



United Nations  
Educational, Scientific and  
Cultural Organization

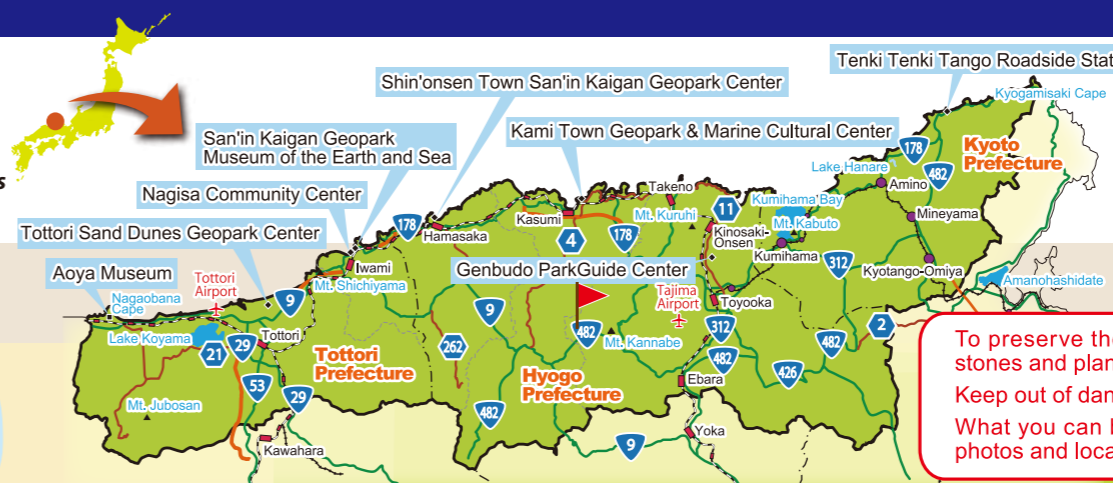


San'in Kaigan  
UNESCO  
Global Geopark

# Kannabe Highlands Courses

Volcanic Activities & People's Lives

Porous volcanic rocks or "scoriae" that erupted from the Kannabe Volcano became andosol and then transformed into land suitable for growing highland vegetables. Rainwater penetrates into the land consisting scoria becoming groundwater and springs downstream, where trout is cultivated.



San'in Kaigan Geopark  
Walk model course

First edition: 2013.10.28 Last updated: 2017.3.31

To preserve these beautiful natural assets, please leave stones and plants as they are.  
Keep out of dangerous places and do not go off-limits.  
What you can bring home with you are happy memories, photos and local souvenirs!!

## ③Mt. Kannabe Scoria Cone and Crater

## ⑤Cross-Section Surface: Scoria Layer



Offer: UP JAPAN

Porous volcanic rocks called scoria, which erupted from Kannabe Volcano, became kuroboku soil, an ideal soil for growing highland vegetables. Rainwater seeping into the scoria ground becomes groundwater. It springs out in the lower reaches of the river and is used for trout farming.

## Kannabe Volcano Course

- Start** Time is on foot
- ①Kannabe Highlands Roadside Station  
5min ↓ About 300m
  - ②Iwakura Ancient Tomb  
20min ↓ About 1.1km
  - ③Mt. Kannabe Scoria Con and Crater  
5min ↓ About 300m
  - ④View from Mt. Kannabe  
20min ↓ About 800m
  - ⑤Cross-Section Surface: Scoria Layer  
5min ↓ About 300m
  - ⑥Fuketsu Cave  
15min ↓ About 800m
  - ①Kannabe Highlands Roadside Station

Total traveling time: 1 hour 10 minutes  
Total distance: About 3.5 km

## Kannabe Volcano Short Course

- Start** Time is on foot
- ①Kannabe Highlands Roadside Station  
5min ↓ About 300m
  - ②Iwakura Ancient Tomb  
20min ↓ About 1.1km
  - ③Mt. Kannabe Scoria Con and Crater  
5min ↓ About 300m
  - ④View from Mt. Kannabe  
20min ↓ About 800m
  - ⑤Cross-Section Surface: Scoria Layer  
10min ↓ About 600m
  - ①Kannabe Highlands Roadside Station

