

See back cover for an English translation of this cover

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90927M



909275



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD  
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

SUPERVISOR'S USE ONLY

Tohua tēnei pouaka mēnā  
KĀORE koe i tuhi kōrero ki  
tēnei pukapuka

## Mātai Koiora, Kaupae 1, 2022

90927M Te whakaatu māramatanga ki ngā ariā koiora e pā  
ana ki te moroiti

Ngā whiwhinga: E whā

Paetae	Kaiaka	Kairangi
Te whakaatu māramatanga ki ngā ariā koiora e pā ana ki te moroiti.	Te whakaatu i te hōhonu o te māramatanga ki ngā ariā koiora e pā ana ki te moroiti.	Te whakaatu i te matatau ki ngā ariā koiora e pā ana ki te moroiti.

Tirohia kia kitea ai e rite ana te Tau Ākonga ā-Motu (NSN) kei runga i tō puka whakauru ki te tau kei runga i tēnei whārangi.

**Me whakamātau koe i ngā tūmahi KATO A kei roto i tēnei pukapuka.**

Mēnā ka hiahia whārangi atu anō mō ō tuhinga, whakamahia te wāhi wātea kei muri o tēnei pukapuka.

Tirohia kia kitea ai e tika ana te raupapatanga o ngā whārangi 2–15 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

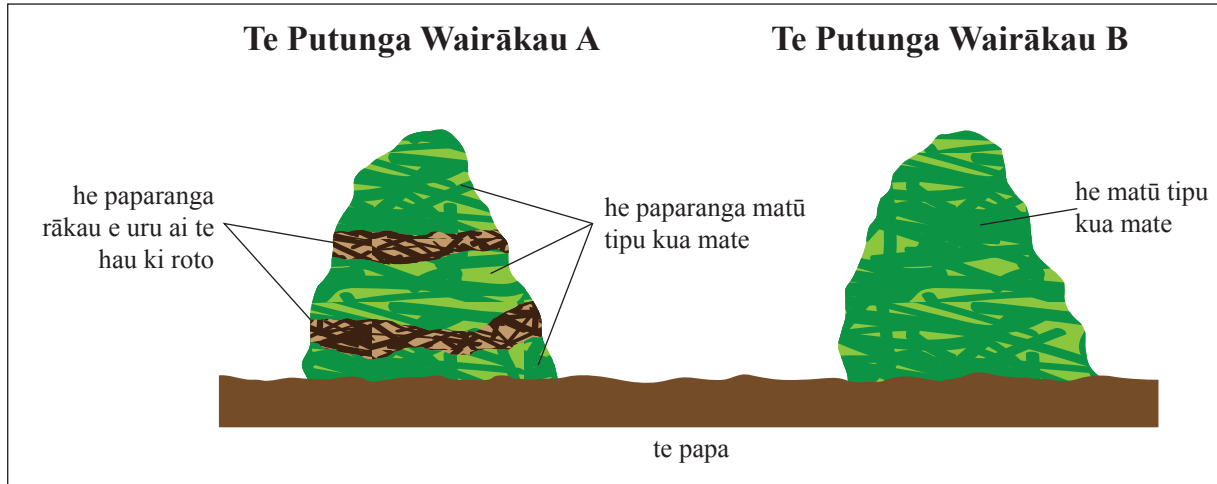
Kaua e tuhi ki tētahi wāhi e kitea ai te kauruku whakahāngai (X). Ka poroa pea taua wāhanga ka mākahia ana te pukapuka.

**HOATU TE PUKAPUKA NEI KI TE KAIWHAKAHAERE HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.**

## TE TŪMAHI TUATAHI: TE WAIRĀKAU

He momo moroiti te huakita ka noho hei kaiwhakapopo mā te wāwāhi i ngā matū tipu kua mate kia hangaruatia ai ngā taiora, pēnei i te waro. Ka whai wāhi ki te tukanga o te mahi wairākau te wāwāhitanga o te matū tipu kua mate e te huakita, e ētahi atu moroiti hoki.

E rua ngā putunga wairākau e whakaaturia ana i raro nei:



Whakatauritea te wāwāhinga o ngā matū tipu kua mate e te huakita i te Putunga Wairākau A me te Putunga Wairākau B e whakaaturia ana i runga nei.

I tō tuhinga, me:

- whakaahua te āhua o tā te huakita whai taiora (whai kai) me tāna whakatutuki i te tukupūngao
- whakamārama te āhua o te hononga o te tukanga whai taiora (whai kai) a te huakita ki te tukanga o te wāwāhi i ngā matū tipu kua mate
- matapaki te āhua o te pānga o ngā panonitanga ki ētahi āhuatanga taiao e RUA (pēnei i te paemahana, i te wātea o te hāora, i te nui rānei o te pH) ki ngā tukanga oranga o te whai kai me te tukupūngao a ngā huakita, me te pānga anō ki te pāpātanga o te wāwāhi i ngā matū tipu kua mate i tētahi putunga wairākau.



Lined area for writing or drawing.



## TE TŪMAHI TUARUA: TE PARĀOA PURUHEKA

I ngā hararei o te raumati, i mahi hanuwiti a Rāwiri hei tina mā tana whānau. I tētahi rā, i waiho a Rāwiri i te parāoa i te pae i te kīhini mahana, ā, i te puare te pēke. Nōna ka huri ki te mahi hanuwiti i te rā i muri mai, ka kite ia kua whai tongi huruhuru e kiwikiwi ana ngā parāoa. Nā tōna māmā i kī kei te tipu te hekaheka i te parāoa.



He parāoa kua waiho i te pae i tētahi kīhini mahana.

