in order to acclimatize it to the conditions of our country, were studied, and relevant conclusions and recommendations were developed as a result of the research.The article can be used by professors, teachers, scientific and technical staff, graduate students, farmers and peasants, as well as any interested reader, working in biotechnology, chemical technology, biochemistry, agriculture and other fields. The climatic conditions of Uzbekistan are the most favorable for raising and breeding earthworms. Summers are hot and winters are cold in the northern regions of our republic, summers are hot and winters are warm in other regions. In this climate, the average number of hot days is 270 days a year. It is more convenient to feed worms under these conditions. Earthworms can be kept in basements, barns, sheds, barns, and similar places. In order to increase the number of earthworms raised in indoor heated houses throughout the year, and to save space when earthworms are fed in places where excess biomass (live worms) and biohumus are collected, wooden or plastic cages of size 50x40x15 can be used. 5.6 holes with a diameter of 1.5-2 cm are left at the bottom of the cells for water to

flow. For this, if possible, the boxes are filled with horse manure or compost made in the household with a thickness of 10 cm and thoroughly moistened. Then 50 earthworms are sprinkled on the surface. 5-6 rows are picked by putting manure and worm boxes one on top of the other. The moisture content of the manure in the cages should be 75-80%. To determine this, the manure is squeezed into the palm of the hand. It should drip 1.2 drops of water without being massaged. If the temperature in the oven is around 18-250C, the worms develop well and multiply quickly. The manure in the cages is eaten by worms, and it is gradually put on top of new manure. Together with manure, organic waste from the farm, leaves, twigs, straw, plant branches and other things are mixed into the cells. Non-biodegradable materials, plastics, polyethylene, metal and bottles are not used as food. In the absence of pre-written materials, it is possible to feed the worms thoroughly moistened scraps of paper and cardboard, that is, they will eat the material rich in silylose with appetite. It is possible to use aratopon and kirrindi without tar as food for worms.

Earthworms also love the pods of vegetables from the kitchen. Tea leaves and coffee grounds are also good food for worms.If the cages where the worms are fed are kept at a temperature that is either too hot or too cold, half of them are separated every 90 days and transferred to another cage with food. In this way, the number of boxes where worms are fed can be increased. In one year, the density of earthworms in 1 m of space reaches 30-60 thousand tons. If the surplus of worms is added to the main feed of birds and chickens, their productivity will increase dramatically. Worms contain 65-72% of proteins necessary for animals.

1. Housing of cells

2. Temperature

3. Light

The location of the cells should be away from heat and cold sources. It should be in a convenient place to feed and moisten the worms. Optimum development of

worms takes place at 19-240C. Therefore, it is necessary to try to maintain this temperature. Worms in order to raise the temperature of the living nest, it is necessary not to put them in a place where sunlight falls. Red earthworms are afraid of light, and ultraviolet light kills them. Therefore, the source of natural or artificial light should not directly affect the place where worms live in small farms, the removal of worms from the biohumus produced by them is carried out as follows: the worms are transferred to a well-fed and moistened cage so that they start eating new food immediately two different methods are used to separate worms from humus. In the first method, earthworms mixed with humus are sieved. Small particles that have fallen through the sieve are called humus. In the sieve, the remains of manure that the worms have not yet eaten remain. They will continue to breed by placing them in another nutrient cage. If possible, the sieve should be made of iron or plastic, the mesh size should be 2 mm in the second method, the worms in the cage are starved for 8-10 days to separate the worms from the humus. After that, 2-3 cm thick feed is added. After two days, the starved worms crawl out onto new food, and then 5 cm of worm-rich manure is placed in another cage. By repeating this operation 1-2 more times, 95-97% of the worms in the first cell can be extracted. It is not advisable to remove the remaining 3-5% of earthworms, they remain in the humthe. It has a unique feature of feeding and breeding worms in the open. For this purpose, the width of 1.5 m, depth of 0.7 m can be different depending on the amount of manure and organic waste in the farm. It is desirable that the prepared pit is close to the source of water and food. The side walls of the pit are slightly inclined so that they do not collapse, and the bottom is 5 cm below the water level. If the underground water is closer to the surface of the earth, 5 cm thick gravel is laid at the bottom of the pit for drainage. When the pit is ready, it is leveled with a thickness of 10-15 m of ready-fermented compost 5-7 days before spreading the worms in the pit, it is covered with water. This work is done to wash away a lot of ammonia left in the manure. If the worm breeder has the opportunity, if the wall of the pit is covered with metal, the water sprinkled on the compost will