Total traveling time: 1 hour  
Total distance: About 3.5 km

## ⑥Fuketsu Cave

## Tawaradaki Waterfalls

**Quiz1**  
How steep is the slope of Mt. Kannabe?  
The answer is on the back.

## Hidaka-Kannabe Tourism Association

## ①Kannabe Highlands Roadside Station



Kuroboku soil & cabbage fields

## Legend

- Toilet
- Parking lot
- Restaurant
- Explanatory signboard
- Route
- Watch your step!
- Traffic hazards
- Kannabe Volcano Course
- Kannabe Volcano Short Course
- Kannabe Lava Flow Course
- Kannabe Lava Flow Short Course
- Kannabe Lava Flow Long Course
- Farmland & pasture
- Rice paddy

## Fields of kuroboku soil

## ④View from Mt. Kannabe

## ②Iwakura Ancient Tomb

## Fields of kuroboku soil

## ①Tajima Dome

Volcanic rocks are mixed in with other stones in the walls.  
Can you find them?  
\*Clue: Lava is bigger than other stones. (The answer is on the back)

## Quiz2

Kiyotaki Tunnel

## Mt. Buri

## Fields of kuroboku soil

## Six Jizo (Guardian deity of children)

Kiyotaki Community Center

## ⑦Mabo Valley Area

## ⑥Nidantaki Waterfalls / Lava Knob Area



Waterfalls look their best when viewed from below! Why not enjoy a slow climb from downstream?

## ⑤Kannabe Lava Flow Kiyotaki Natural Trail



Trout farm making use of groundwater

## ④Benzaiten

## Jugodaki Waterfalls

## Jugo spring-fed pond & trout farms

## ②Nagasaki Ishigumi-dori Street

## ③Yama-jinja Shrine & Oddly-Shaped Rocks

View street

Place for attaching & removing tire chains



Rice cake scattering at Kiyotaki lava flow festival



Six Jizo (Guardian deity of children)

Various events are held in Kannabe Highlands!  
For more information, please contact the Hidaka-Kannabe Tourist Association (Kannabe Highlands Roadside Station): Tel 0796-45-0800

## Kannabe Lava Flow Course

- Start** Time is on foot
- ①Hyogo Prefectural Tajima Dome  
30min ↓ About 1.8km
  - ②Nagasaki Ishigumi-dori Street  
15min ↓ About 700km
  - ③Yama-jinja Shrine & Oddly-Shaped Rocks  
30min ↓ About 1.7km
  - ④Benzaiten  
5min ↓ About 400m
  - ⑤Kannabe Lava Flow Kiyotaki Natural Trail  
25min ↓ About 1.3km
  - ⑥Nidantaki Waterfalls / Lava Knob Area  
10min ↓ About 600m
  - ⑦Mabo Valley Area  
25min ↓ About 1.3km
  - ①Hyogo Prefectural Tajima Dome

Total traveling time: 2 hour 20 minutes  
Total distance: About 8 km

## Lava Flow Short Course

- Start** Time is on foot
- Place for attaching & removing tire chains  
5min ↓ About 400m
  - ⑤Kannabe Lava Flow Kiyotaki Natural Trail  
20min ↓ About 1km
  - ②Nagasaki Ishigumi-dori Street  
15min ↓ About 700km
  - ③Yama-jinja Shrine & Oddly-Shaped Rocks  
30min ↓ About 1.7km
  - ④Benzaiten  
5min ↓ About 400m
  - Place for attaching & removing tire chains

Total traveling time: 1 hour 15 minutes  
Total distance: About 4.5 km

## ●Kannabe Lava Flow Course

### ① Hyogo Prefectural Tajima Dome (Start)



Sports and other various events are held at Tajima Dome, known for its roof and outer wall which open 100 degrees. The floor space inside is almost as large as Koshien Stadium (Hyogo's most famous stadium). The dome's design features images of Mt. McKinley, where Naomi Uemura, an adventurer who was born in Hidaka, Toyooka City, lost his life in mountaineering. (Info) 0796-45-1900

### ② Nagasaki Ishigumi-dori Street



Route 482, which runs from Kiyotaki Elementary School in Tochimoto to the Yamanomiya district is lined on both sides by stone walls made of basaltic lava and scoria, which erupted mainly from Mt. Buri. Some parts of the stone walls are built by taking advantage of the natural lava flow itself. Can you find them?

### ③ Yama-jinja Shrine & Oddly-Shaped Rocks



In Yama Shrine in the Yamanomiya district, there is a forest of Japanese cedars and zelkova trees that is over 400 years old. This shrine is dedicated to the god, Oyamazumi-no-kami. Sandstone from the Hokutan Group (layers of sediments from the Miocene epoch) can be observed in the riverbed near the shrine. Buri lava is exposed around the cliff in the south, while Hokutan Group rhyolite is exposed around the cliff in the north.

