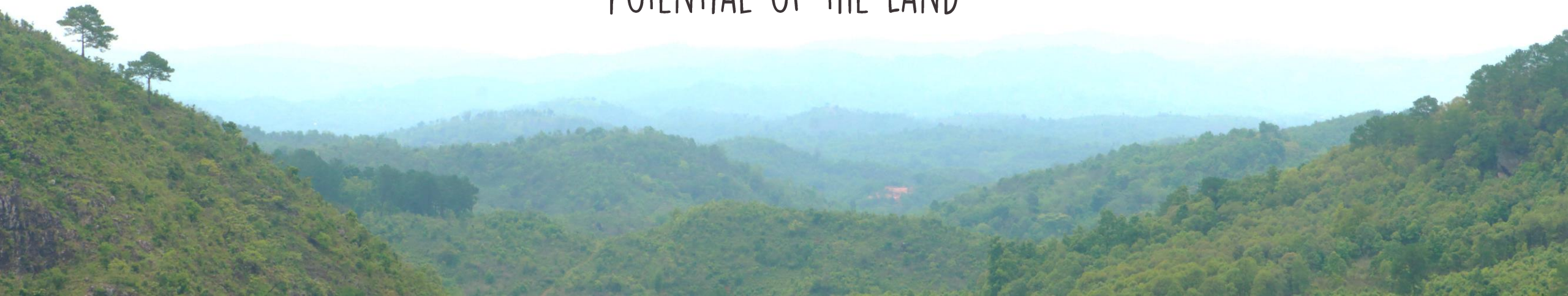
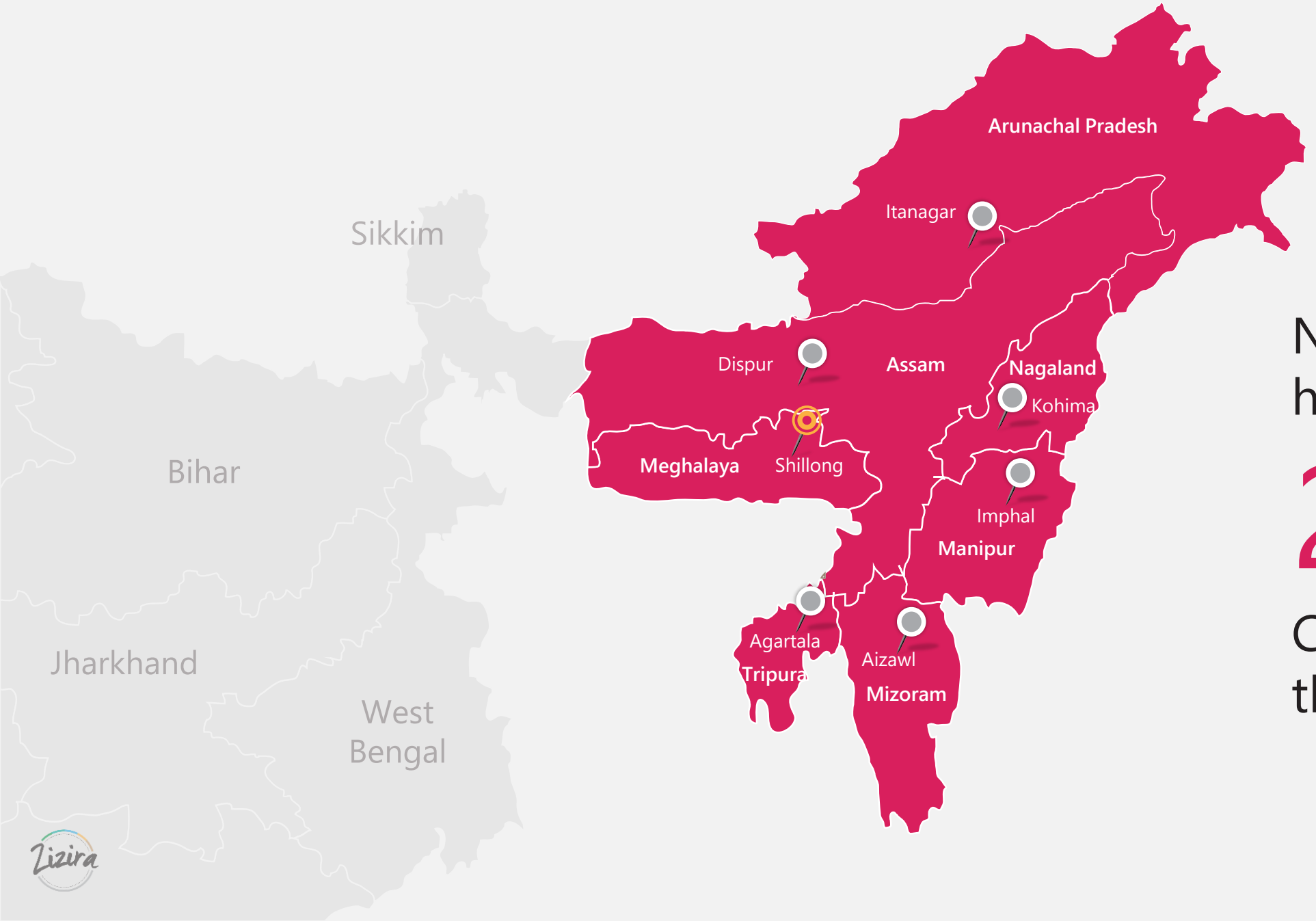
Zizira

MEGHALAYA

POTENTIAL OF THE LAND





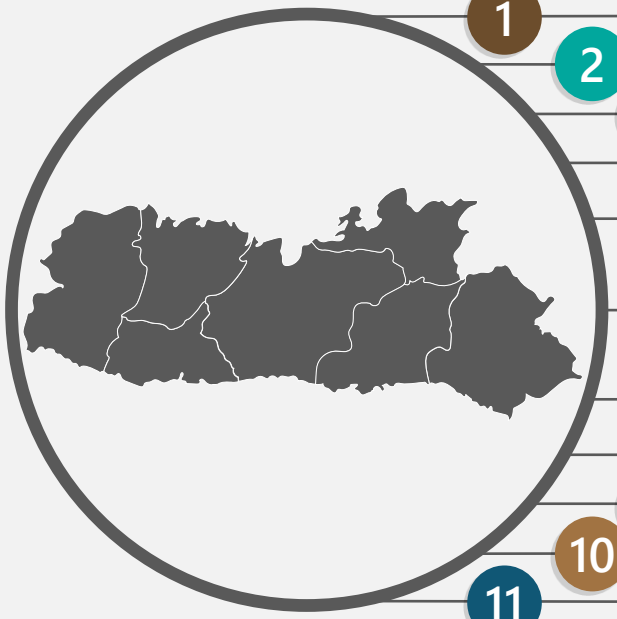
Northeast India has only

2%...

Connectivity to the rest of India

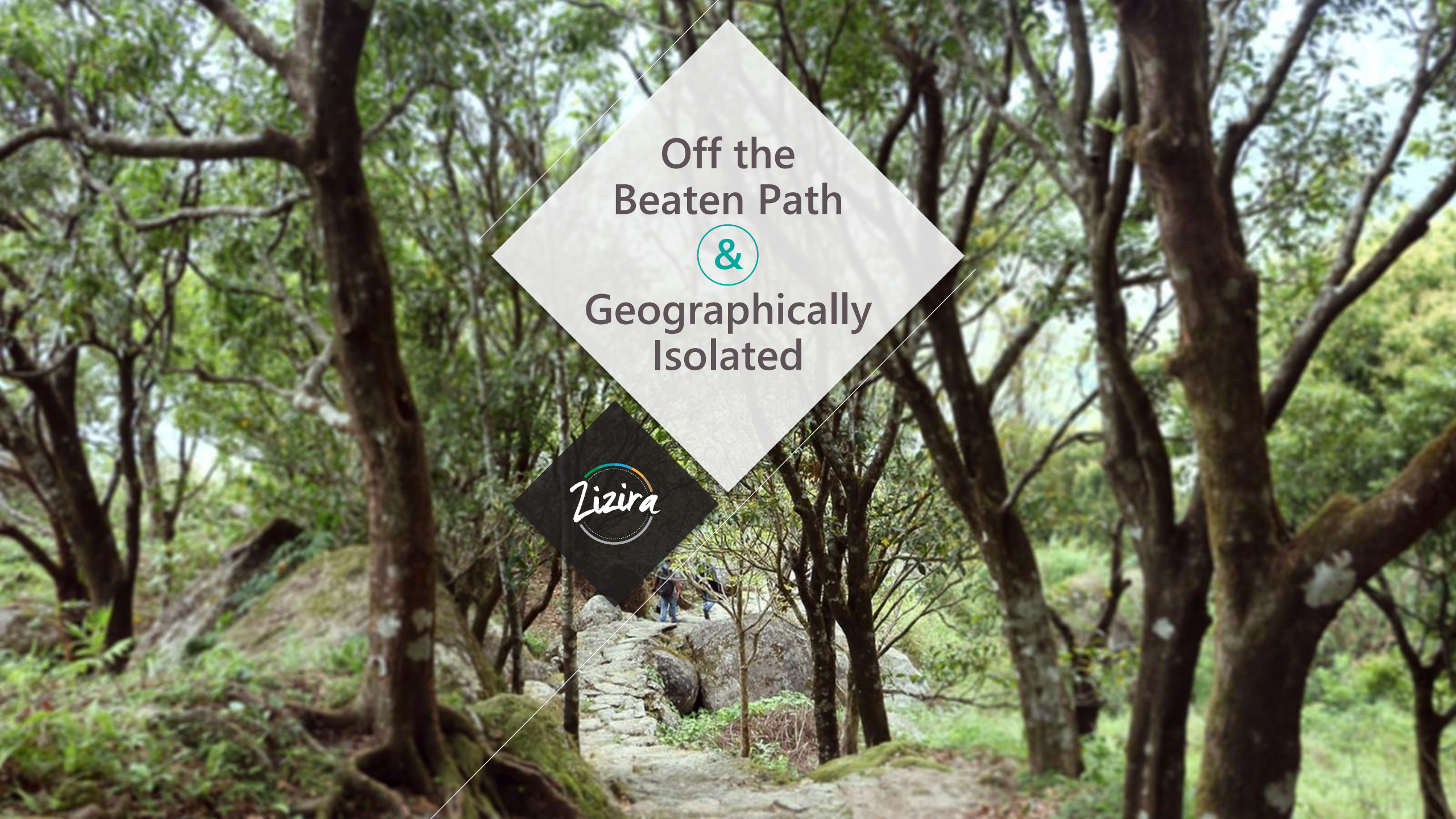
Interesting facts about
MEGHALAYA

Interesting facts about MEGHALAYA



1. **Area**
   22,429 Km^2
2. **Literacy**
   75.48%
3. **Abode** of clouds
4. Scotland
   of the East
5. **Mawlynnong**
   is Asia's **cleanest village**
6. The **first species of Citrus** fruit was discovered within the **Nokrek region of Garo Hills district of Meghalaya**
7. **Mawsynram**
   is the wettest place on earth with rainfall as high as **1,200 cm**
8. **Gleneagles** of the East - The largest and the only **natural golf course in the whole of Asia**
9. **India's highest** plunge waterfall **Nohkalikai Falls**
10. **India's longest cave** system of more **22 km** is located in Jaintia Hills
11. **Cherrapunji**
    holds the record for most rainfall in a calendar month

