

**VIETNAM ACADEMY OF AGRICULTURE SCIENCE
NORTHERN MOUNTAINOUS AGRICULTURE AND FORESTRY
SCIENCE INSTITUTE**

Recycling of rice plant residues for enriching land with organic matter and in-time cultivation of next crop

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Ha Noi, 2017

Background

- **Around 50 million tons of rice straw residues are produced in Viet Nam,**
- **Most of it was burnt in the fields or along the roads,**
- **Wastes a valuable carbon source, but also causes air pollution and generates greenhouse gas (CO₂),**
- **Killed rice straw in the field by paraquate,**



Burning rice
straw

Killed rice
straw by
herbicide



- **NOMAFSI has developed techniques for “quick composting” of rice plant residues by using EM product,**
- **Only 7-10 days after treatment with this EM product the field could be ready for the next crop cultivation,**
- **Rice plants expressed better growth with stronger root system and gave higher yield.**

EM product

- **Commercial name: AT Biodecomposite**
- **Consist: 11 kind of microorganism:**
Trichoderma, Aspergillus, Penicillium...



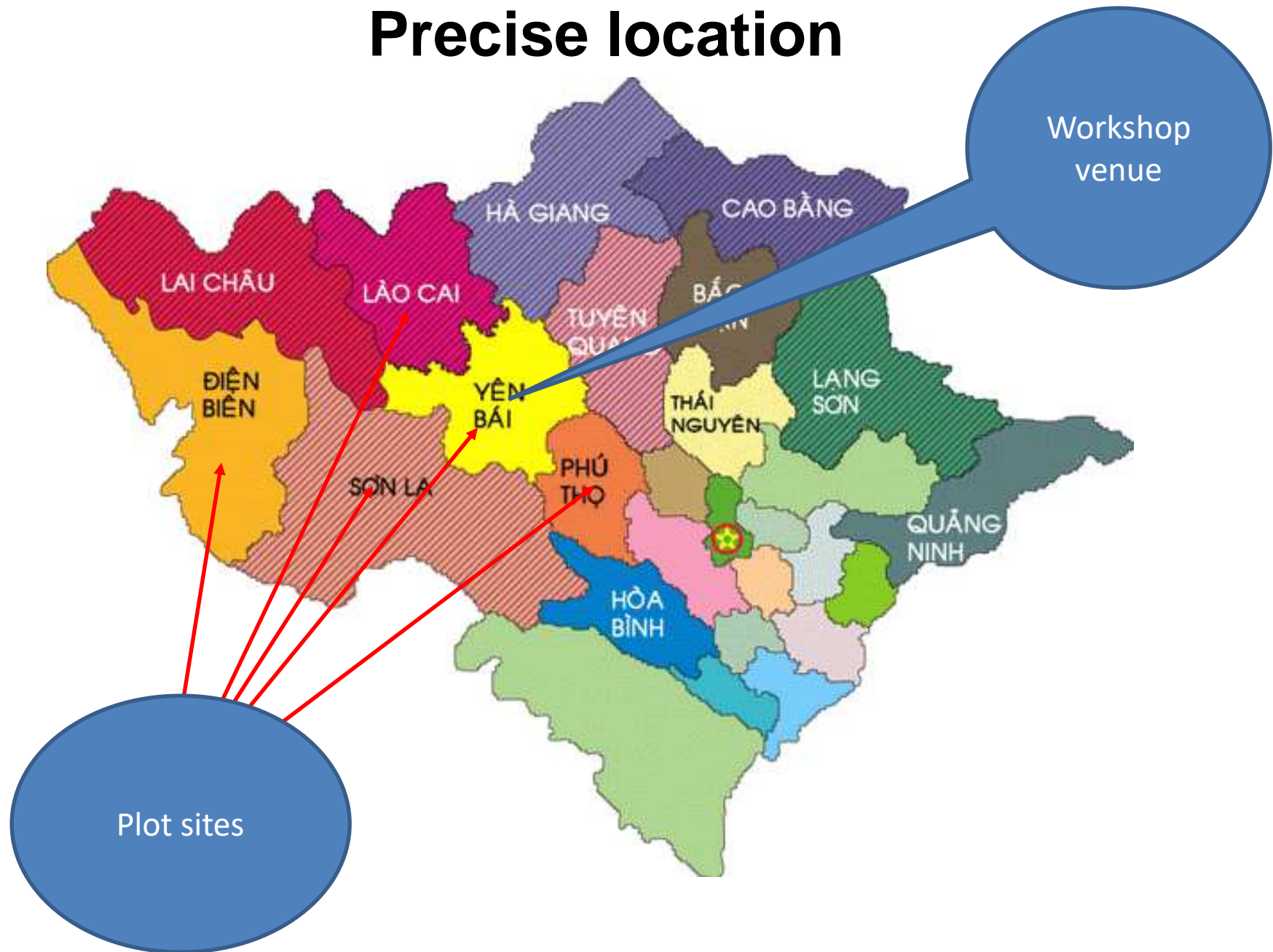
Objectives

- **To share experience towards large scale adoption of the practice of use an efficient micro-organism product (EM) to quickly recycle rice plant residues right after the harvest for improving rice production and reducing greenhouse gas emission**

Approaches and methodologies

- **Experience was introduced and shared through implementing on – farm experiments and work shop**

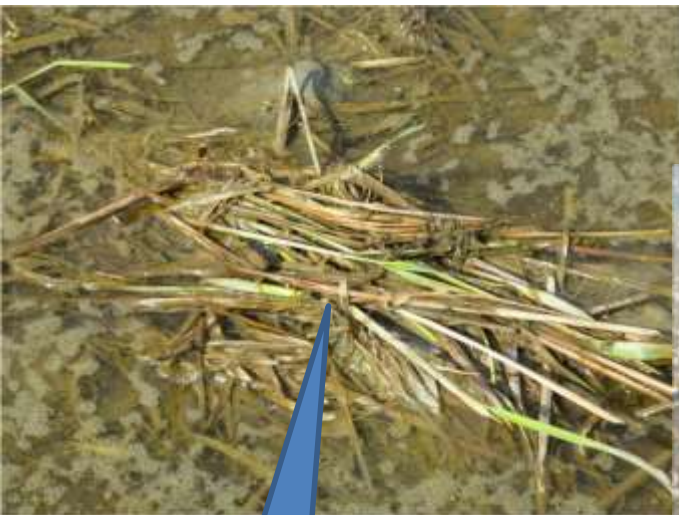
Precise location



Achievements

- *Literature review*
- Six EM products were commercialized in Viet Nam: Vixura (2007); Emic (2009), Fito-Biomic (2010), Hatimic (2011), Trichoderma (2012), Simitri (2014)
- Consisting: *Bacillus, Lactobacillus, Trichoderma*
- Recommendation: Decomposing agriculture residues in the heap

