



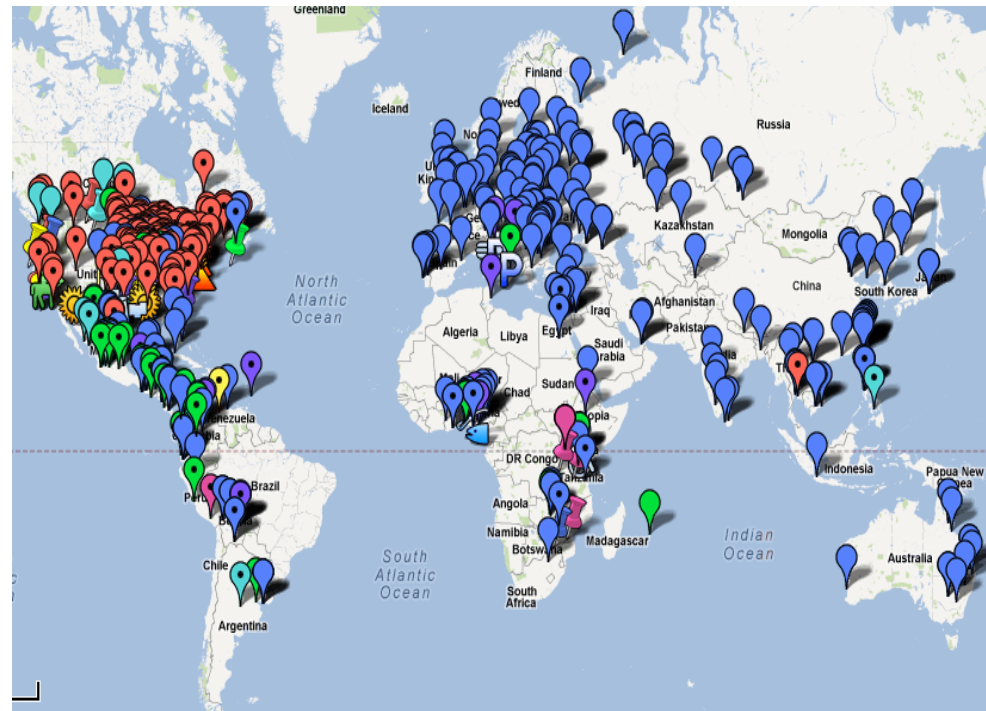
Insta-Pro Extrusion Systems in Africa

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Who is Insta-Pro?



- Global Experts in Extrusion Technology since 1969
- Processing solutions for small-medium applications for food and feed
- Global Presence – in over 100 countries
- Focus
 - Oilseeds
 - FBF/CSB
 - TSP
 - Fishfeed, Petfood



What does Insta-Pro do?



Provide **extrusion processing** solutions
with **exceptional customer support**
so that customers can optimize the quality
of their food and feed

Research Partners

- Iowa State University
- University of Illinois
- Texas A&M University
- University of North Carolina
- Texas Tech University
- USDA ARS Lubbock
- Kansas State University
- University of Missouri
- University of Nebraska
- Oceanic Institute
- University of Georgia