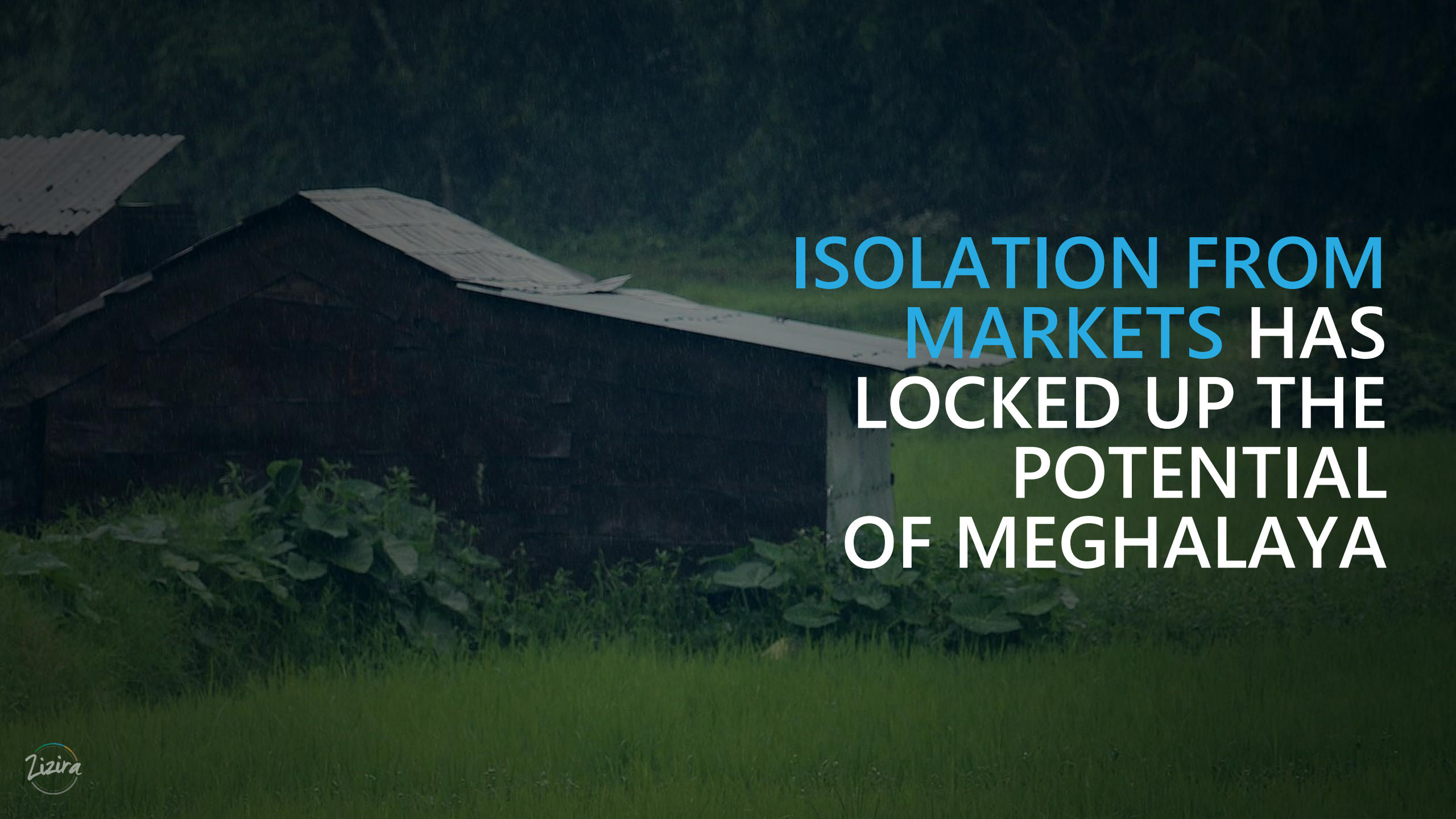
Zizira


Off the
Beaten Path
&
Geographically
Isolated
Zizira


A COOL **RAINY** CLIMATE...

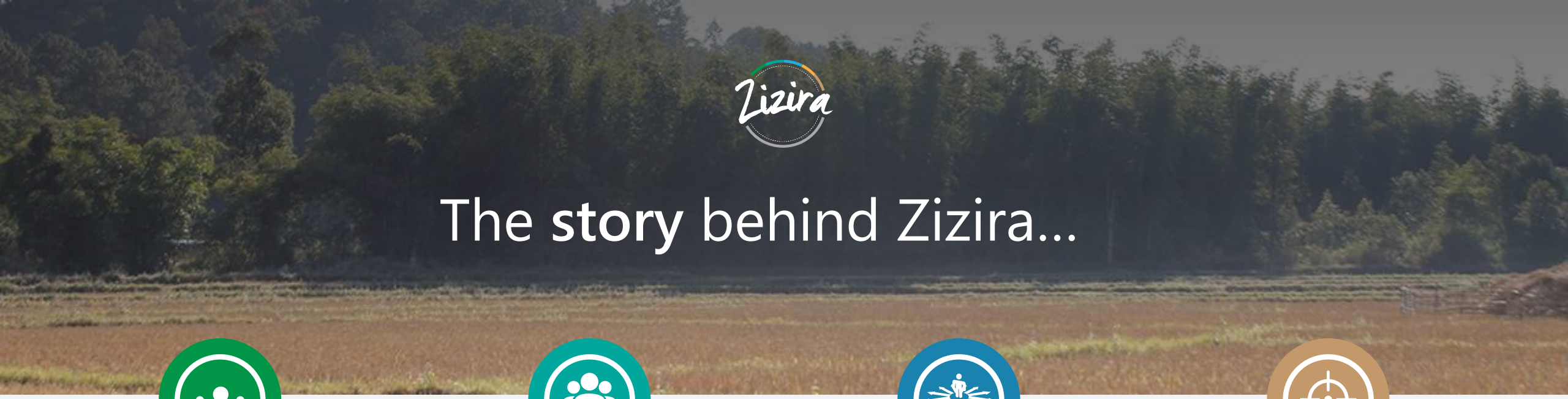

MEGHALAYA,
WHERE SPICES,
HERBS, FRUITS,
MEDICINAL PLANTS,
NUTS AND TEA
CAN GROW
Zizira


SUBSISTENCE
FARMERS GROW
POTATOES, RICE,
VEGETABLES
ON SMALL PLOTS
OF LAND
Zizira


ISOLATION FROM MARKETS HAS LOCKED UP THE POTENTIAL OF MEGHALAYA


ZIZIRA
IS RELEASING
THIS POTENTIAL
Zizira


HOW ZIZIRA
CAME TO BE AND
WHAT WE, AS A
TEAM, WANT TO
ACHIEVE...



The **story** behind Zizira...

Team Zizira carved out of Team Chillibreeze

The vision of Chillibreeze

...committed to transforming lives, creating wealth, providing purpose and adding value to customers, employees, families and community

What we believe possible

The Chillibreeze team of about 70 people believes that as a healthy company, we can be a role model throughout Northeast India

Our vision for Zizira

...to make a difference by pioneering new ideas, opening markets and proving the potential of the people and the land of Northeast India. To be an example leading the way to a brighter future for farmers and their families

Zizira Vision

Make a Difference to farmers and Northeast India by pioneering

New ideas

Opening markets

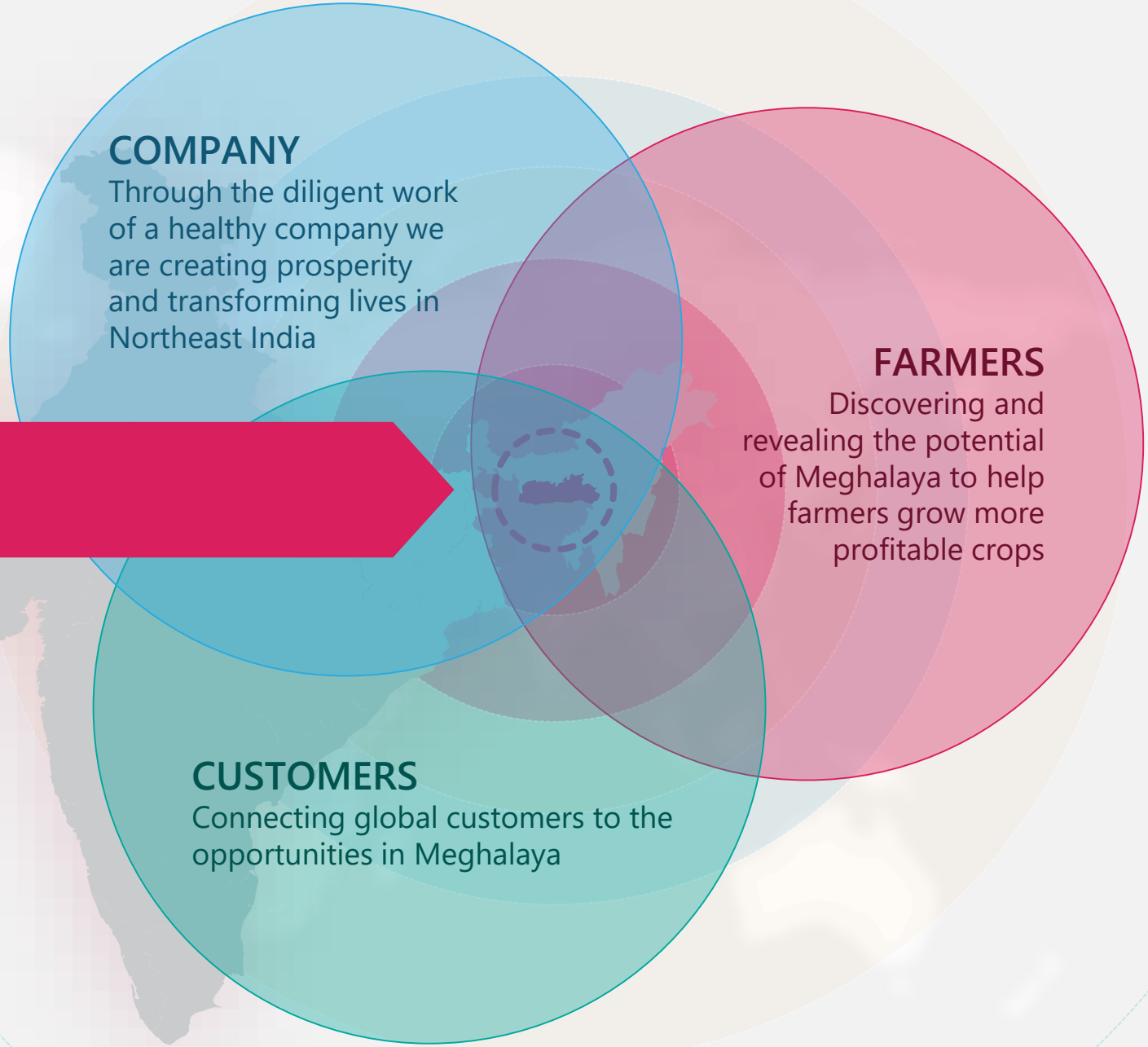
Proving the potential

...of the people and the region.