not be absorbed into the walls of the pit quickly, besides, earthworms and rats, which are very hostile to worms, cannot enter the pit before spreading and sprinkling the worms in the pit, ready-made compost is placed in a 50x40x15 cm box with a thickness of 10 cm, and 50 of the worms are placed there. If the worms stay inside the compost for half an hour, it indicates that the worms are edible. After determining the suitability of the compost, 1.5-2 thousand pieces of earthworms are distributed on each square meter of the feed in the pit, and 5 cm thick manure is placed on top of it and thoroughly moistened with water. In order for the worms not to get hot during the hot summer days, the pit is covered with a 10-15 cm thick layer of straw or old straw. It takes 5-7 days for worms to adapt well to new food. Healthy worms will be active. Food particles will not stick to them. The food in which the mites live must always be moist on hot days, water should be sprinkled two or three times a day. A worm placed in a hole will eat the food in it in 20-25 days. The humus produced by worms becomes granular. It looks like dry black tea. Every 8-10 days, 5-7 cm thick manure is sprinkled on top of the pit, which is sure that the manure has been eaten. In this way, the pit is filled with hummus. As the manure in the pit thickens, it becomes denser. Free movement of worms in concentrated manure is somewhat difficult. In order to avoid this problem, the manure in which the worms live is carefully turned over with a panshoha.

№	Temperature	Worms Cound	Before the experiment Worms Weight	Worms Lenght	After the experiment Worms Weight	Number of cocoons	The number of small worms
1	5°C	10	380	7-10	333	-	-
2	10°C	10	333	8-10	340	-	-
3	20°C	10	400	8-10	495	37	218
4	25°C	10	400	9-10	500	46	364
5	30°C	10	400	8-10	400	6	11

6	**40°C**	**10**	**400**	**8-10**	**340**	**-**	**-**

Adapted to new conditions, the main activity was focused on laying cocoons. Each worm lays one cocoon every 5-7 days. The cocoon is about half the size of a grain of rice, and the upper part is surrounded by a soft but firm skin, which resembles a lemon. Each cocoon contains from 3 to 21 embryos. Optimum temperature depending on high and low temperature (19-240C) in 15-20 days from the cocoons, red-colored worms with a length of 4-6 mm grow quickly. It turns into an adult worm in 10-12 weeks. In the conditions of our Uzbekistan, worms lay the last cocoon at the end of September. Worms emerge from it at the end of November in the conditions of Uzbekistan, worms lay cocoons for 20-26 weeks in a year, during this period the mass of worms increases 30-60 times as soon as it gets cold, the activity of worms decreases, their feeding slows down, and they stop feeding at a temperature of 60 C. Therefore, before the onset of severe frosts, 20-25 cm thick compost is sprinkled on top of vermicompost and moistened, and 15-20 cm thick rice, wheat, barley straw is placed on top of it in laboratory conditions, experiments were carried out at temperatures from 100C to 300C for the growth and development of the California earthworm at different temperatures. The results of the experiment show that the activity of worms kept at a temperature of 10-150C is slower. Adult worms consume food slowly. Their weight did not change significantly compared to the initial period of the experiment. There was no noticeable change in length. The cocooning of these worms is as follows: only 2 out of 12 worms cocoon. There are 2-4 young worms emerging from the cocoon. It should be noted that we observed that the above temperature is not enough for the normal growth and reproduction of worms. In fact, although the worms came out in the state of anabiosis at a temperature of 7-100, this temperature is not enough for their active movement, feeding and reproduction in our next experiment, worms were incubated at 16-200C from February 16 to March 16. Observations showed that in the first decade, worms were observed to move more actively, that is, their average weight increased from 380 mg to 415 mg, that is, it was found that

