



Breakthrough
outcomes

PRISMA's stories of
systemic change

From zero to hero

The establishment of the commercial mung bean sector in Indonesia | February 2022

In 5 years PRISMA has established a new commercial market in mung bean, which is increasing farmer income.

Mung bean plays a vital role for smallholder farming families in Indonesia despite being perceived as a secondary crop compared to rice and maize. It generates a triple benefit for poor households—additional income, affordable nutrient-rich food, and increased soil fertility.

Most farming households growing mung bean are poor, with roughly 39 percent falling under the \$2.5 a day poverty line (PPP) and 58% under the \$5.5 PPP. Domestic consumption for mung beans is increasing 3.5 percent per annum. However, there is still a production gap of 22 percent between supply and demand due to poor yields.

Low productivity and incomes due to a lack of quality seeds

When PRISMA commenced in 2016 in the mung bean sector, farmers use retained seeds – seeds from previous harvests - to plant future crops. However, this reduces productivity significantly from a potential of 2.5 tonnes per hectare to 0.8 tonnes per hectare.

The government-owned Balitkabi had released the new high-yielding mung bean variety (VIMA series) in 2013.

Although this variety is publicly owned, seed producers were not made aware of it or were not convinced of its potential, so the variety was not developed for production. As this parent stock was not being made available to farmers commercially, PRISMA saw an opportunity to change the sector for the better.

PRISMA's systemic change strategy

Through detailed business calculations and analysis, it was clear that the market failure was on the supply side. Key elements of a strategy to address this were as follows. First, PRISMA needed to persuade seed companies that there was a viable market for mung bean seed. Second, it needed to influence Balitkabi to create

suitable seed varieties and to make these commercially available to interested seed companies. Finally, PRISMA needed to persuade seed companies to market these seeds to mung bean farmers with embedded services on good agricultural practices to ensure increased productivity.

Steps towards systemic change

In 2016 PRISMA partnered with Balitkabi to assess the productivity and feasibility of their parent stock for commercialisation. PRISMA convinced Balitkabi to make their three parent seed varieties¹ available to seed companies. In tandem, PRISMA convinced three companies, EWINDO, CV Semi, and CV Luwes, of the market potential of mung bean seed and connected

these companies with Balitkabi. As a result, by 2018, these companies trialled seed propagation for the commercial market and started selling to the open market. Since then, Balitkabi has worked with PRISMA partners to create two² additional mung bean seed varieties, which PRISMA assisted commercialising.

The result of PRISMA partnerships

With the three companies assessing farmer behaviour and subsequently adjusting their marketing strategies, quality mung bean seed sales have increased significantly. EWINDO, for example, sold 3.5 metric tonnes in 2018 as part of their initial marketing trial. In 2019 this increased to 30 metric tonnes, 76.6 metric tonnes in 2020, and was estimated to reach around 150 metric tonnes in 2021³, despite the impacts of COVID-19. PRISMA also supported smaller seed

companies in NTT to propagate certified seed to the open market using the same market linkage model.

This led to significant changes in market player behaviour, which is a sign that permanent change to the market is likely. One partner, CV Luwes, no longer relies on PRISMA support and is progressing with seed development and sales independent of PRISMA support.

Results beyond PRISMA partners

More exciting is that competitors have started to react to these changes. Five other seed companies have independently contacted Balitkabi and are now licensed and selling certified mung bean seed to the market⁴. This is a clear indicator that PRISMA's innovative business model is being replicated.

The government has also seen the results and has approached past and present partners of PRISMA to supply certified seed to a new government subsidy program. For example, this year, CV Luwes provided 300 metric tonnes of certified seed of which 30 percent went to the commercial market. While subsidy programs may distort the market in the long run, the government's interest in supplying good quality seed to farmers is a positive sign that a previously non-existent market is gaining traction and poor farmers will benefit.



¹ VIMA 1,2 and 3.

² VIMA 4 and 5. It should be noted that PRISMA also supported Batan (the National Nuclear Energy Agency) as variety owner to commercialize their variety (Camar and Muri). EWINDO signed a licensing agreement with Batan in 2018 to commercialize the Muri variety.

³ Based on figures recently provided by EWINDO, during 2021 demand outstripped supply by 100%, and EWINDO's contract farmers received a better price from the free market for their maize. This led them to side-sell the seed. This resulted in EWINDO only achieving 73.2 metric tons out of the targeted 150 tons for 2021 sales. Despite a decreased actual sale, EWINDO sees this as a sign that the market is thriving, and plan to strengthen their business model with their contract farmers.

⁴ PB Utama, CV Sujinah, CV. Tani Maju, CV Putramandiri, PT Agri Makmur Pertiwi

Systemic changes so far

Starting from a zero position in five years, ten percent of the mung bean market is now using certified seed instead of retained seed. This is highly significant when we are talking about making a permanent change to a market system. According to innovation diffusion theory (see figure 3), this means that the sector is well on the way to capturing the 'early majority' of farmers with certified seed. If more seed producers continue to enter the market, then the sector is expected to achieve scale.

Innovation diffusion describes a process by which the state of a group or society moves from one equilibrium to another. Over the decades it has been used in agriculture to measure the degree to which a change (either behaviour or technological) is likely to become permanent. There is a lot of debate on diffusionism, but it is a useful indicator that can be used by sector teams to benchmark progress towards a permanent state of change.

Another significant sign is that large companies in food production such as Nestle and PT Terasindo, have

started to source local mung bean grown using certified seed instead of importing. Both companies state that the quality of the mung bean from certified seed meets their requirement in terms of quality and uniformity. Two export companies⁵ have also expressed an interest in exporting mung bean grown by farmers using certified seed. The significance of these changes is that both the supply and demand sides of the market are responding positively. It means farmers who grow mung bean using certified seed have a market to sell to.

In terms of the impact of these changes on smallholder farmers, the use of certified seed has increased 24,211 farming households' mung bean productivity by 0.3 tonnes per hectare. While this doesn't sound like much, for an intermittently planted crop this is significant. The important point is that farmers are now planting mung bean for commercial purposes, rather than family consumption. This increased productivity has resulted in an average income increase of 47 percent for these poor farming households.

Next steps

To increase scale, PRISMA will broker some more partnerships, and these are already in the pipeline. Improving the sector's resilience will require a greater number of parent seed varieties available and from a range of sources. EWINDO and CV Semi have already started to do this, and a further five partnerships are in the pipeline. PRISMA is also exploring strengthening the regulatory system with the Regional Seed Agency to facilitate easier parent seed propagation. This is particularly important with the planned restructuring of Balitkabi and other Research and Development units under the MOA. However, a major constraint in achieving this is time. The mung bean team are exploring the likelihood of progress in this area within the next two years.

⁵ PT Andaru and PT Agrotani Sukses Sejahtera

About PRISMA

PRISMA is an innovative partnership between the Government of Indonesia and the Government of Australia to grow agricultural markets in rural Indonesia. Our strategic aim is to address food security and poverty by making rural markets more inclusive. We do this by partnering with businesses, government and investors to remove market barriers and introduce product and production innovations.

PRISMA is supported by the Governments of Australia and Indonesia and implemented by Palladium, with Technical Assistance from Swisscontact, Zurich.

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