Set an example by leading the way for a brighter future for farmers and their families.

Zizira Vision

OPENING MARKETS



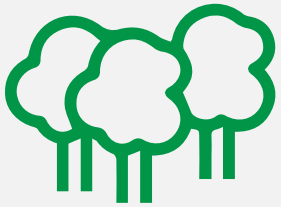
We dream **BIG**

We wish to showcase **Northeast India**

And release the Potential of farmers

Zizira

Things going for Meghalaya



Forest Cover

Forests are a treasure house of valuable products such a **timber, resin, tannin, gums, shellac, fiber, latex, essential oils, fats, edible fruits, honey** and a large number of **medicinal** plants.

About **70%** of the state is forested, of which **9,496 sq**. km is primarily subtropical forest.

Air Quality

"The overall air quality in Meghalaya is **good** except for those areas in industrial estates and where vehicular movement is at its peak"

-Meghalaya State Pollution Control Board, *14th Dec 2015.*

Abundant Water

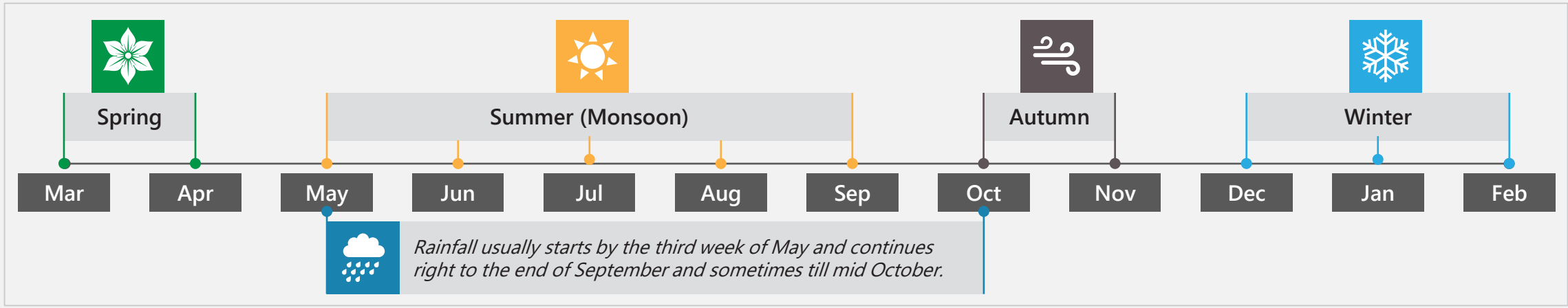
The average annual **rainfall** is about **281.8 cm.**

Many farmers depend on springs for hydrating their fields. A big spring mapping exercise is being conducted by MBDA.

The state has **25 rivers**, of which **16 drain** into the Brahmaputra basin and the other **9** to the Meghna Basin.

Zizira

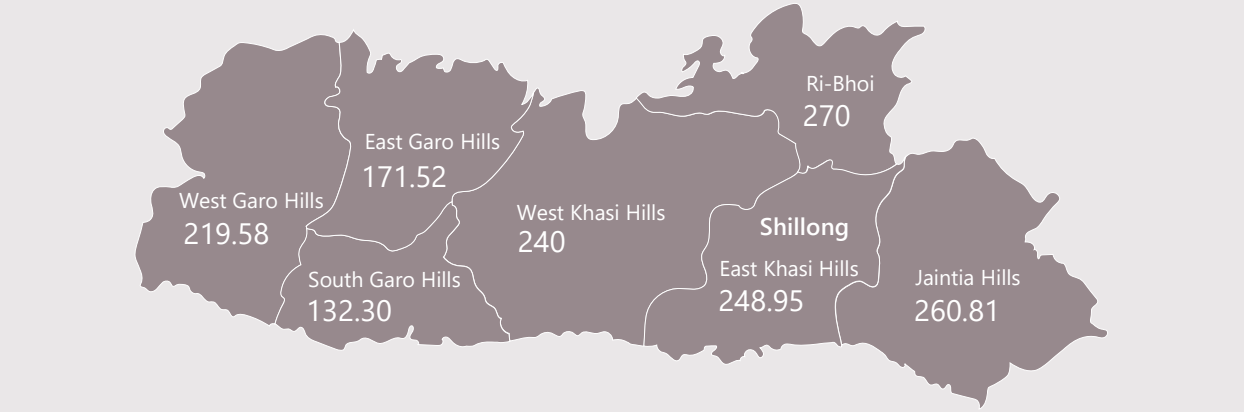
Rain plays an active role in the agricultural sector



Meghalaya is in the top three with respect to rainfall

State	Average annual rainfall (cm)
Andaman and Nicobar Islands	296.7
Arunachal Pradesh	278.2
Assam	281.8
Meghalaya	281.8
Nagaland	188.1
Manipur	188.1

District wise annual rainfall in Meghalaya measured in cm (2013)



Things going for Meghalaya

Groundwater

Owing to the abundance of rain fed rivers and the abundant rains, the groundwater of the state is almost untouched.

Meghalaya has an available reservoir of 1.60 billion cubic meters of groundwater.

Rich Biodiversity

One of the richest in biological values with vegetation types ranging from tropical rain forest in the foothills to alpine meadows.

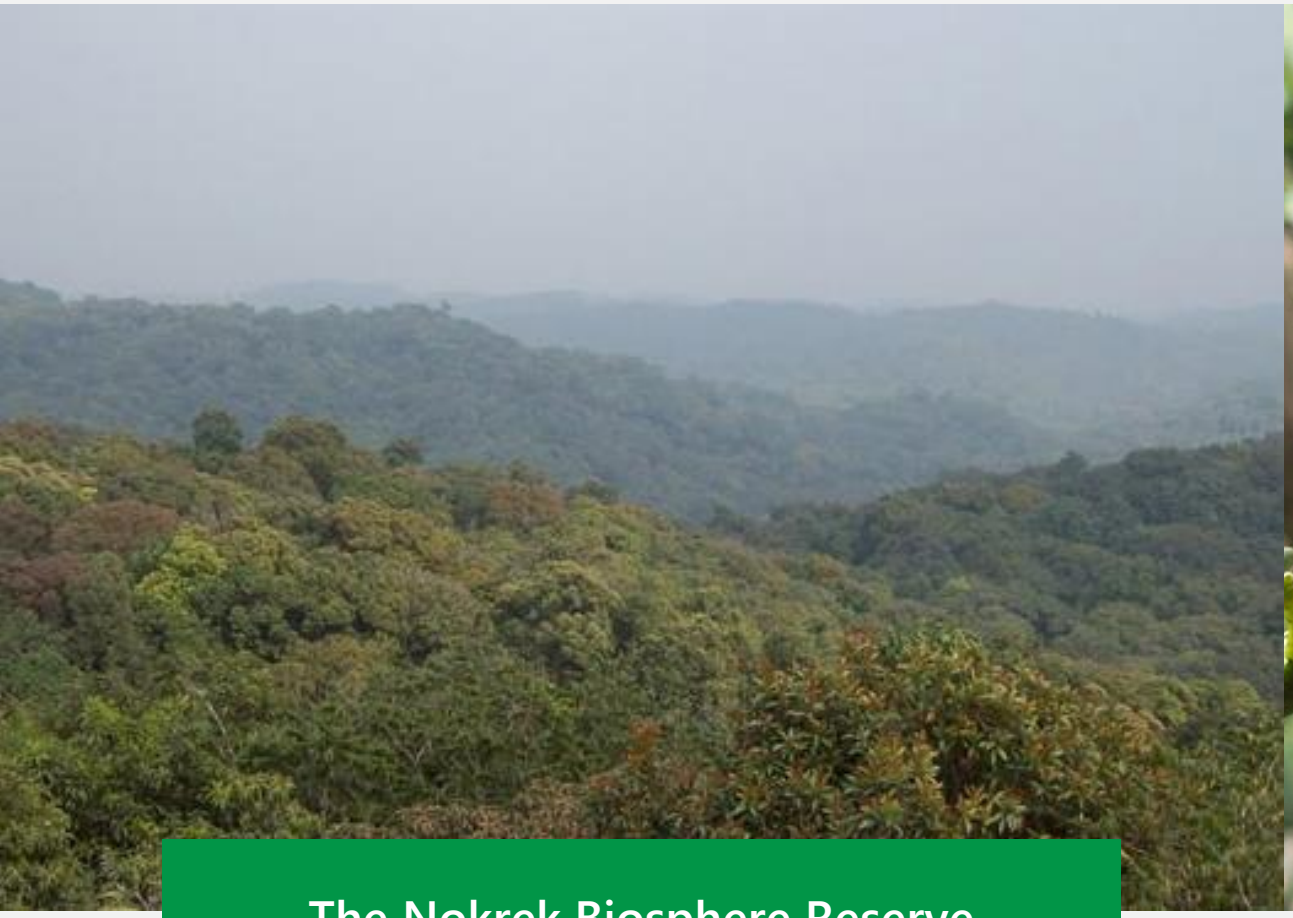
Known as a key area for biodiversity conservation due to its high species diversity and high level of endemism.

Plant Diversity

Rich in plant diversity with 3,128 species of flowering plants including 1,237 endemic species and several valuable medicinal plant species.

Zizira

Meghalaya’s rich biodiversity



The Nokrek Biosphere Reserve
is a UNESCO recognized biosphere reserve

Citrus Indica
Mother genome of citrus fruits

FARMING
as a way of life

Agrarian

About **83%** of the population in Meghalaya depends on **agriculture** for livelihood and survival.

This also means that agriculture has been part of the **people's culture** and tradition for generations.

Family farms

Most of the farmers operate out of family farms and have been farming **for generations** and are willing to do hard work.

These family farms have continued to use the **same techniques** they learnt from their forefathers.

Soil Quality

Meghalaya's soil is primarily **rich in organic carbon**, which is a measure of nitrogen supplying potential of the soil.

The **soils favor** growing of a **wide variety of forest trees, plantation crops and orchards** like areca nut, cashew, tea, pineapple, citrus, black pepper and banana etc.