Services



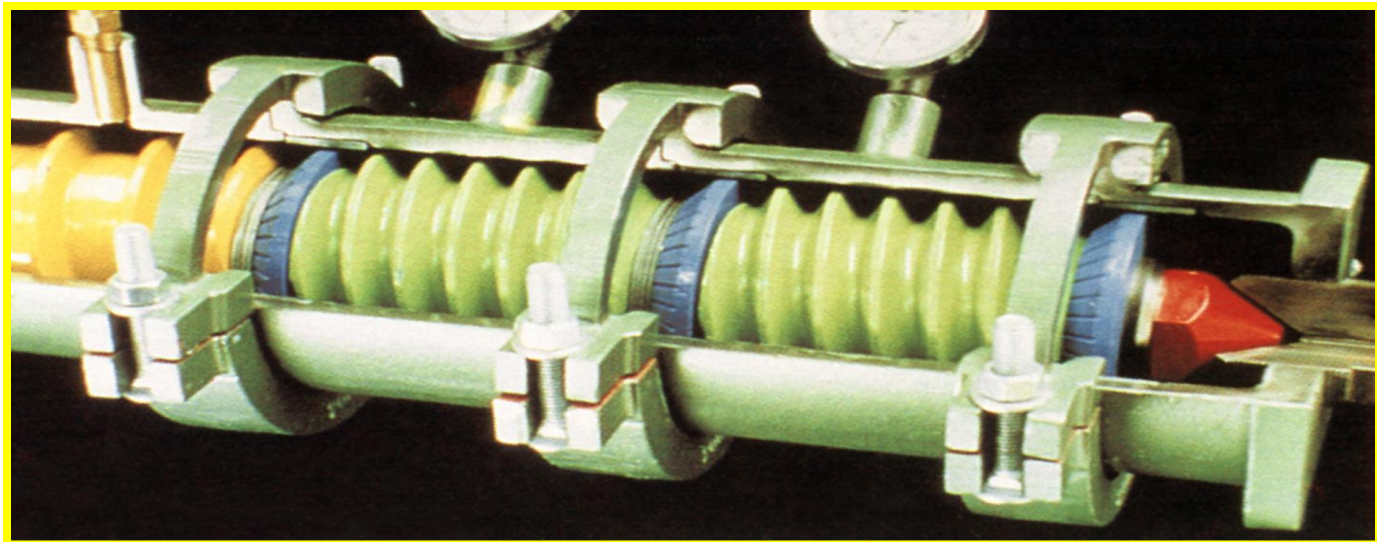
- Extrusion Research & Development
- Nutrition Services
- Technology Workshops
- Equipment Rebuilding & Parts
- Complete Processing Plants
- Commissioning and Training
- Financing
- Raw Material Supply
- Oil Refining



What is an Extruder?

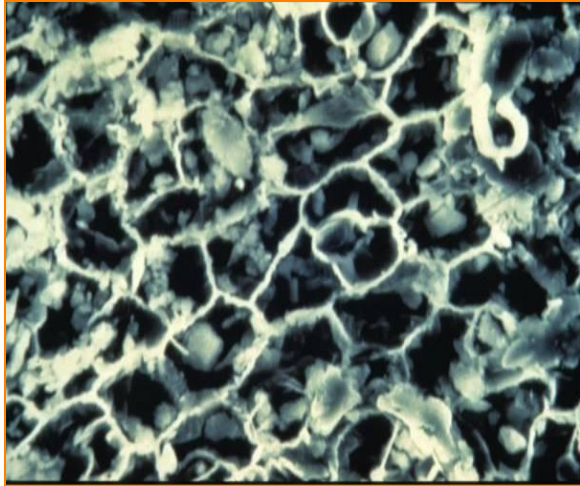


An extruder is a machine which cooks and shapes materials by the process of extrusion. Consists of a flighted Archimedes screw which rotates within a tightly fitting cylindrical barrel.



High + Medium Shear Extrusion

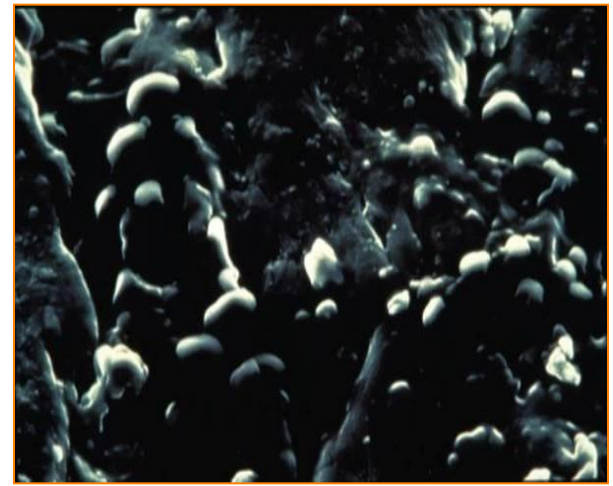
- shear
- temperature
- pressure
- time



Raw Soybean
Cell wall intact



Extrusion



Extruded Soy
Complete Cell Rupture

Dry Extrusion: no external heat source – only friction

Extrusion Applications



- **Oilseeds**

Soybeans, Cottonseed, Canola/Rapeseed, Sunflower seed, Mustard seed, Peanuts, Flaxseed, Safflower seed, etc