Te mā tāpuna: <https://jgklausner.com/work/white-bread-slice-mold-i>

Matapakina te pānga o ngā āhuatanga taiao, e panoni haere nei, ki te tipu me te whakaputa uri a te hekaheka.

I tō tuhinga, me:

- whakaahua mai te āhua o te tipu me te whakaputa uri a te hekaheka
- whakamārama mai te āhua o te tau o te hekaheka ki runga i te parāoa
- matapaki te āhua o te rokiroki i te kai e kore ai e tipuria e te hekaheka, e kore ai rānei te hekaheka e whakaputa uri ki reira, mā te whakahaere i te pānga o ngā āhuatanga taiao, pēnei i te paemahana, i te hāora me te wai.

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## QUESTION TWO: MOULDY BREAD

In the summer holidays Rawiri made sandwiches for lunch for his whānau. One day Rawiri left the bread on the bench in the warm kitchen with the bag open. When he came to make the sandwiches the next day, he noticed that the bread had grey, furry spots on it. His mum said that fungi was growing on the bread.



Bread left on the bench in a warm kitchen.

Source: <https://jgklausner.com/work/white-bread-slice-mold-i>

Discuss the impact of changing environmental factors on the growth and reproduction of fungi.

In your answer:

- describe how fungi grow and reproduce
- explain how the fungi got onto the bread
- discuss how food can be stored to prevent fungi from growing and reproducing on it, by controlling the effect of environmental factors such as temperature, oxygen, and water.

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## TE TŪMAHI TUATORU: TE HUAKETO TŌMATO

I a Hūrae, i te tau 2021, i mutu tā Aotearoa tuku tōmato ki ētahi atu whenua i te kitenga kua pokea ngā tōmato o Aotearoa e tētahi huaketo i tapaina rā ko te huaketo Pepino mosaic (Pep MV). Ko tā te huaketo nei, he whakapōturi i te tipu o te tōmato, he whakaiti hoki i te nui o ngā tōmato ora e whakaputaina ana.

I tonoa ngā kaiwhakatipu tōmato kia āwhina ki te whakahaere i te hora o te huaketo mā te whai i ngā tikanga, pēnei i te:

.... akuaku pai i ngā taputapu, i ngā wāhi, hei tauira, mā te āta horoi i ngā taputapu, mā te tuhi hoki i ngā nekehanga o ngā tāngata i te pāmu, i ētahi atu wāhi hoki.

Te mātāpuna: <https://www.rnz.co.nz/news/country/447787/mpi-continues-effort-to-control-tomato-disease>



He tōmato ora

Te mātāpuna: <https://gardenerspath.com/plants/vegetables/growing-cherry-tomatoes/>

He tōmato kua pokea e te huaketo Pepino mosaic

Te mātāpuna: <https://gd.eppo.int/taxon/PEPMV0/photos>

Hāunga rā ngā mate tipu e pūtake mai ana i te huakita, kāore e taea ngā mate tipu e pūtake mai ana i te huaketo, pēnei i te Pepino mosaic, te whakahaere ki ngā rehu paturopi.

Whakatauritea ngā tikanga ka whakamahia hei whakahaere i ngā mate tipu e pūtake mai ana i te huaketo ki ērā e pūtake mai ana i te huakita.

I tō tuhinga, me:

- whakaahua mai te āhua o te whakaputa uri a te huaketo
- whakamārama te āhua o te hora o te huaketo
- matapaki ngā take i taea ai e ngā rehu paturopi te whakahaere ngā mate tipu e pūtake mai ana i te huakito, engari me whai tikanga kē hei whakahaere i ngā mate tipu e pūtake mai ana i te huaketo.

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### QUESTION THREE: TOMATO VIRUS

In July 2021, New Zealand stopped sending tomatoes to other countries because New Zealand tomatoes were found to be infected with a virus, called the Pepino mosaic virus (Pep MV). The virus slows the growth of the tomato plant, and reduces the number of healthy tomatoes produced.

Tomato growers were told to help control the spread of the virus by using measures such as:

.... good hygiene around equipment, and properties, for example, keeping equipment sterilised, keeping records of people's movements around the farm and onto other properties.

Source: <https://www.rnz.co.nz/news/country/447787/mpi-continues-effort-to-control-tomato-disease>



Healthy tomatoes

Source: <https://gardenerspath.com/plants/vegetables/growing-cherry-tomatoes/>

Tomatoes infected with the Pepino mosaic virus

Source: <https://gd.eppo.int/taxon/PEPMV0/photos>

Unlike plant diseases caused by bacteria, plant diseases caused by viruses such as the Pepino mosaic virus cannot be controlled by antibiotic sprays.

Compare and contrast the methods used to control plant diseases caused by viruses with those caused by bacteria.

In your answer:

- describe how viruses reproduce
- explain how viruses can be spread
- discuss why antibiotic sprays can control plant diseases caused by bacteria, but other methods are required to control plant diseases caused by viruses.

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**He whārangi anō ki te hiahiatia.  
Tuhia te tau tūmahi mēnā e hāngai ana.**

TE TAU  
TŪMAHI

**Extra space if required.**  
**Write the question number(s) if applicable.**

QUESTION  
NUMBER

*English translation of the wording on the front cover*

## Level 1 Biology 2022

### 90927M Demonstrate understanding of biological ideas relating to micro-organisms

Credits: Four

90927M

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of biological ideas relating to micro-organisms.	Demonstrate in-depth understanding of biological ideas relating to micro-organisms.	Demonstrate comprehensive understanding of biological ideas relating to micro-organisms.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

**You should attempt ALL the questions in this booklet.**

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–15 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (▨). This area may be cut off when the booklet is marked.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**