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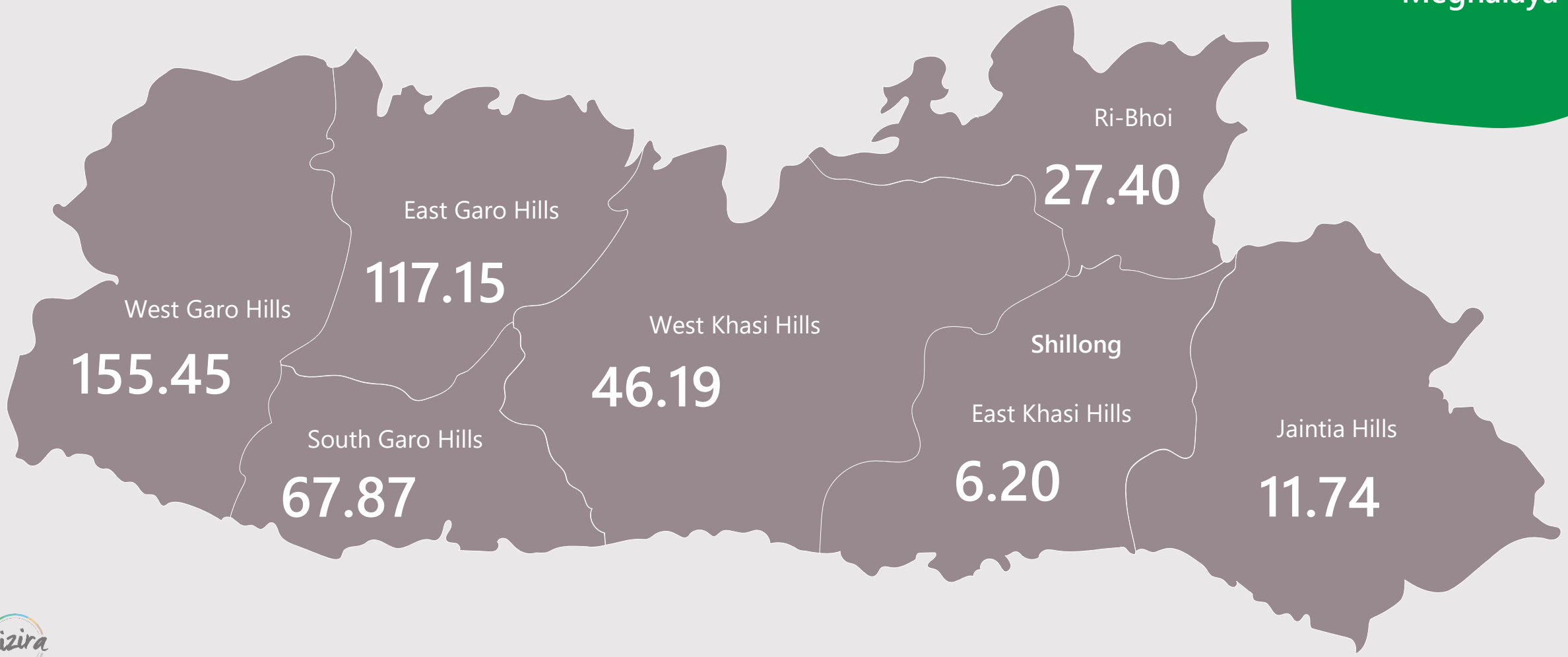
MEGHALAYA's farming practices

District wise area (sq. km) under Jhum cultivation in Meghalaya



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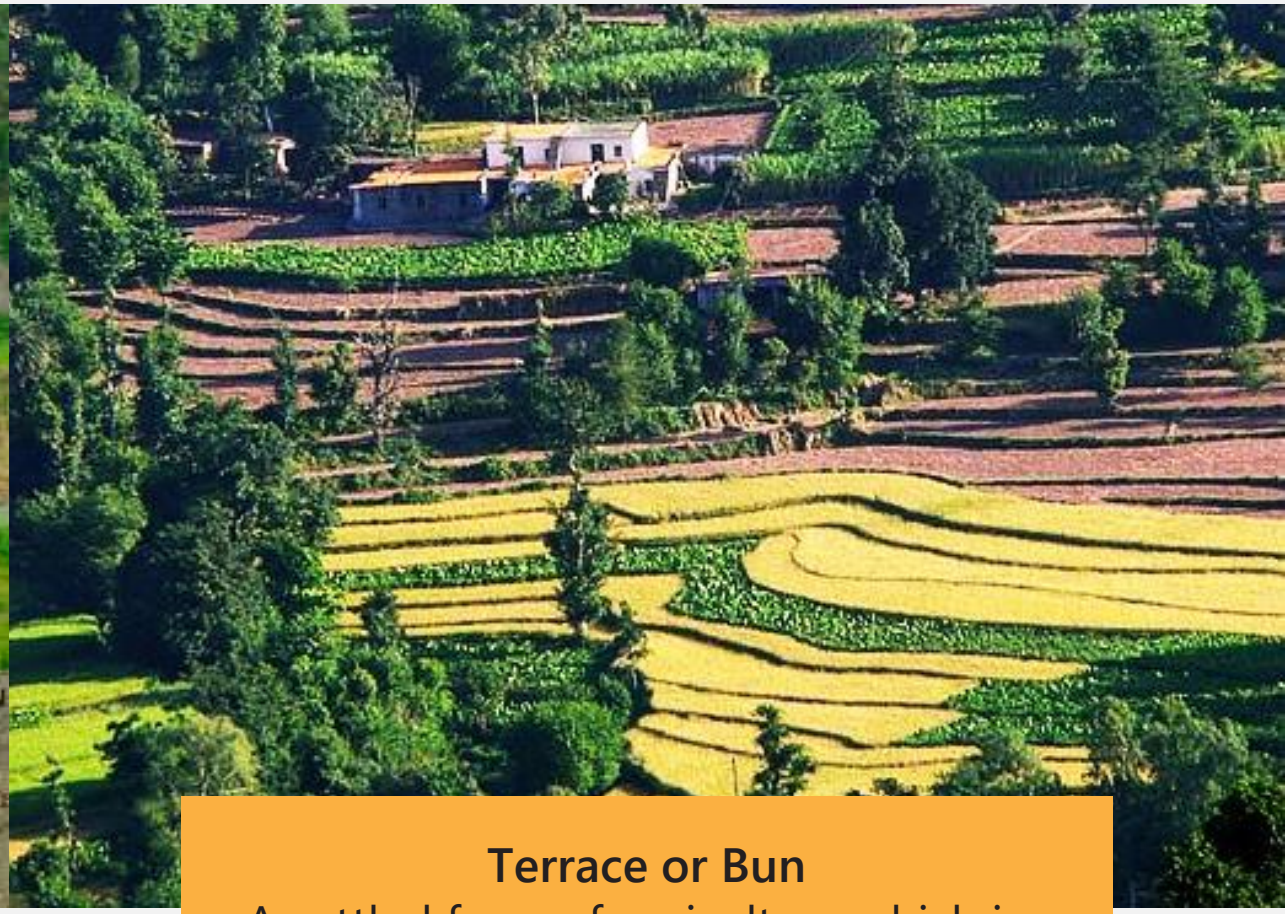
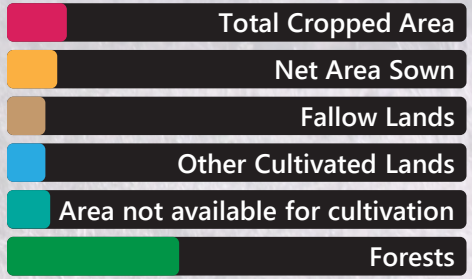
Meghalaya’s farming practices

Jhum
The fallow cycle is now at 3 to 5 years where earlier it was up to 20 years

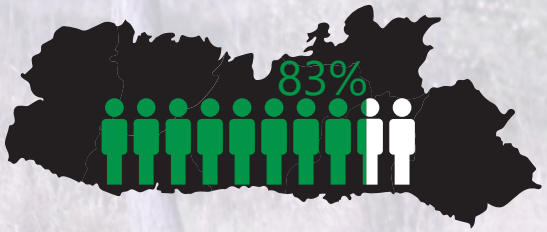


Terrace or Bun
A settled form of agriculture which is a far more sustainable and benign

Farming in Meghalaya

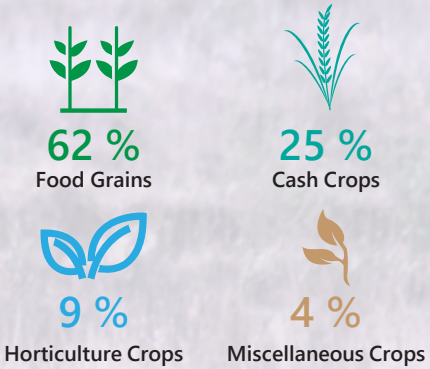


Percentage to Total Land Area (22,429 KM^2)



83% of the population depends on agriculture for livelihood

48% of the total geographical area under cultivation



Share of Different Crop Types in Meghalaya

Shifting Cultivation (*Jhum or Swidden*)

Tracks of forest land are cleared and used for cultivation. Fallow cycle varies between 4-6 years, after which the farmer returns to the same plot

Terrace or *Bun* Cultivation

Bench terraces or Buns are constructed on hill slopes and vegetables and grains are then grown here. This allows for a more sustained form of farming with proper drainage of rainwater and retention of soil