### ④ Benzaiten



In the upper reach of the drainage canal of Ishii power plant, Benzaiten is enshrined just by the source of a spring from the Kannabe district. There is a big lava tunnel on the opposite bank.

### ⑤ Kannabe Lava Flow Kiyotaki Natural Trail



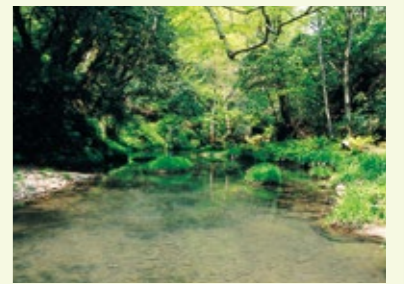
Lava which erupted from Mt. Kannabe flowed about 15km along the Inamba River and reached the Maruyama River downstream. The lava flow and river erosion created some wonderful scenery. The 5 km route between Tawaradaki Waterfalls near Mt. Kannabe to Jugodaki Waterfalls features waterfalls and deep water and provides an ideal setting for walking. There are many places of scenic beauty such as Tatamidaki Waterfalls, Tanadakodaki Waterfalls and Dorobuchi.

### ⑥ Nidantaki Waterfalls Lava Knob Area



Nidantaki Waterfalls consists of two waterfalls, 4 m and 5 m high, respectively. It is one of the most beautiful waterfalls in the Kannabe lava flow area, fringed with wisteria, maple trees and bamboo. Lava lump is a hollow stretch of basalt that rises up in the shape of a horse's back 34 meters long and 8 meters wide. It was designated as a Hyogo Prefectural Natural Monument in 1967.

### ⑦ Mabo Valley Area



There were once some gold veins in Kannabe. "Mabo" is from a word in the local dialect "Mabu," meaning mine tunnels. Hattandaki Waterfalls (23 m) is located at the furthest point upstream of the Mabo Valley area. It is also formed of basaltic lava.

## ●Kannabe Volcano Course

### ① Kannabe Highlands Roadside Station



Kannabe Highlands Roadside Rest Area is the base for touring around Kannabe. It houses a restaurant called "Kannabe," a local specialty shop, tourist information, and a hot springs facility "Yutorogi," which is reputed for its skin-beautifying properties. (Info) 0796-45-1331

### ② Iwakura Ancient Tomb

It is thought that Iwakura Burial Mounds are remains from the Kofun ("old mounds") period in Japanese history (mid 3rd century—end of the 7th century). Several burial mounds, which yielded a Japanese sword and other artifacts, are to be found in the area around here. Visitors can see inside the mounds and learn about their typical internal structure. Other remains in Kannabe from the Jomon period (16,500-3,000 years ago) show that people have lived on kuroboku soil (black volcanic ash soil) since ancient times.



### ③ Mt. Kannabe Scoria Cone and Crater



Mt. Kannabe (469.5 m) is the newest volcano in the Kansai Region. It is thought to have erupted between 10,000-20,000 years ago. There is a volcanic vent with a circumference of 750 m at the peak of the mountain.



### ④ View from Mt. Kannabe (from north to east)

The east side of the slope of Mt. Kannabe has been converted into a ski resort. The gentle slope of the mountain made of scoria is at what is called the angle of repose (where the rocks on the slope maintain their position without falling down). Tajima Dome and monogenetic volcanoes (volcanoes that only erupted once) such as Mt. Buri are visible to the east. In the north, vegetable fields that make use of kuroboku soil spread out beneath the ski resort. Visitors can enjoy skiing in winter as well as paragliding and grass skiing in summer here.



### ⑤ Cross-Section Surface: Scoria Layer



Mt. Kannabe is a scoria cone formed when the lava was caught in scoria (black volcanic rock made from drops of frothy lava). Since the bigger scoria stones were removed for bonsai, the strata became vertical cliffs. The volcano is designated as a Hyogo Prefectural Natural Park and it is prohibited to remove stones from the park. An outcrop of scoria allows visitors to observe the layers which show that the mountain has erupted repeatedly.

### ⑥ Fuketsu Cave



Lava caves formed by volcanic activity are called lava tunnels. After a volcano erupts, the lava flow gradually cools down and solidifies. In this process, liquid lava flows out through the solidified lava and creates cave-like lava tunnels. Another cause is eruptions of high-pressure gas within the lava. Because the inside of Mt. Kannabe's lava tunnels maintains an even temperature of 8°C throughout the year, local people made use of them as natural refrigerators.

