

SCALING FARMS TO THE FRONTIER

The case of non-traditional agricultural exports in Peru

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Summary

Non-traditional agricultural products have the biggest potential for growth in Peru.

Since the early 2000s, Peruvian agriculture has experienced a boom in exports – mostly due to non-traditional crops. Some firms are producing at levels comparable to international leaders. However, this is only the case of a minority of producers. There is a lot of variability in productivity.

Size of the plot in non-traditional crops greatly explains why some farms are much more productive.

Differences in plot size are more important than regional differences, which is impressive given the multitude of eco-regions in Peru. Non-traditional crops require scale to achieve higher productivity. Thus, we focus on differences in productivity based on size of farms.

To get closer to the world frontier in productivity, Peruvian farms require measures to scale up in size.

The Ministry of Agriculture should release a policy package to improve productivity through increasing farms' scale.

Main policy recommendations:

1

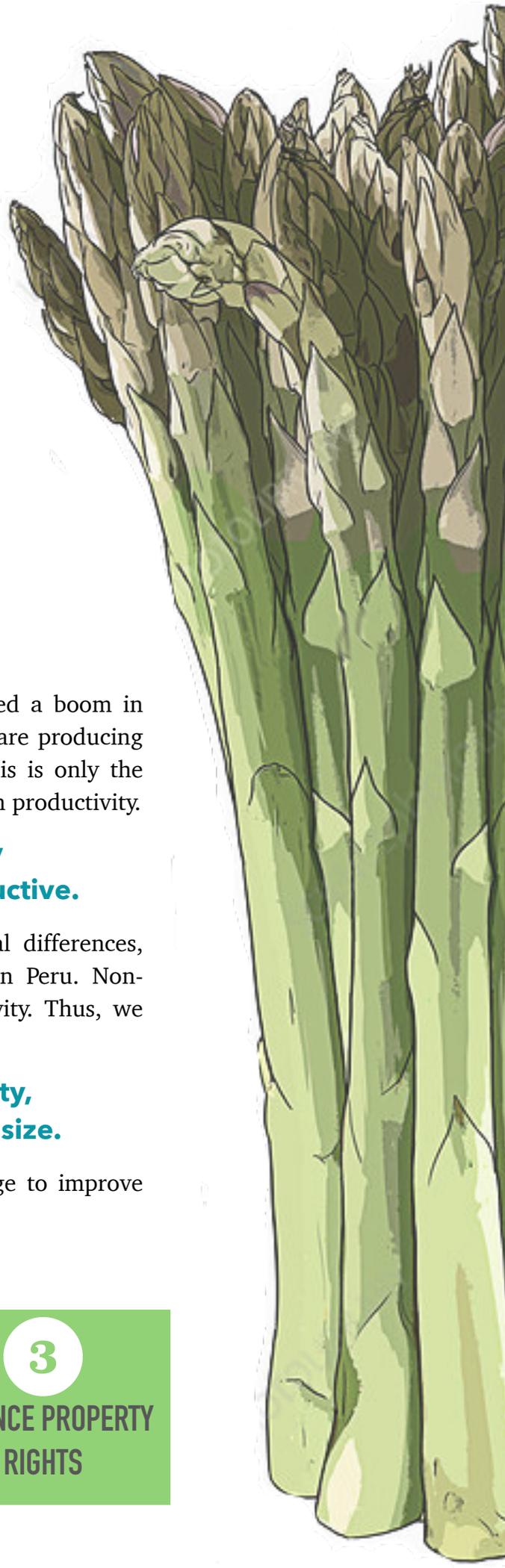
FOSTER
COOPERATIVES

2

QUASI-UNIVERSAL
RURAL PENSION

3

ENHANCE PROPERTY
RIGHTS



Why focusing on agriculture and farms?

Because Peru has a huge endowment of natural ecosystems and agriculture still represents a large share of employment (27%) and GDP (7%).

While the Coastal region is the least fertile region of the country (it is a desert), it is by far the most productive. On the other hand, the biggest share of the agricultural employment is in the Andes and the Amazon, regions that have a lower productivity and a large share of informal employment.