Crops Grown

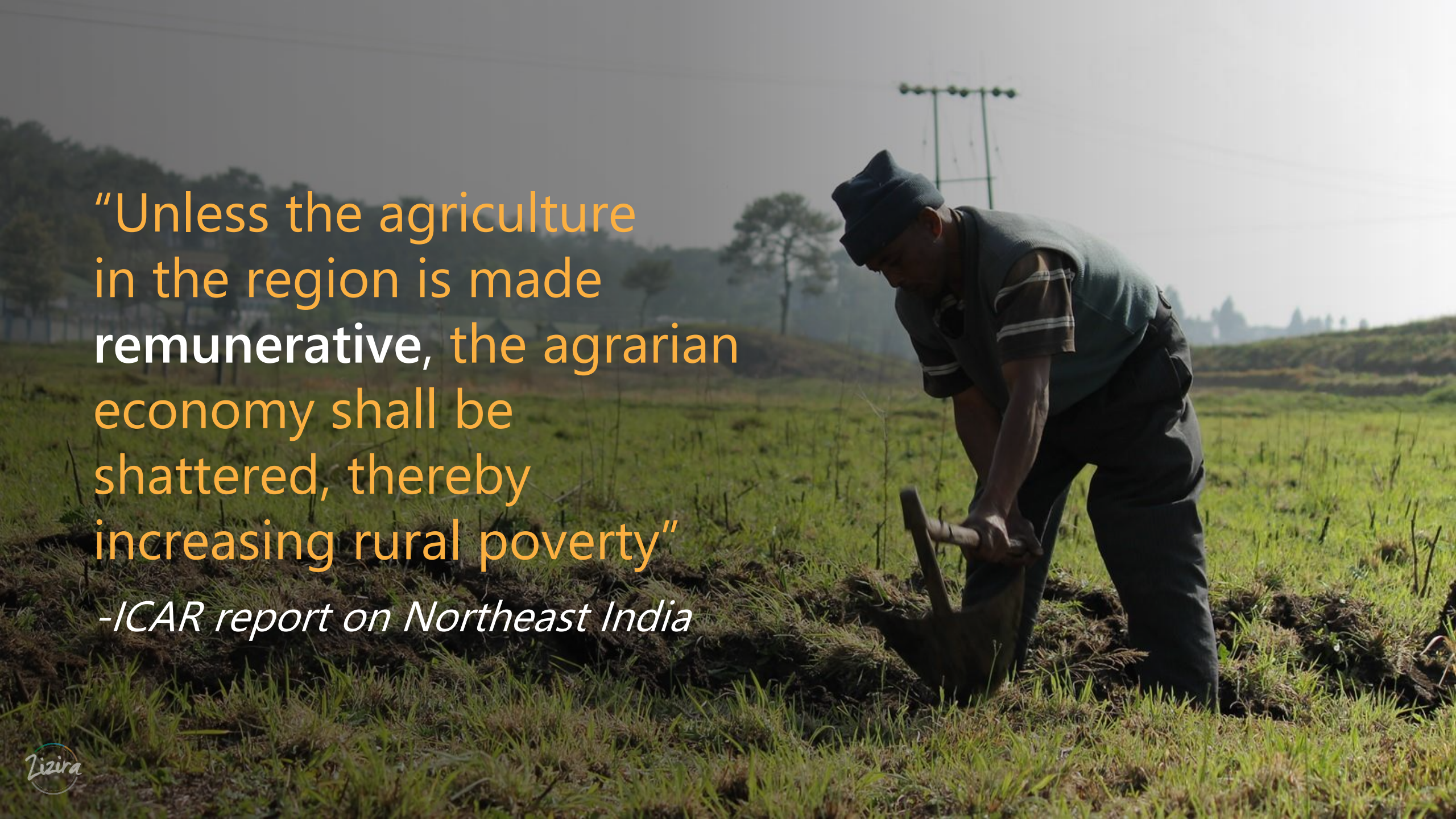
Food Grains: Rice, Maize, Wheat

Cash Crops: Potato, Ginger, Turmeric, Black Pepper, Areca Nut, Jute, Mustard

Horticulture Crops: Citrus, Guava, Jackfruit, Bananas, Papayas

Misc. Crops: Tea, Coffee, Cashews, Oilseeds, Sesame

Zizira


“Unless the agriculture in the region is made **remunerative**, the agrarian economy shall be shattered, thereby increasing rural poverty”
-ICAR report on Northeast India

There is a push to improve farming

One of the recent developments in the state is that the government is no longer supplying chemical based fertilizers, pesticides and herbicides as of 2015. But then again they are easily available in the market and here again, comes another vicious cycle. The market that we currently have has only so much capacity to absorb a certain amount of produce and due to diseases and pestilence, naturally raised produce lack the advantage that chemically intervened crops have. So farmers have to a tough choice to make between going chemical and staying traditionally organic.

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CHANGE IS SLOW

and the potential remains locked up…

- ✓ NE India remains remote and isolated
- ✓ Transportation links are poor and access to markets is limited. It is common to hear of farmers having to carry their loads for hours before reaching the market place to sell
- ✓ Storage and refrigeration are two other factors which play havoc with the market prices for the farmers
- ✓ Most if not all the farmers fail to realize the potential right under their feet

Zizira

SIGNIFICANT issues exist...

Technology

Lack of high-yielding crop varieties for diverse climate and altitude areas. Improvement and standardization of farming techniques.

"Crop yields in India are still just 30% to 60% of the best sustainable crop yields achievable in the farms of developed and other developing countries."

- World Economic Forum

Storage

Lack of adequate storage or refrigeration facilities leaves farmers with just two options – either sell off surplus produce at absurdly low prices or simply dump them.

"And poor infrastructure and unorganized retail means India has one of the world's highest levels of post-harvest food loss."

- World Economic Forum

Processing

Meghalaya has 946 **unorganized** manufacturing enterprise in food processing industry.

"The Arabica variety of coffee grown in the state fetches less than the desirable price due to improper drying methods."

- Coffee Board of India official

Zizira

SIGNIFICANT issues exist...

Market

Surplus produce finds little or no outlet at all

Low and volatile income for farmers

Existence of multiple layers of middlemen which ends up in the farmer only breaking even

Absence of proper standardization or grading of the produce

Prices

Meghalaya currently has only two government regulated markets in comparison to Andhra Pradesh (894), Maharashtra (880) and West Bengal (687)

Transportation

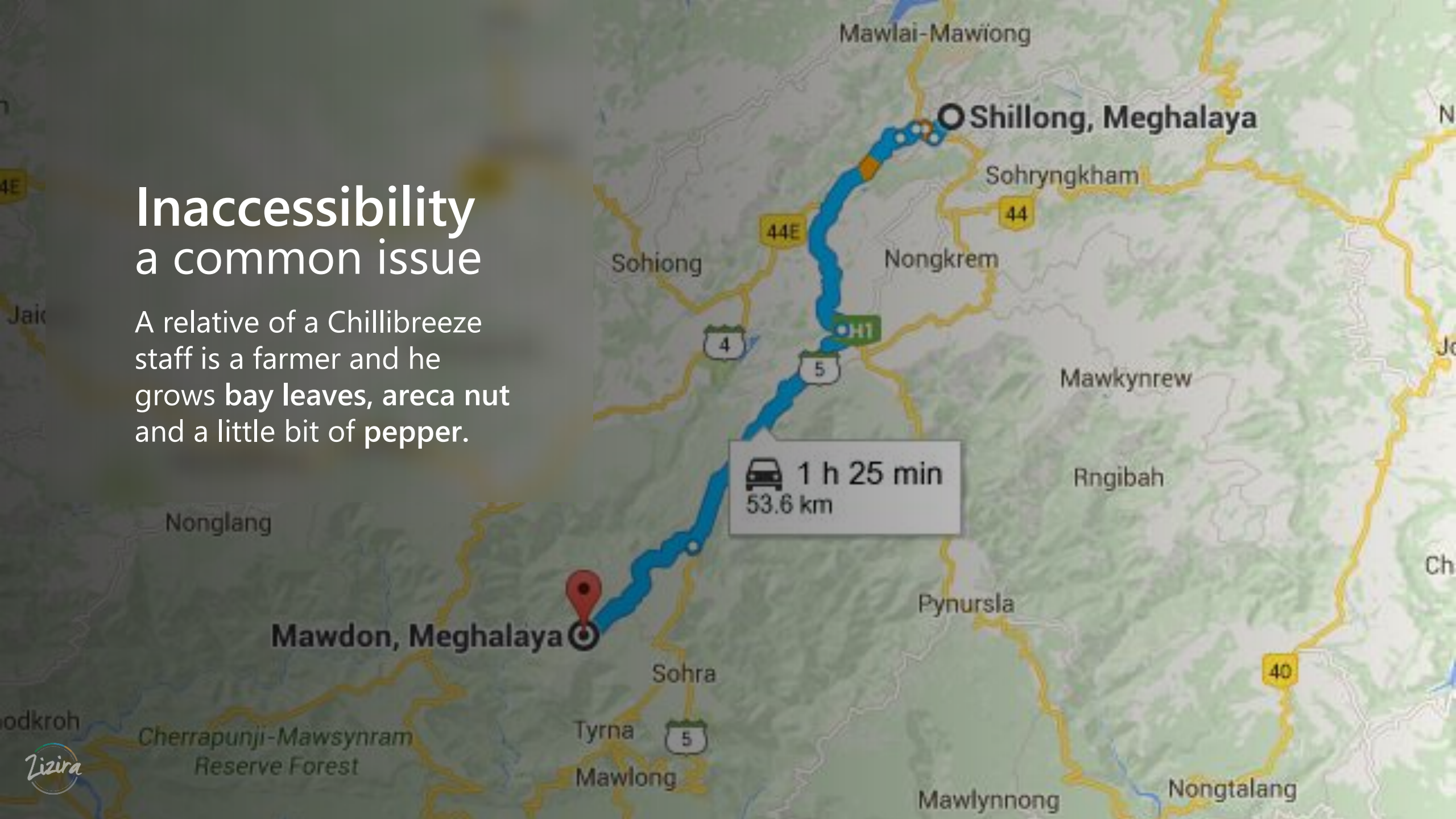
Inadequate or absent facilities to transport produce, raw materials and equipment

"We have to trek long distances and at times, through steep slopes, to bring manure to our fields."

- Local farmer

Inaccessibility
a common issue

A relative of a Chillibreeze staff is a farmer and he grows **bay leaves, areca nut** and a little bit of **pepper.**



Inaccessibility
a common issue

He farms in a place called **Mawdon**, which is **about 2 hours** from Shillong. But that is not before he brings his produce to a loading area.

Inaccessibility
a common issue

This farmer is very old now and his three sons are now working the plantation themselves. In order to take their produce to the nearest market, they carry **50 kilo** bags and trek to the next village, **Lawbah**.
This trek is a vertical climb which with their heavy burden takes anywhere between **45 minutes to 1 hour**.

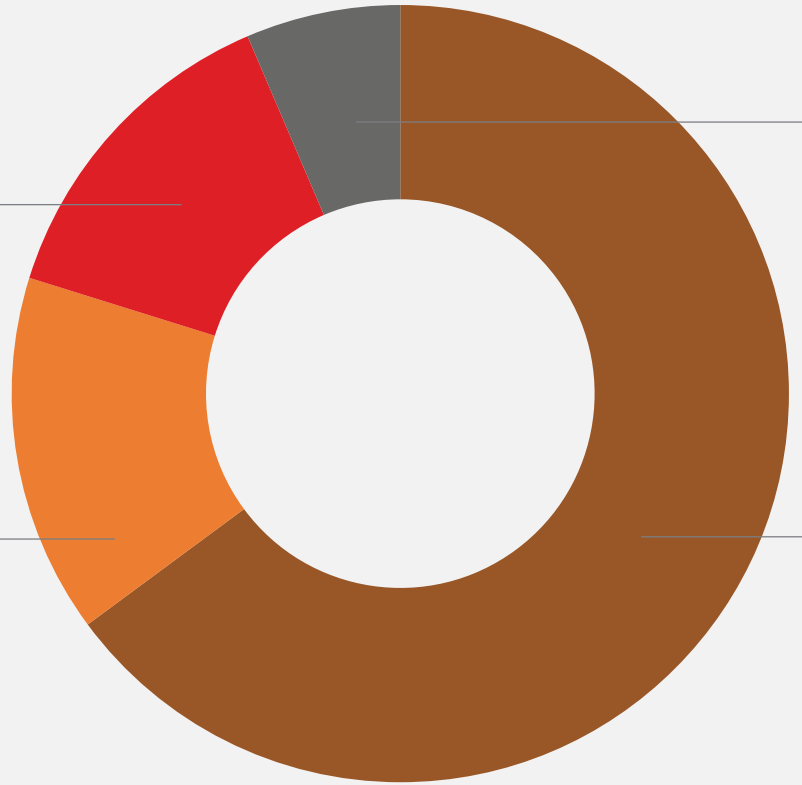

Social Media
Branding
eCommerce
Opening Markets
Global Exposure
Awareness
Internet Marketing
Collaboration

Popular spices in Meghalaya and cultivated area

Area (in hectares) under cultivation and as % of total area under spices (2012-13)