it increased by 35 mg. At the same time, their length increases from 7.6 cm to 8.7 cm. Their consumption of food is accelerated. This can be seen from the fact that the nutrients in the cells turn into humus.We counted 4 cocoons in the first decade of the experiment. In the second ten days, the weight and length of the worms change significantly, their activity increases. During this period, 9 cocoons were observed in the nest. In the previous decade, we saw 24 small worms from the cocoons. From the results of the experiment, it was observed that compared to the worms stored at 10-15 0C, the worms stored at 16-200 are more active and have an increased tendency to reproduce. At the end of the second decade, the average weight of worms increased from 415 mg to 435 mg. The number of small worms reaches 75. It should be noted that in the first decade, the weight of cocooned worms (up to 40 mg) is 0.9-1 mg, and at the end of the second decade, their weight increases to 40 mg. Its length has increased from 1.2 cm to 2.9 cm at the end of the third decade, the weight and length of large worms almost do not change. But the number of young worms that came out of their cocoons reaches 187. The results of the experiment showed that at a temperature of 16-200 C, adult worms developed and multiplied close to the optimal level in the third form of the experiment, the worms were kept at a temperature of 21-240C from March 17 to April 17. From the observations, it was found that this temperature is the most favorable temperature for worms to consume food and reproduce. In the first decade of the experiment, it was found that 12 worms in the cage laid 12 cocoons. Almost all the nutrients in the box were converted into biohumus. At the end of the second decade, 175 larvae were observed from 12 cocoons, which indicates an average of about 15 larvae per cocoon in the third decade of the experiment, the food that became biohumus in the cells was removed and 12 worms were added to it. A significant change in the growth of worms was also observed. At the beginning of the third decade, the average weight of worms was 429 mg, and at the end of the decade, their average weight was 478 mg. It can also be known from the fact that the average weight has increased to 49 mg at the beginning of the third decade, the

average weight of young worms was 1.2 mg, and at the end of the decade, the weight of each young worm increased to 41 mg.We have conducted research on the growth and development of California earthworms on various feeds in a thermostat at an average comfort temperature, i.e. 240C. We experimented with worms in 12 types of feeding conditions. Each pair of worms cocoons in 7-10 days 9-12 small worms came out of them. The length of the worms that came out of the cocoon was 0.7-0.9 mm, and the weight was about 0.7-1.0 mg. They grew very quickly, and after 10 days after hatching, each one weighed 45-50 mg. Worms continue to grow and enlarge in this way, their weight can reach 470-500 mg, and their length can reach 800-900 mm. Our observations show that worms develop quickly in various mixed feeds.In short, the growth and development of the California red earthworm depends on food and temperature in laboratory conditions, experiments were carried out at temperatures ranging from 100C to 300C for the growth and development of the California earthworm at different temperatures.

The results of the experiment show that the activity of worms kept at a temperature of 10-150C is slower. Adult worms consume food slowly. Their weight did not change significantly compared to the initial period of the experiment. There was no noticeable change in length either. The cocooning of these worms is as follows: only 2 out of 12 worms will cocoon. There are 2-4 young worms emerging from the cocoon. It should be noted that we observed that the above temperature is not enough for the normal growth and reproduction of worms. Actually, although the worms came out in the state of anabiosis at a temperature of 7-100, this temperature is not enough for their active movement, feeding and reproduction in our next experiment, worms are kept at 16-200C from February 16 to March 16. Observations showed that in the first decade, worms were more active, and their average weight increased from 380 mg to 415 mg, i.e. by 35 mg. At the same time, their length increases from 7.6 cm to 8.7 cm. Their consumption of food is accelerated. This can be seen from the fact that the nutrients in the cells turn into humus.

CONCLUSION:

As a result of the conducted experiments and observations, it is possible to come to such a conclusion. The biotechnology of raising and caring for California red earthworms was developed in the conditions of Uzbekistan. Worms ensure the health of the ecological environment as a result of the production of biohumus. Observations revealed that the activity of worms at a temperature of 50-100C has a weak effect on the intensity of food absorption. At 150C, worm activity and feed intake increased slightly, but their reproduction did not increase. When earthworms are kept at a temperature of 20-250C, consumption of their substrate has a positive effect on laying cocoons and the emergence of many small earthworms and their intensive growth. This action is the optimal temperature for the vital activity of earthworms. When kept at a temperature of 30-400C, the growth and development of worms was sharply reduced due to the fact that keeping at this temperature negatively affected the vital activity of the worms. Cocoon laying was not observed at all.The growth and reproduction of worms was at the highest level in the feed consisting of horse manure. During the experiments, it was found that the weight of the worms increased by 130 mg and 100% laid cocoons. In the conditions of Uzbekistan, it was found that worms lay cocoons 20-26 times in one season and up to 400-500 worms emerge from them. It was found that the worms that have come out of the cocoon mature and multiply in 10-12 weeks. In the conditions of Uzbekistan, when earthworms were kept in open places, it was found that they grew and multiplied very intensively in March, April, May, August, September and October.