Our crops

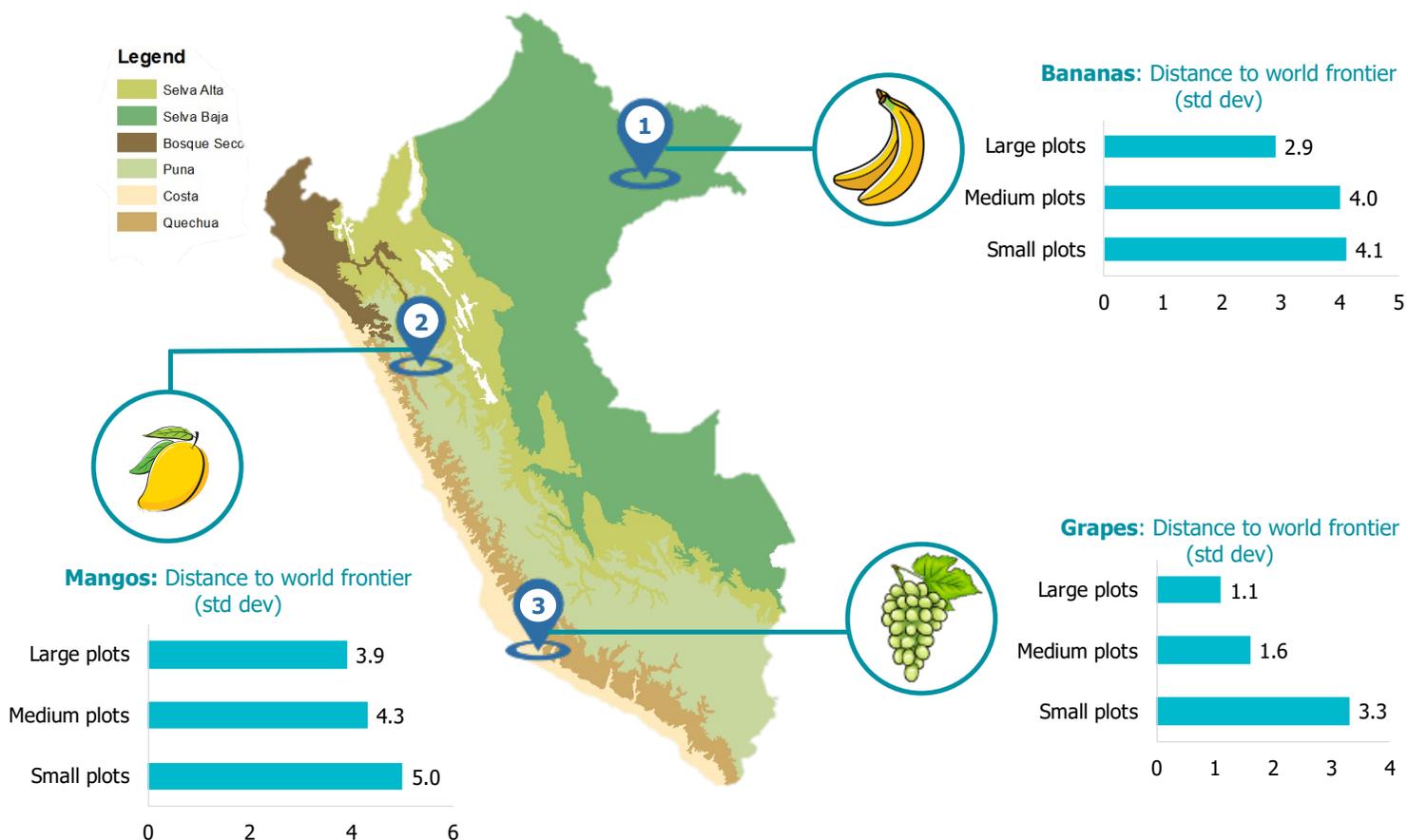
Non-traditional crops are those with higher unitary value that cater a niche market. We focus on grapes, bananas, mangos, avocados, asparagus, coffee and cocoa.

Our measure of productivity

Our variable — distance to world frontier — compares the yield of each farm by crop with the average yield of the world’s most productive country in that crop. We standardized it across crops for comparison purposes.

We see that smaller plots have productivity levels farther from the frontier.

On the other side, bigger plots have productivity levels closer to the world frontier. Our graph shows this pattern for mangos, bananas and grapes — but this holds for all our non-traditional crops.



Analysis

We analyze the main factors that explain the difference in productivity for the non-traditional crops. We include relevant variables found in the literature. Then we predict new productivity levels based on improvements of these variables. We base our analysis on the Peruvian National Agricultural Survey data of 2015 and 2016.

Key Findings



Plot size is a significant determinant of productivity, accounting for 70% of the explained variation in yields.



Using technology and certifying products are also correlated with higher levels of productivity.



Joining a cooperative is an alternative to gaining scale, as it takes away the importance of the plot size.



Younger farmers are more productive than older ones. The average age of farmers in our study is 52.



Younger farmers are more likely to join a cooperative and to rent or sell their land to larger farms.

What if...

... we increase **plot size** from small to medium farms?

Productivity of the plot would increase by **12.7%**

... we mimic large-scale productivity by grouping small-scale plots into **cooperatives**?

Productivity of the cooperative would increase by **8.1%**

... we foster an **intergenerational change** in farmers?

Productivity of the farmer would increase by **6.4%**

Policy recommendations

In a context of atomized small farms, we propose alternative solutions to increase the scale of plots

FOSTERING COOPERATIVES

1

Incentivize farmers to group their plots into cooperatives to access the large-farms benefits (i.e. access to technology or credit), as a more realistic way of increasing farm’s yield per hectare.

QUASI-UNIVERSAL RURAL PENSION

2

Foster intergenerational change in the tenure of small farms through rural pensions — allowing a new generation to be in charge of the management of the farms. We estimate that productivity gains from this policy offsets almost 40% of the cost of the program.

ENHANCING PROPERTY RIGHTS

3

Increase the likelihood of forming cooperatives and renting/selling the land to larger firms by reactivating a large-scale rural titling program. This policy boosts the effect of the two previous ones.

How would these policies create impact?