- **Food**

Fortified Blended Foods FBF - Corn-Soy Blend CSB, Sorghum-Soy Blend SSB, Textured Soy Protein TSP, Cereal Beverages, Low Fat Soy Flour

- **Complete Feed**

Fishfeed, Petfood, Horse Feeds, Young Animal feeds, etc

- **By-Products**

Animal, Plant, Ethanol and Marine By-Products

- **Rice Bran Stabilization**

Insta-Pro Extruders

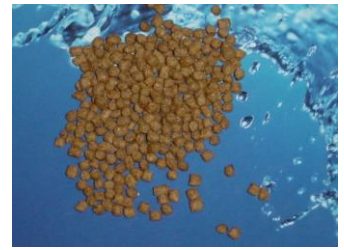
Adaptable to produce multiple products



INSTA-PRO
INTERNATIONAL
MODEL 2000-1



Shaped Snacks Pelleted Feeds



Insta-Pro Oil Presses



Model 1000



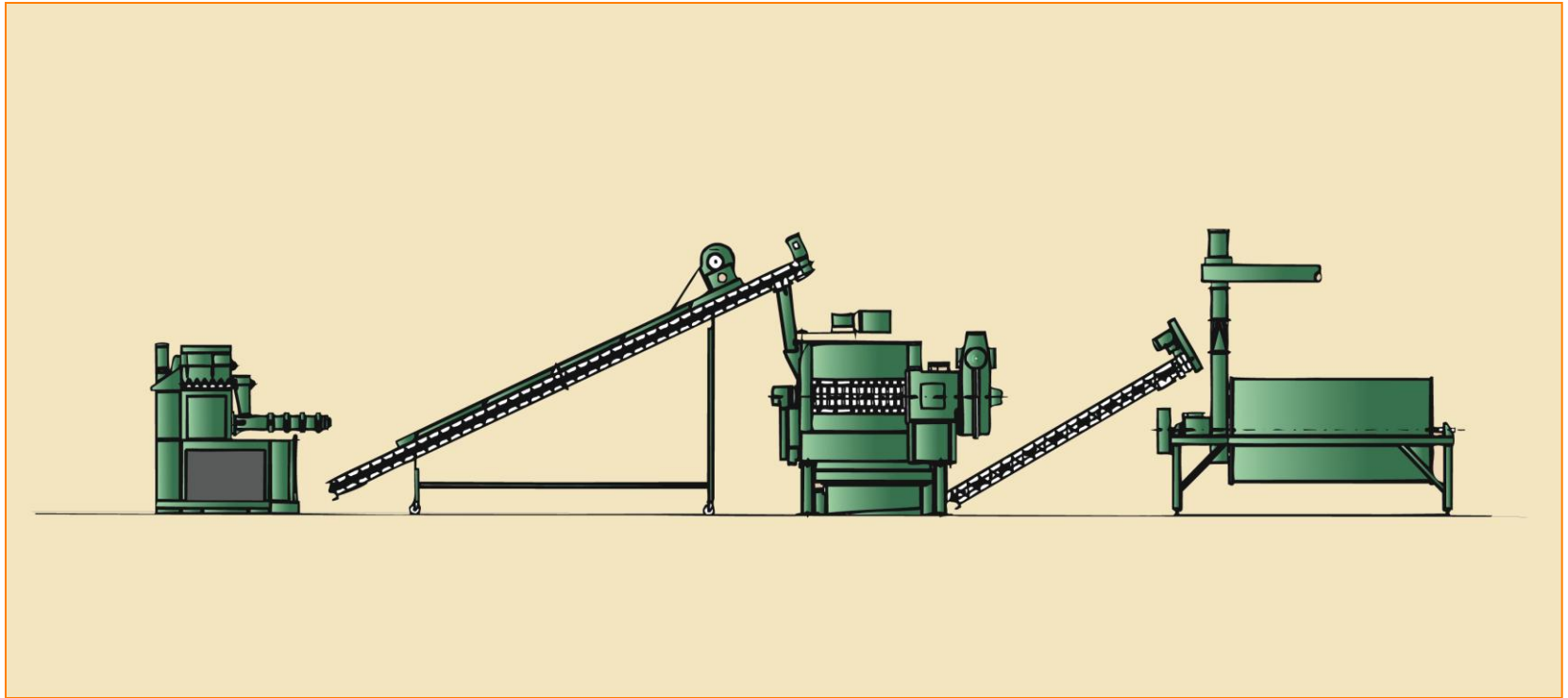