Chillies
2,033 | 14%

Turmeric
2,208 | 15%



Black Pepper
950 | 6%

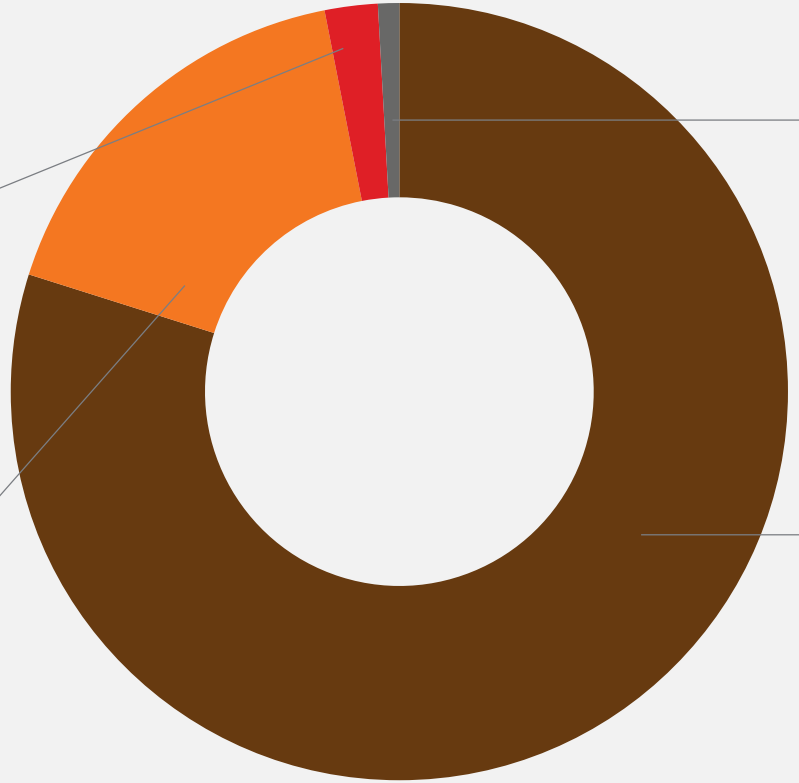
Ginger
9,587 | 65%

Popular spices in Meghalaya and their production

Production (in Metric tonnes) and as a % of total production of spices (2012-13)

Chillies
1,659 | 2%

Turmeric
12,831 | 17%

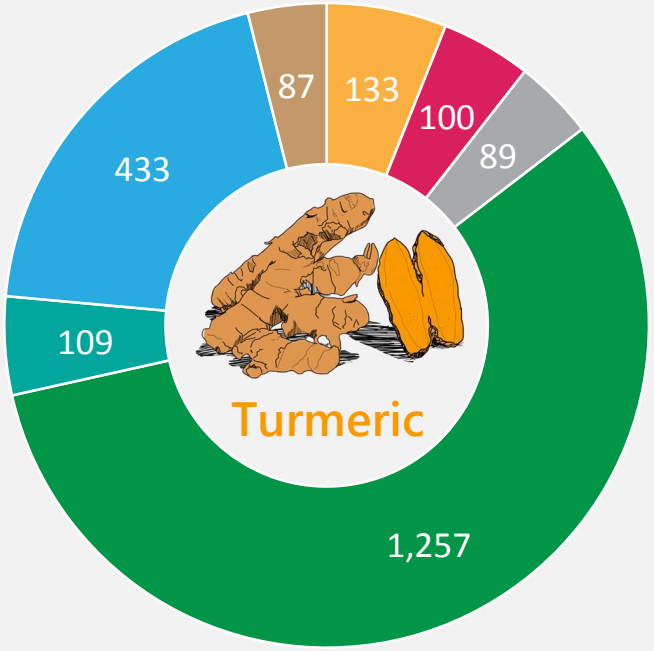


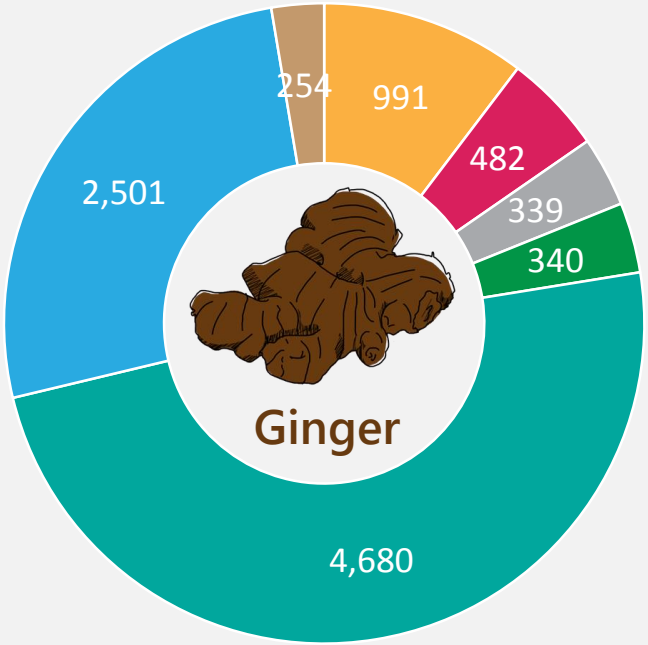
Black Pepper
665 | 1%

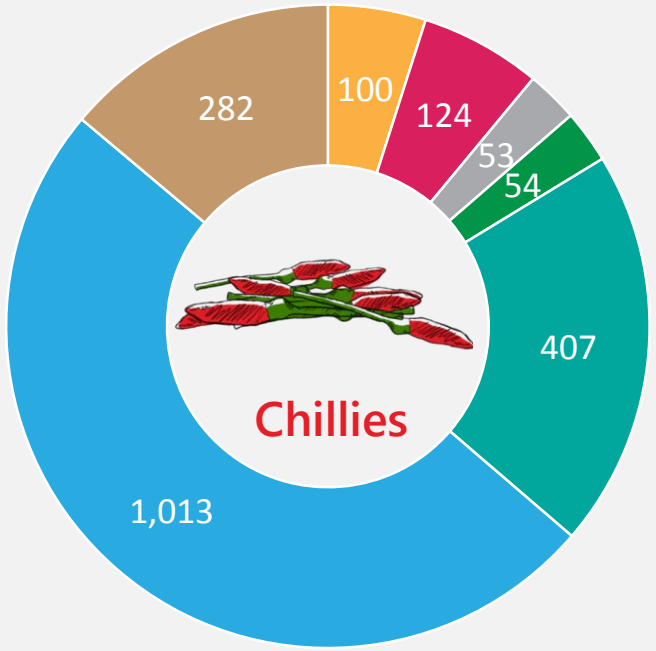
Ginger
60,149| 80%

Distribution of cultivation area (in hectares)

Meghalaya 2012-13







1 Hectare = 0.01 Square Kilometer

- Ri Bhoi
- East Khasi Hills
- West Khasi Hills
- Jaintia Hills
- East Garo Hills
- West Garo Hills
- South Garo Hills

Spice varieties grown in Meghalaya

CHILLI

Hot Chilli:
Synteng hot
NP-46
Jwala

Capsicum:
Chinese giant
Bullnose
Oskosh
California Wonder

Pickle (achar):
Hungarian
Wax
Local Achar

BLACK PEPPER

Panniyur-1

Panniyur-2

LARGE CARDAMOM

Bebo

Golsey

Ramla

Ramsey

Sawney

Varlangey

GINGER

Nadia

Suprada

Thingpui

Poona

Rio de Janeiro

Thinglaidong

Tata

Wynad

TURMERIC

Lakadong

RCT-1

Megha Turmeric-1

Other Spices from MEGHALAYA

Common name: Bengal Ginger
Botanical name: *Zingiber rubens*
Local name: Sying makhir

Common name: Rocambole Garlic
Botanical name: *Allium ophioscorodon rocambole*
Local name: Rynsun khasi

Common name: Aromatic Ginger
Botanical name: *Kaempferia galangal*
Local name: Sying shmoh

Common name: Bay Leaf
Botanical name: *Cinnamomum tamala*
Local name: Sla tyrpad

Common name: Indian Long Pepper
Botanical name: *Piper longum*
Local name: Sohmrit khlaw

Common name: Winged Prickly Ash
Botanical name: *Zanthoxylum khaasianum*
Local name: Jaiur

Zizira


Discovering the
potential of **Meghalaya**
through **exploration**


DISCOVERING
MEGHALAYA
On a Quest to Discover Unique Products of Meghalaya
Zizira

Zizira Discovery: Lakadong Turmeric

Met with ICAR and learnt about the work of Dr. S. K. Barik.

Field visit to meet the farmers of Mootyrchiah Village in Jaintia Hills district of Meghalaya growing Lakadong turmeric. They wanted market support.

Came to know about their Self Help Groups (SHG) that grows the high-curcumin turmeric Lakadong.

Dr. Barik, *a NEHU professor was coaching the SHG group and also helped set up a processing unit in their village.*

Telefax: + 91 364 2570678 (Office)
Mobile + 91 9402507059
E-mail: ak-jha@gov.in

INDIAN COUNCIL OF AGRICULTURAL RESEARCH
ICAR Research Complex for N.E.H. Region
Horticulture Division, Umiam 793103 - Meghalaya

Dr. Anjani Kumar Jha, ARS
Senior Scientist (Horticulture) & I/c Head

Dated: 27.08.2015

RC/Hort-1/ 2014-15/ 1170

Shri Banteilang Shylla
Zizira Organization,
A unit of Chillibreeeze Solutions Pvt. Ltd.
Software Technology Parks of India, Lawmali,
East Khasi Hills
Meghalaya, Shillong 793001
(Mob: 9856627174)

Sub: Quality analysis of turmeric sample for curcumin content- regarding

Ref: Your letter No. Nil dated 11th August, 2015 to the Director, ICAR Research Complex, Umiam

Sir,

With reference to your above letter, please find the analysis report for curcumin content of the turmeric sample supplied by you to our laboratory:

Powdered Sample	**7. 94 % Curcumin**

This is for your kind information and further needful.