- ***On – farm experiments***



10 days
Without
EM



10 days
after using
EM



30 days after
transplanting

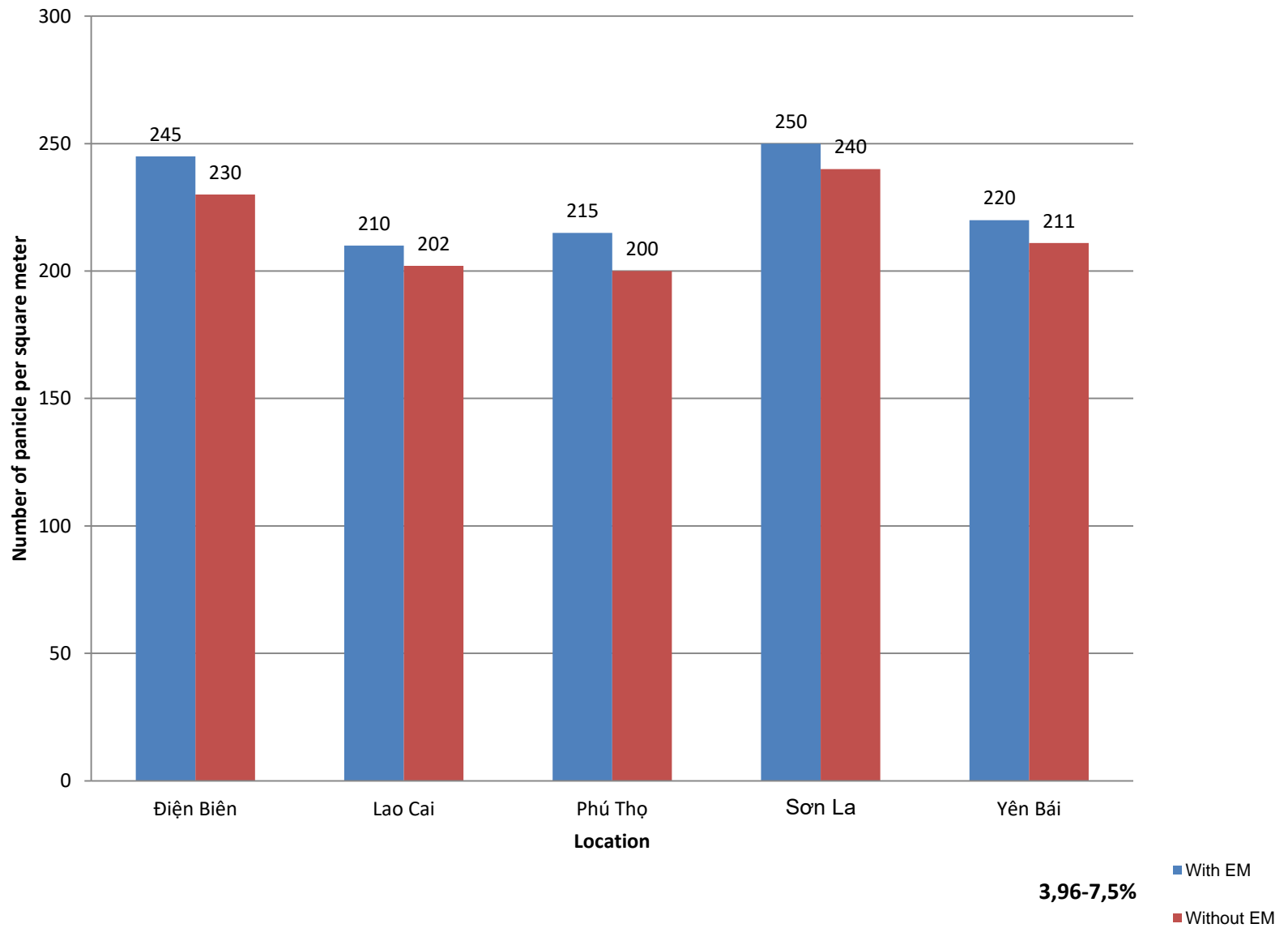


Figure 1: Number of panicle per square meter

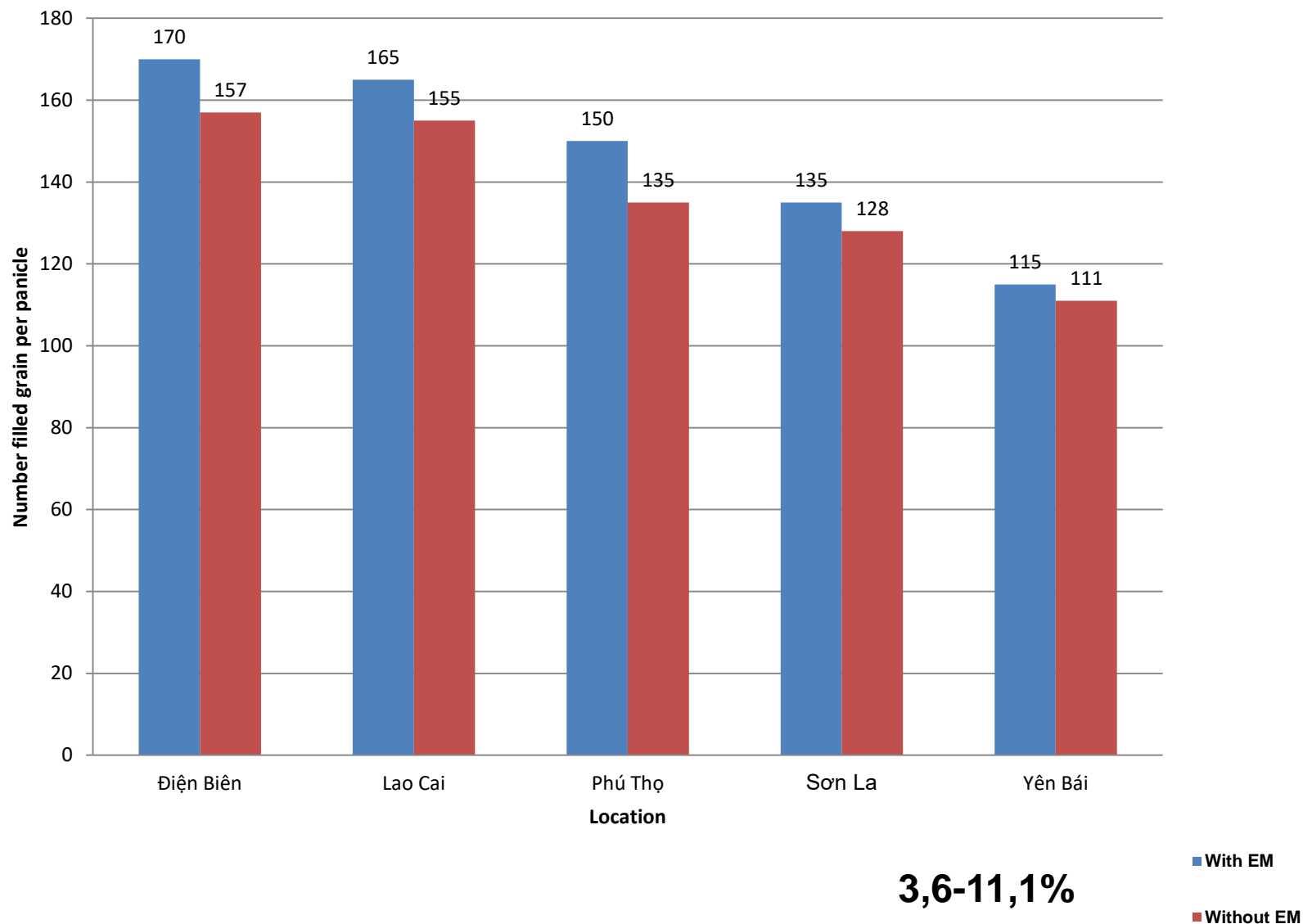


Figure 2: Number of filled grain per panicle

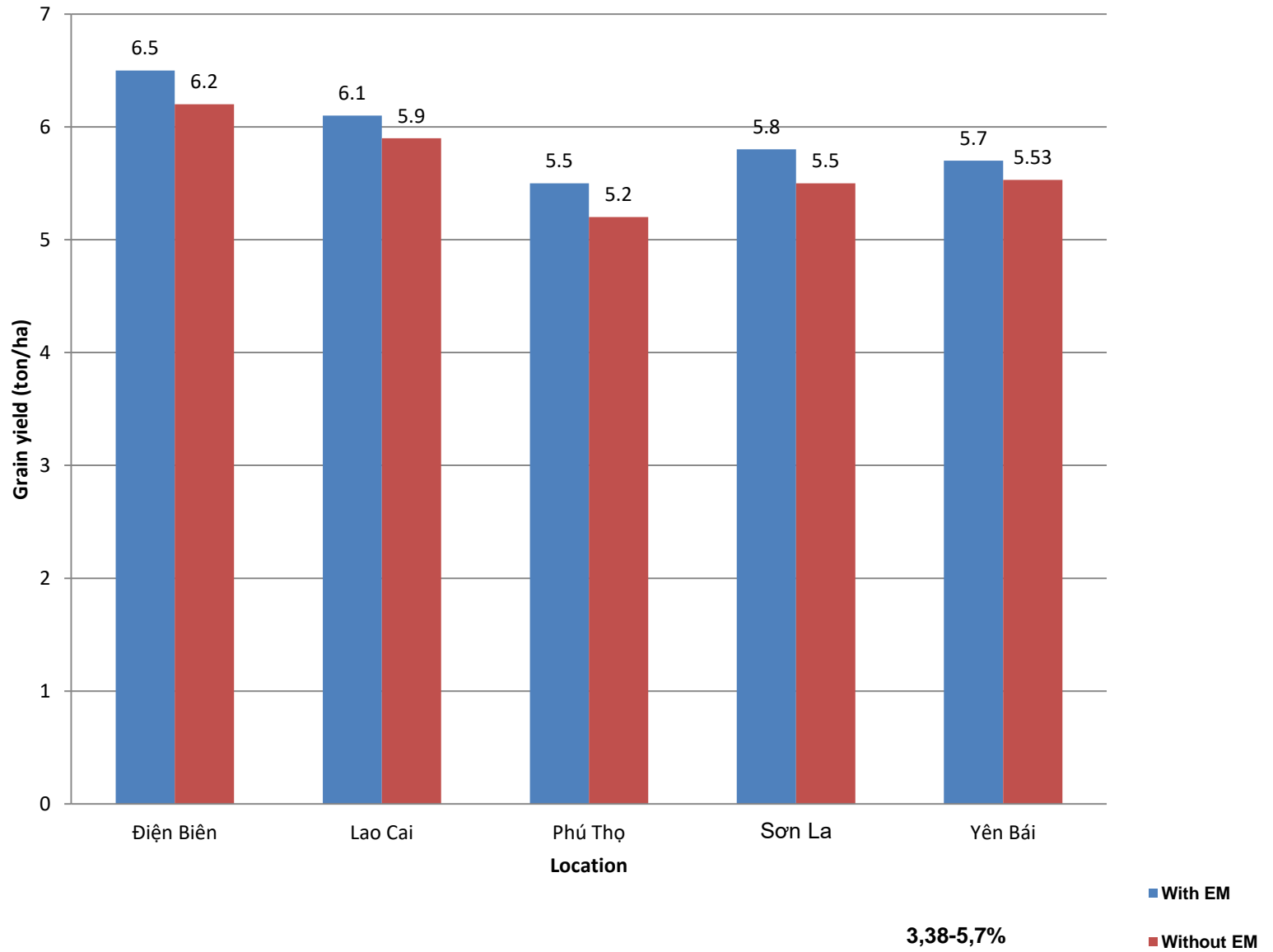


Figure 3: Grain yield

**Trước khi
xử lý**



**Sau xử lý 15
ngày**



**Sau xử lý 35
ngày**



- ***Workshop organization***

On September 14th, 2017 the workshop was organized in Yen Bai province with attendance of 55 participants from Viet Nam academy of agriculture science, Lao Cai, Ha Giang, Tuyen Quang, Yen Bai, Phu Tho provinces.

Some key points captured:

- **Application of EM product on quickly decomposited rice straw in the field not only help rice grow better, also limited using herbicide (paraquate). Before, farmers used to apply herbicide (paraquate) to kill rice straw. By doing this, healthy of human and animal was affected and also soil structure was destroyed.**

- Application EM product on decompositing has stopped burning rice straw on the road. Rice straw compost was use to raise maize seedling or grow vegetable. By using rice compost, farmer could save input cost for fertilizer..**
- To scaling up and out this practice in reality, organizations and local authorities should support to implement demonstrations and improve awareness of community.**



Potential challenges

- **Free time duration between two crop is very short, in some area this time is only 4-5 days, so rice straw was not completely decomposed.**
- **Machines were used to prepare land. It is difficult to farmers apply EM product on the field.**

- **Rice production efficiency is very low, a lot of local labor move to industries to work. So, lack of labor uses new practices.**
- **In the some location, farmers could not irrigate their field after harvesting first crop.**
- **With composting rice straw in the heap, it requires labor to collect and water rice straw, so farmers normally burn rice straw as simple method..**

Thank you for your attention