Model 2000



Model 5005



Insta-Pro ExPress® Modular System



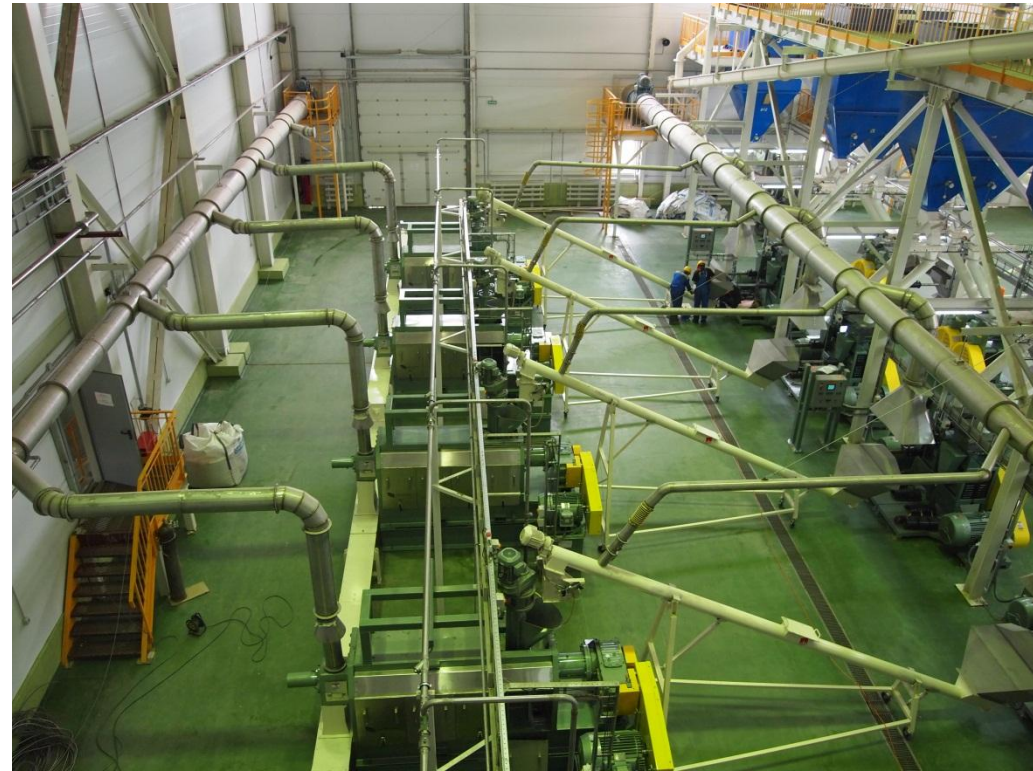
Extrusion and Mechanical Oil Extraction



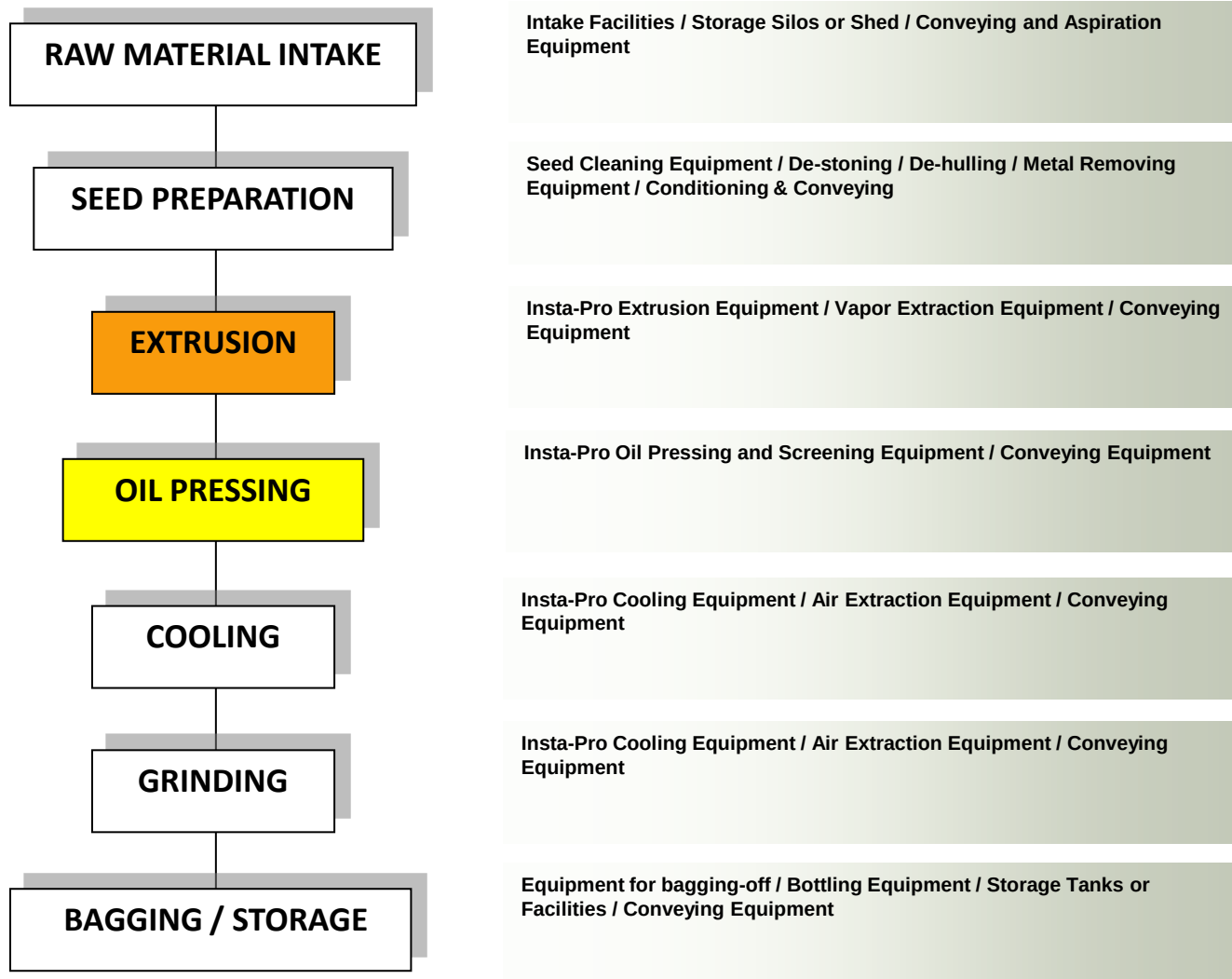
1 mt/hr ExPress – total power requirement with
cleaning unit ~200 HP / 150 kW