Thanking you,

Sincerely yours,

27/8/2015

(Anjani Kumar Jha)

Note: The %age depends on the batch, but this is indicative of high curcumin

Curcumin content tested – 7.94%

ZIZIRA DISCOVERY

Megha Turmeric-1

Developed by ICAR Research Complex of NEH Region, Meghalaya

Through clonal selection from the genotype Lakadong

Tolerant to leaf blotch and leaf spot

Habitat: Suitable for mid hills condition

Maturity: 300-315 days

Average yield: 270 quintals per hectare

Curcumin content: 6.8%

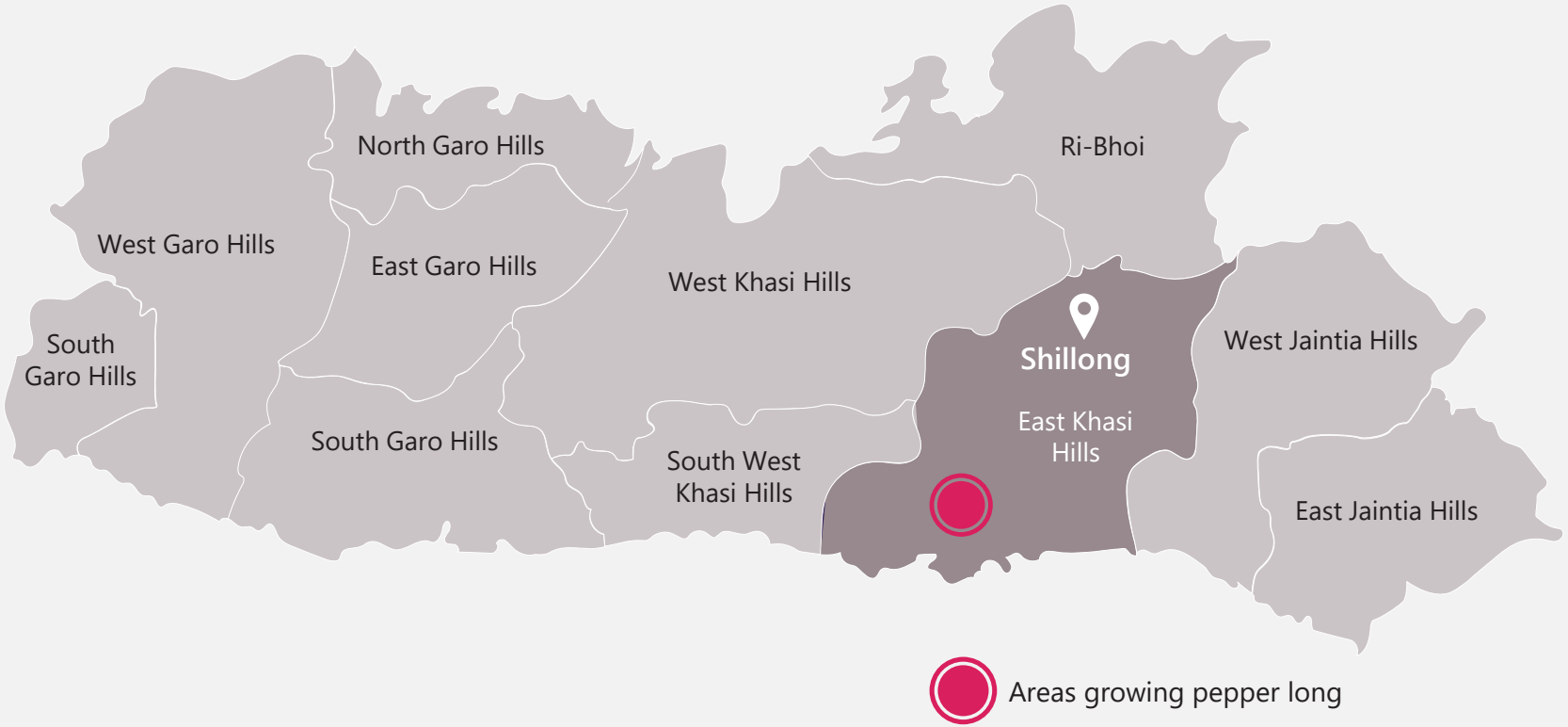
Dry matter content: 16.37%

Essential oil: 5.5%

Zizira Discovery: **Piper longum**

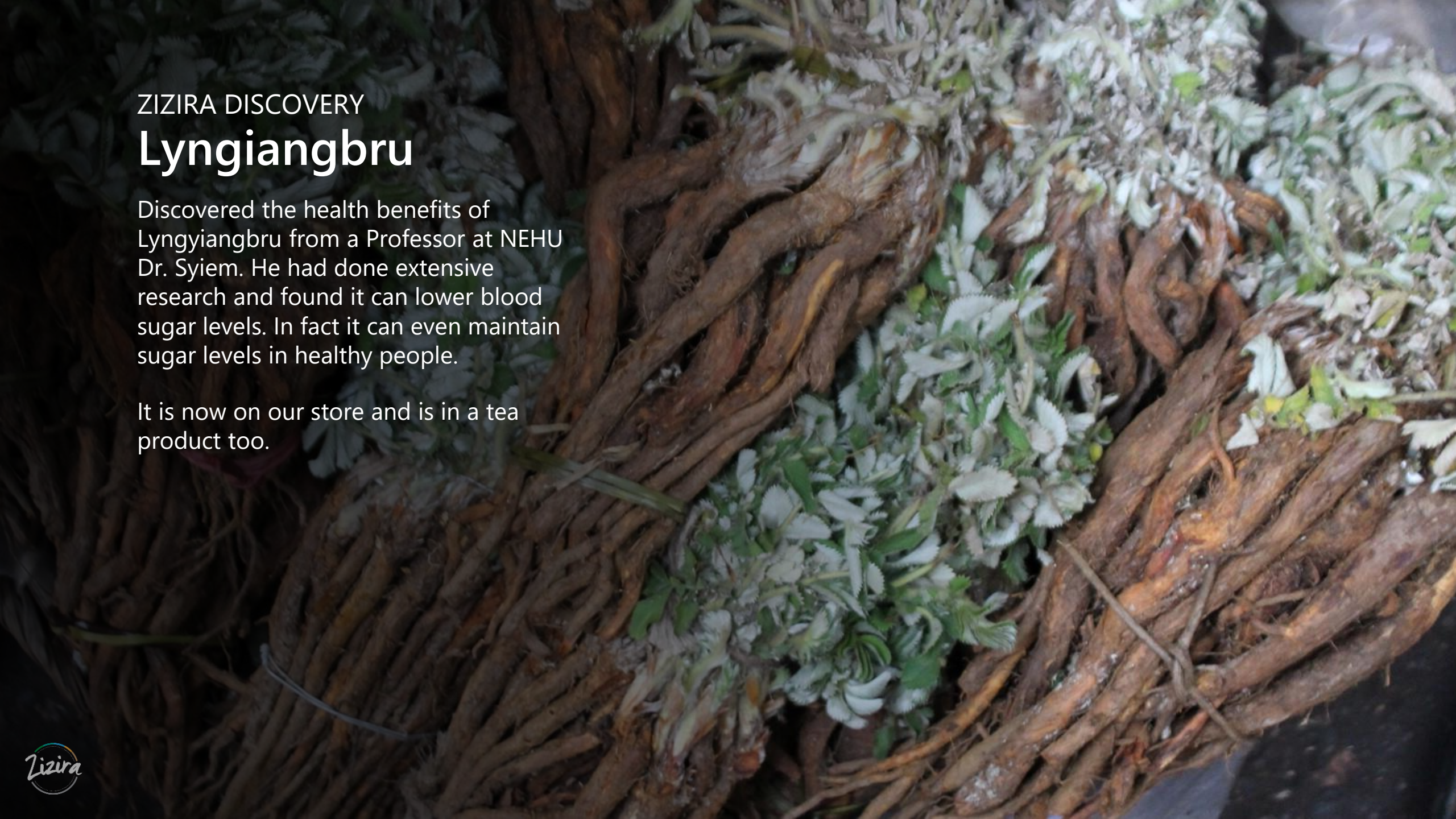
"Most of the people of the Southern slopes of Meghalaya use this crop as an **insurance** as it can be stored for up to one year (after drying). As and when they need money, they gradually sell it in the market. This product acts like a savings bank for farmers in the Ri-War areas, where betel leaf is the main source of income the whole year long."

Mr. Canning Shabong
Assistant Director of Agriculture,
Department of Agriculture,
Meghalaya



Zizira Discovery: **Soh Danei**

Discovered the efficacy of Sohdanei through a herbal medicine practitioner. Sohdanei or Garcinia Pedunculata is an evergreen fruit with a tangy taste and much used in Northeast India for its health benefits.
It is now on our store and is in a tea product too.



ZIZIRA DISCOVERY

Lyngiangbru

Discovered the health benefits of Lyngyiangbru from a Professor at NEHU Dr. Syiem. He had done extensive research and found it can lower blood sugar levels. In fact it can even maintain sugar levels in healthy people.

It is now on our store and is in a tea product too.

ZIZIRA DISCOVERY

Entrepreneur farmers

A lady farmer, Bernadethe is doing very well in the area of floriculture

Her main line of business is cultivating and selling flowers, ginger and strawberries.

She grows Lillies, Gerberas and Anthuriums and even Chrysanthemum.

She is very grateful to MBDA officials for all the support they gave her.

ZIZIRA DISCOVERY

High return Bird's Eye Chillies

Comman from Dulongnar, a small village in the Ri-Bhoi district, is famous for growing Bird's Eye chillies

He grows them organically without chemical-based fertilizers and pesticides

There are 60 households in this village and all of them grow chillies

Annually they sell over three tones of raw Bird's Eye chillies.

Zizira Discovery: **Quinoa!**

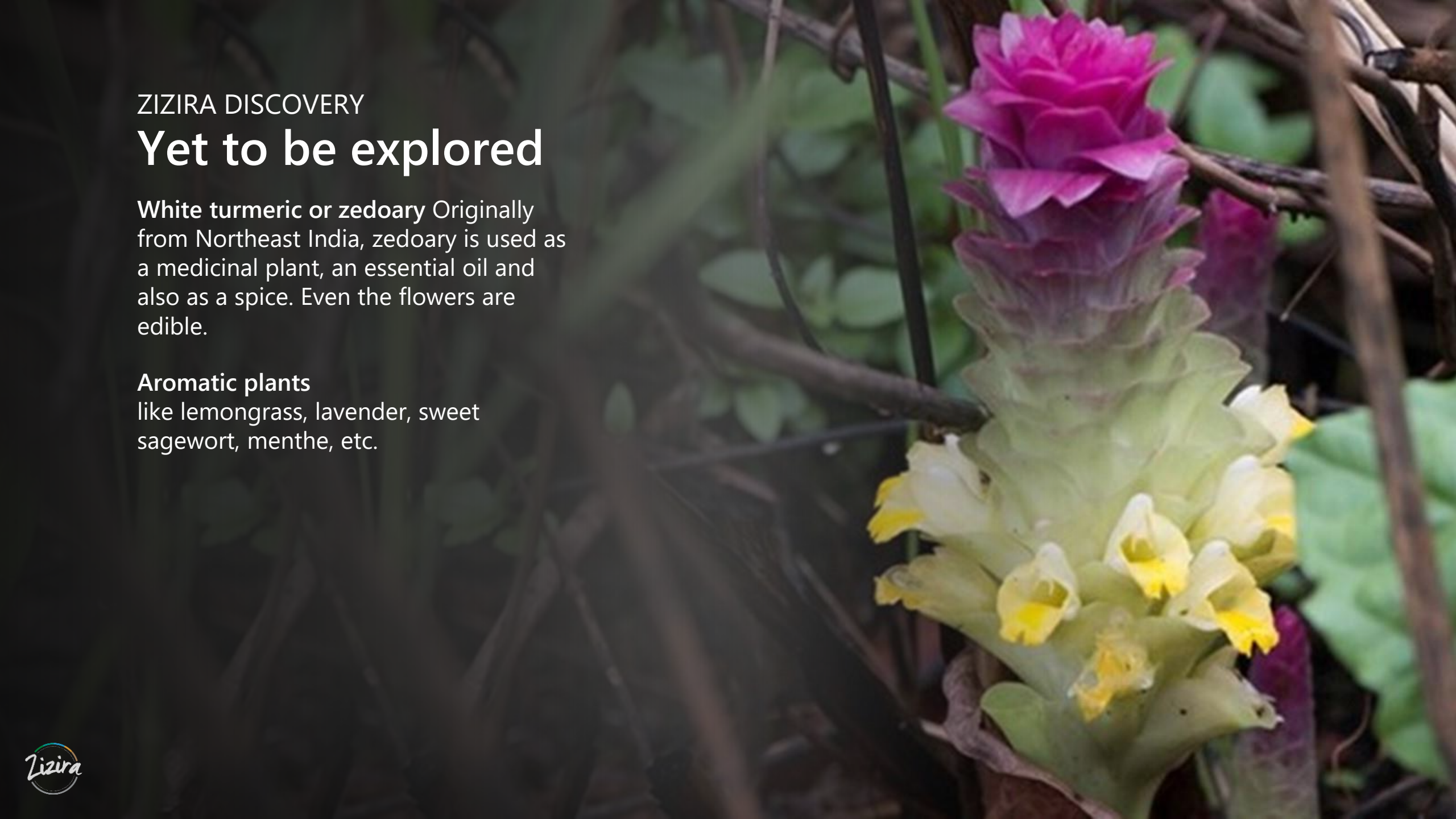
Officials from Bio Resource Development Centre, Shillong, came to our office to share news about the new field tests they are doing.
They have successfully tested Quinoa, an that too a rare variety.
They approached Zizira to create a market – and if we do they will be able to get farmers to grow to meet the demand!