## Quiz-Answer

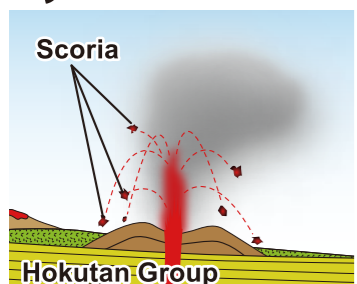
①30 degrees (This is the angle of repose – the steepest angle by which the material on the slope remains balanced without falling or sliding down)

②The big rocks sticking out of the ground under the stone walls are actually lava.

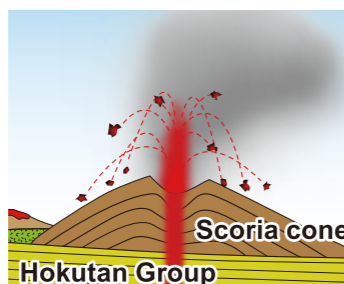


## Geo-Column①

### Mt. Kannabe was formed by an accumulation of scoria



During an eruption, magma spurts out. When it cools down and solidifies, it forms scoria and accumulates around the volcanic vent.

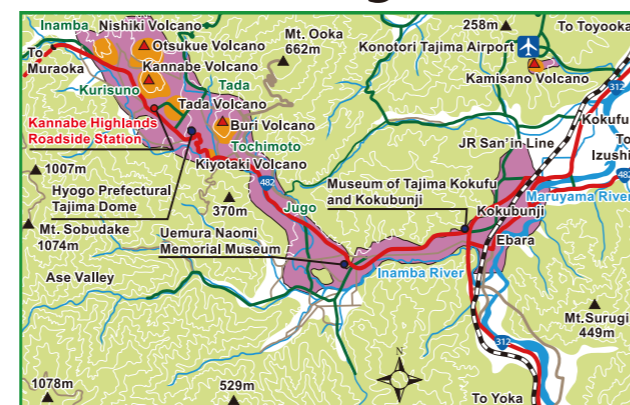


Volcanic activity continued and a scoria cone was formed due to scoria sedimentation.

One can observe reddish-brown, rugged rocks with many bubble-like cavities around the Kannabe Highlands. These are called scoria, magma that was cooled down and became solid after an eruption of the Mt. Kannabe volcanic group. The reason scoria has many holes is that the gas that was once in the magma has since escaped. Scoria rising from the volcanic vent accumulated on the surroundings and formed volcanoes (scoria cones) such as Mt. Kannabe and Mt. Otsukue.

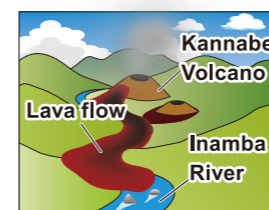
## Geo-Column②

### Lava flow along the Inamba River



Geological distribution around Kannabe Volcano  
Produced by Research Section for Geo-environment, Institute of Natural and Environmental Science, University of Hyogo [This map is edited on the basis of an engineering geological map produced by Hyogo Prefecture in 1996.]

The following geographical features are all distributed around the Kannabe Highlands: lakes and rivers which were formed during the formation of the Sea of Japan, rock strata formed in the sea (the Hokutan Group), more recent volcanoes that overlap the Hokutan Group (such as Kannabe Volcano) and the lava which erupted from these volcanoes. It is thought that the Kannabe volcanic group erupted between about 700,000-10,000 years ago. The most recent volcano is Kannabe Volcano, which still has a volcanic vent at its top.



More recently-formed volcanoes and lava

- : Volcano
- : Volcanoes with complete shapes
- : Distribution of lava flow erupting from volcanoes
- : Hokutan Group (Strata of the age during the formation of the Sea of Japan)

## Geo-Column③

### Distribution of scoria and land usage



Cabbage fields making use of kuroboku soil

There is a distribution of kuroboku soil covering the scoria strata around Kannabe Volcano. Kuroboku soil has good drainage and is ideal for growing vegetables and as such, highland vegetables are grown in the area. Water filters underground through scoria strata and springs out in the lower reaches. People raise young trout and grow wasabi (Japanese horseradish) making use of the rich spring water around Jugo.



Production: The San'in Kaigan Geopark Promotion Council & Research Section for Geo-environment, Institute of Natural and Environmental Sciences, University of Hyogo