REFERENCES:

1. Н.П.Битюцкий, П.И.Кайдун “Влияния дождевых червей на подвижность микроэлементов в почве и их доступность растениям” Журнал Научная статья. 2008 г. Стр:1479-1486

2. П.В.Чинкаребский, Н.Б.Османова, Д.В.Баличиева ”Влияние положительних температур на развитие дождевых червей на субстрате из

отходов в зимнее время” Журнал ВАК Биологическая наука. 2013 г. Стр:147-152

3. М.И.Бабурина, Н.Л Вострикова, Н.Ю. Зарубин, Н.А. Горбунова ”Топливные биостимулиятори роста сельхозкультур”. ИССН. Лесной вестник Фор. Бюллитин, 2020.Т. 24.

4. Л.П.Степанова, В.Н.Стародубсев, Э.И. Степанова “Агроэкологичес-кая эффективность обработки семян водными битяжками из горнх пород и вермикомпостов”. Журнал: Экология и безопасность жизнедельности. 2011 г. Стр:47-51.

5. О.С.Речетняк, Л.С.Космено, А.А.Коволенко “Антропогенная нагрузка и качество воды на замикающих створах рек арктической зони России” Журнал: Вестник Московского университета 2022 г. Стр: 58-62

6. П.В.Чинкаревский, Н.Б.Османова, Д.Б.Баличиева ”Влияние положительных температур на развитие дождевых червей на субстрате из пищевых отходов в зимнее время». Журнал: Биология 2013 г. Стр: 38-43

7. С.И.Некрасов, Ю.А.Некрасова, П.Ф.Рулев “Вермитехнология как эффективный метод обеспечения устойчивости местных агроэкосистем” Журнал:Таврический научний обозриватель. 2016 г. Стр: 73-79

8. О.В.Савина, В.А.Макаров, О.В.Макарова, С.В.Гаспарян ”Органические удобрения – как фактор повишения плородия почвы и эффективности растениеводства». Журнал: Научная статья.2019 г. С:53-59

9. А.Н.Аралбаева, Н.И.Жапаркулова, З.Ж.Саидахметова, А.Т.Маматаева. ”Сельскохозяйственная биотехнология” Учебное пособие Алмати:ТООЛантар Трейд 2020 г. Стр: 74-80

10. А.М.Игонин “Как повысит плородие почвы в десятки раз, используя дождевого червья” Журнал: Грин Пик 2002 г. Стр: 93-98

11. А.М.Игонин ”Дождевые черви” Книга. М. 2023г. Стр: 23-38

12. В.А.Касатиков, В.А.Раскатов, Н.П.Чабардина. ”Действие вермигуматов на агроэкологические параметри дерново-подзолистой супесчаной почви. ”Журнал: Плодородие 2014 г. Стр: 31-36

13. В.А.Касатиков, С.М.Кастикова “Действие вермикомпоста на агрохимические свойства почвы и урожайность сельскохозяйственных культур” Диссертация 2002. Стр: 7-14, 65-71

14. М.А.Абдурахмонов, Я.Т.Рахимов ”Состояние земельных ресурсов в республике Узбекистан” Журнал:Территория науке. 2017 г.

15. А.А.Лячев, И.А.Прок ”Характеристика развития популяции дождивых компостных червей в субстрате из городских остатков” Международный научно-исслодовательский журнал. 2020г № 6.

16. Ismailov, Muminjon Yusupovich, and Nigora Namanzhanovna Dehkanova. ‘Production and purification of naphthenic acids by synthetic method.’ Universum: chemistry and Biology 2-1 (104) (2023). PP. 54-58.

17. Abduraxmonovna, Abdurazakova Iqbolxon. ‘Kolloid eritmalarning tibbiyotdagi ahamiyati.’ Science and innovation ideas in modern education 1.9 (2023).

18. Abduraxmonovna, Abdurazakova Iqbolxon. ‘Biogen elementkarning odam organizmidagi biologic faolligi.’ Science and innovation ideas in modern education 1.9 (2023).