ZIZIRA DISCOVERY

Yet to be explored

White turmeric or zedoary Originally from Northeast India, zedoary is used as a medicinal plant, an essential oil and also as a spice. Even the flowers are edible.

Aromatic plants
like lemongrass, lavender, sweet sagewort, menthe, etc.



Meghalaya's green gold reserves

Botanical name: *Houttuynia cordata*

Local (Khasi) name: Jamyrdoh

Traditional use: Green supplement to food, cholera, dysentery, blood deficiency and purification

Botanical name: *Flemingia vestita*

Local (Khasi) name: Sohphlang

Traditional use: Eaten raw as a leisure food, but also used for deworming

Zizira

Meghalaya's green gold reserves

Common name: Garlic chives

Botanical name: *Allium tuberosum*

Local (Khasi) name: Jyllang

Traditional use: Green supplement to food, leaf decoction used for urinary problems and also as a diuretic

Botanical name: *Citrus medica*

Local (Khasi) name: Sohmad, sohjew Khasi

Traditional uses: Used as flavorant, leaf decoction used for bathing newborns to prevent common cold

Zizira

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Botanical name: *Prunus nepalenses*

Local (Khasi) name: Sohiong

Traditional use: Eaten raw and fresh, also processed for juice, jams and wine.

Common name: Box Myrtle

Botanical name: *Myrcia esculanta*

Local (Khasi) name: Soh Phie Bah

Traditional use: Eaten fresh and also used as a pickle

Zizira

ZIZIRA's approach

Partnerships

We are interacting with various organizations and individuals who share Zizira's passion for uplifting the lives and prosperity of the farmers of the region.

Networking

Our team of explorers undertake regular field trips where they meet with farmers as well as farmer entrepreneurs. Through these field trips, we are building a network of farmers who we hope to enlist in our plans to promote the unique produce of the region.

Learning

Through our partnerships, interactions and networking, we are in a continuous state of learning about farmers, agricultural potential of the region as well as the produce endemic to the state and the region.

Partnership with organizations

North Eastern Hill University (NEHU)

Zizira is building a relationship with a few faculty members of North Eastern Hill University (NEHU) through visits and interactions. In the process, Zizira is acquiring an in-depth knowledge about the agro-biodiversity of Meghalaya and Northeast India.

Partnership with organizations

Indian Council of Agricultural Research (ICAR)

Established in the year 1975 by the Indian Council of Agricultural Research, ICAR Research Complex for North Eastern Hill Region aims to provide a research base for supporting agricultural development in the North Eastern region.

Zizira has been reaching out to ICAR's scientists with specialty in the areas of horticulture and agriculture. Through them, we have learnt about the improved version of the Lakadong Turmeric, Megha Turmeric-1.

Partnership with organizations

Department of Agriculture, Meghalaya

The Department of Agriculture, Meghalaya has a mandate to facilitate increased crop production and productivity. They are not only helping with new and better ways of farming but also working towards providing gainful opportunities for the farming community of the state.

With the state having made the decision to go organic. Zizira and the Department of Agriculture can join hands towards the vision of an organic state.

Partnership with organizations

Meghalaya Basin Development Authority (MBDA)

MBDA provides support with knowledge management, natural resource management and climate change adaptation etc. Recently, spring mapping exercise was also done by MBDA.

And this is where Zizira sees the potential in MBDA playing an active role in terms of spreading awareness and knowledge about organic farming, low yield-high value crops, etc. in their already strong network of farmers.

Partnership with organizations

Bio Resource Development Center (BRDC)

BRDC

Supported by the Department of Biotechnology of India, BRDC ensures meaningful conservation and sustainable utilization of the bio-resources of the state.

In one of its recent interactions with Zizira, we discovered about how they are supporting Quinoa and are also providing guidance and support to encourage farmers. At present, this is only a field experimentation in its pilot phase. Other areas of thrust are Artemisia, Myntha, Kiwi, bio fertilizers, cheaper modes of poly house, etc.

Zizira

Our mentors and well wishers

He played an important role in starting the only successful and fully functioning regulated market in Northeast India in Mawiong, Shillong. He has been instrumental in providing Zizira with key information with regards to government initiatives to help farmers.

Mr. Canning Shabong
Assistant Director of Agriculture
Department of Agriculture Meghalaya

*When you continue to **do things sincerely**, people will see your sincerity and hard work and you will be able to succeed.*

Our mentors and well wishers

Dr. Don Syiem
Head of Department, Biochemistry
North Eastern Hill University Meghalaya

He has worked extensively on Potentilla fulgens, a local herb that can help control diabetes.
He is one of Zizira's most ardent supporters and has been actively campaigning for our mission to help farmers of the state.

*Go for **low volume-high value** products. It has to narrow down to horticulture, floriculture - which include medicinal and aromatic plants. Others include endemic fruit products, mushrooms, wild edibles etc.*

Our mentors and well wishers

An Expert Committee Member for National Innovation Foundation India, Ahmedabad, HQ. IIM and advisor to various NGOs of the Northeast region on floriculture, mushroom cultivation, medicinal plants, etc.
We hope to be able to tap into his wealth of knowledge to explore the potential of Meghalaya's medicinal plants, flowers and various other produce.

Dr. A. A. Mao
Scientist-F & HoO, Eastern Regional Centre
Botanical Survey of India

*To succeed, **build trust with the farmers** and prove to them what your motives are – that you want to help them. This will build a strong relationship*

Our mentors and well wishers

He has worked with Turmeric farmers in Laksein village to help improve productivity and initiated the setting up of an oleoresin extraction pilot plant.
He shares Zizira's vision passionately and is very insistent about the farmers having a better livelihood from their produce.

Dr. S. K. Barik
Head of Department, Botany
North Eastern Hill University Meghalaya

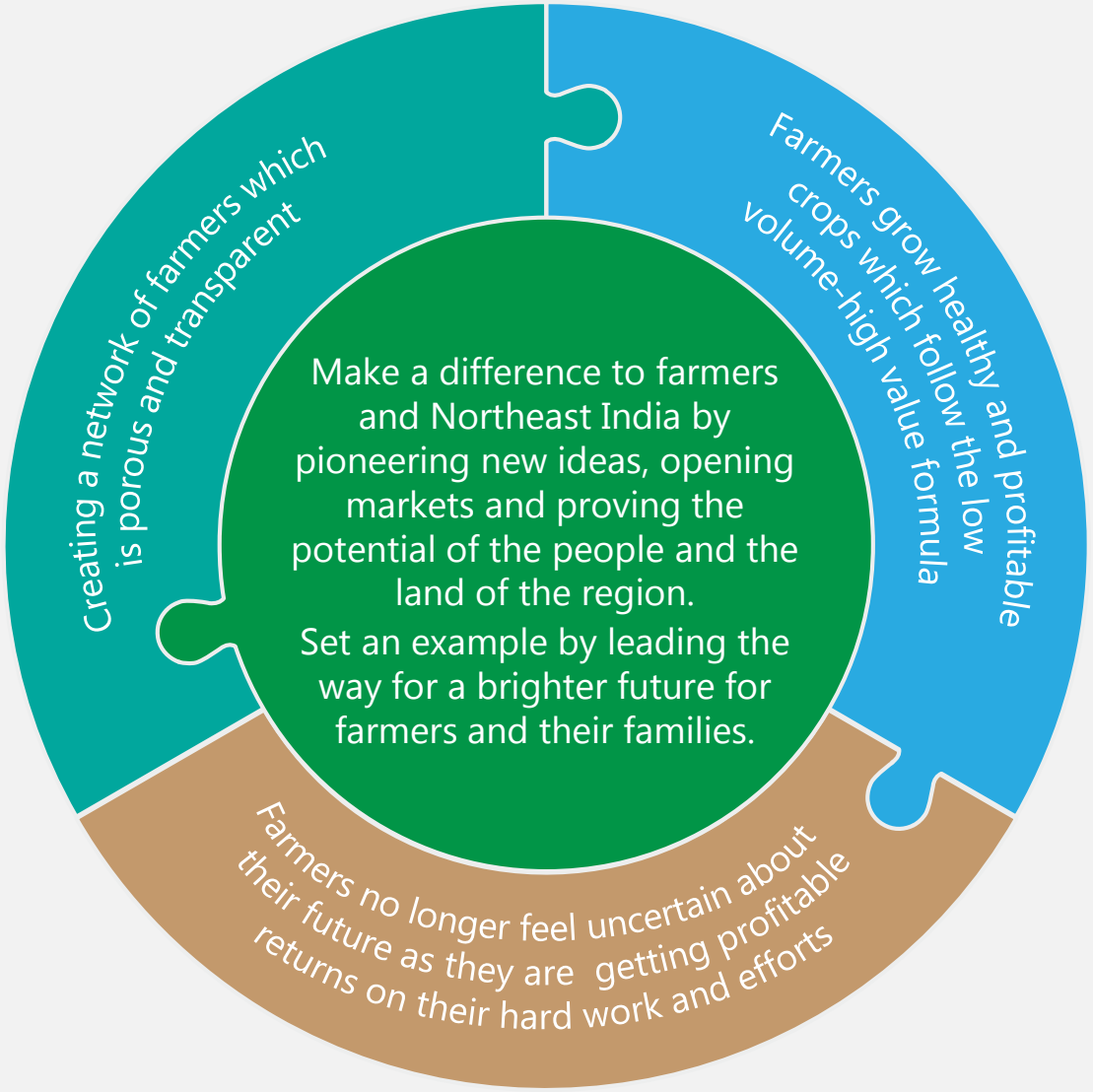
*My observation is that the poor are **blessed with talent and labor**, but lack resources. I tried to give them support by providing them with modern techniques, machinery and any source of fund available for the needy*

"**Bio-prospecting** for **green gold** in NE region will yield results, but there should be no bio-piracy"

Dr. Syiem, NEHU

Zizira

Coming full circle



"But the public-private partnership (PPP) model could be just the game-changer in India's agricultural sector needs. By drawing on the collective power of all agricultural stakeholders, PPPs can transform the sector at multiple levels."

World Economic Forum

Thank you