20 mthr ExPress® Soy Plant Russia



Insta-Pro Express® Process



ExPress® Soybean Meal



Proximate Analysis

Dehulled ExPress® SBM

Nutrient	(%)
Dry matter	93.0
Crude protein	48.0
Crude Fat	
a) ether extract	6.00
b) acid hydrolysis	6.50
Crude fiber	3.30
Ash	5.50
18:2n-6	4.50
18:3n-3	0.90
FFA	0.50
Lecithin	0.20

Energy Content of Dehulled ExPress® SBM

	Species	Kcal/Lb.	Kcal/Kg.
TME _n	Poultry	1520	3344
ME	Swine	1900	4180

	Species	Mcal/Lb.	Mcal/Kg.
NEm	Ruminants	1.10	2.42
NEg	Ruminants	0.80	1.76
NEL	Dairy	1.06	2.33
ME	Ruminants	1.60	3.52

Amino Acid Digestibility of ExPress® Meal - Poultry



	ExPress® AA Con. ¹	ExPress® True AAD ¹	Solvent-Extracted True AAD ²
<u>Indispensable AA</u> (%)			
Arg	3.31	92.1	92.0
His	1.17	92.3	88.0
Ile	2.13	93.1	93.0
Leu	3.49	93.8	92.0
Lys	2.84	92.1	91.0
Met	0.59	91.1	92.0
Cys	0.62	94.7	82.0
Phe	2.38	94.8	92.0
Thr	1.67	91.5	88.0
Val	2.21	92.8	91.0
<u>Dispensable AA</u>			
Ala	1.89	90.7	-
Glu	7.97	95.5	-
Pro	2.20	94.8	-

¹Data reported by Dr. Nick Dale, University of Georgia (2011, unpublished data)

²Feedstuffs Ingredient Analysis Table (2011)

SBM **with hulls** was used in this trial

Value of ExPress® Soybean Oil



Crude ExPress® Soybean Oil

- Can be used in all food applications except deep frying (cooking, salad)
- Nutritionally superior to refined oil (more nutrients, natural antioxidants)
- No chemical treatment
- Colour is golden and taste is 'nutty'
- Premium in some markets (mechanically extracted, organic)

Degummed ExPress® Soybean Oil

- Suitable for all cooking uses without restriction (including deep frying)
- Degumming is first step of refining (degummed oil may be considered as refined oil in some markets)

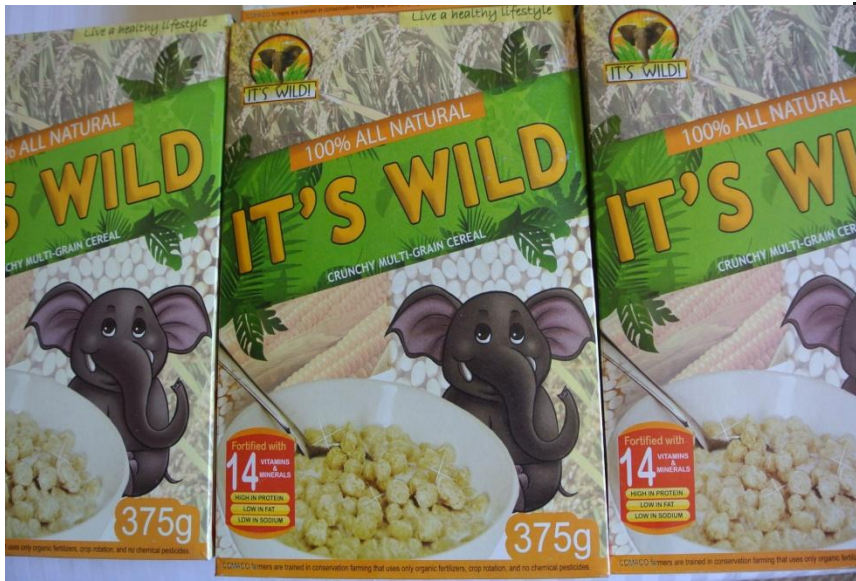
Fully Refined (RBD) ExPress® Soybean Oil

- Clear, white colour, odourless

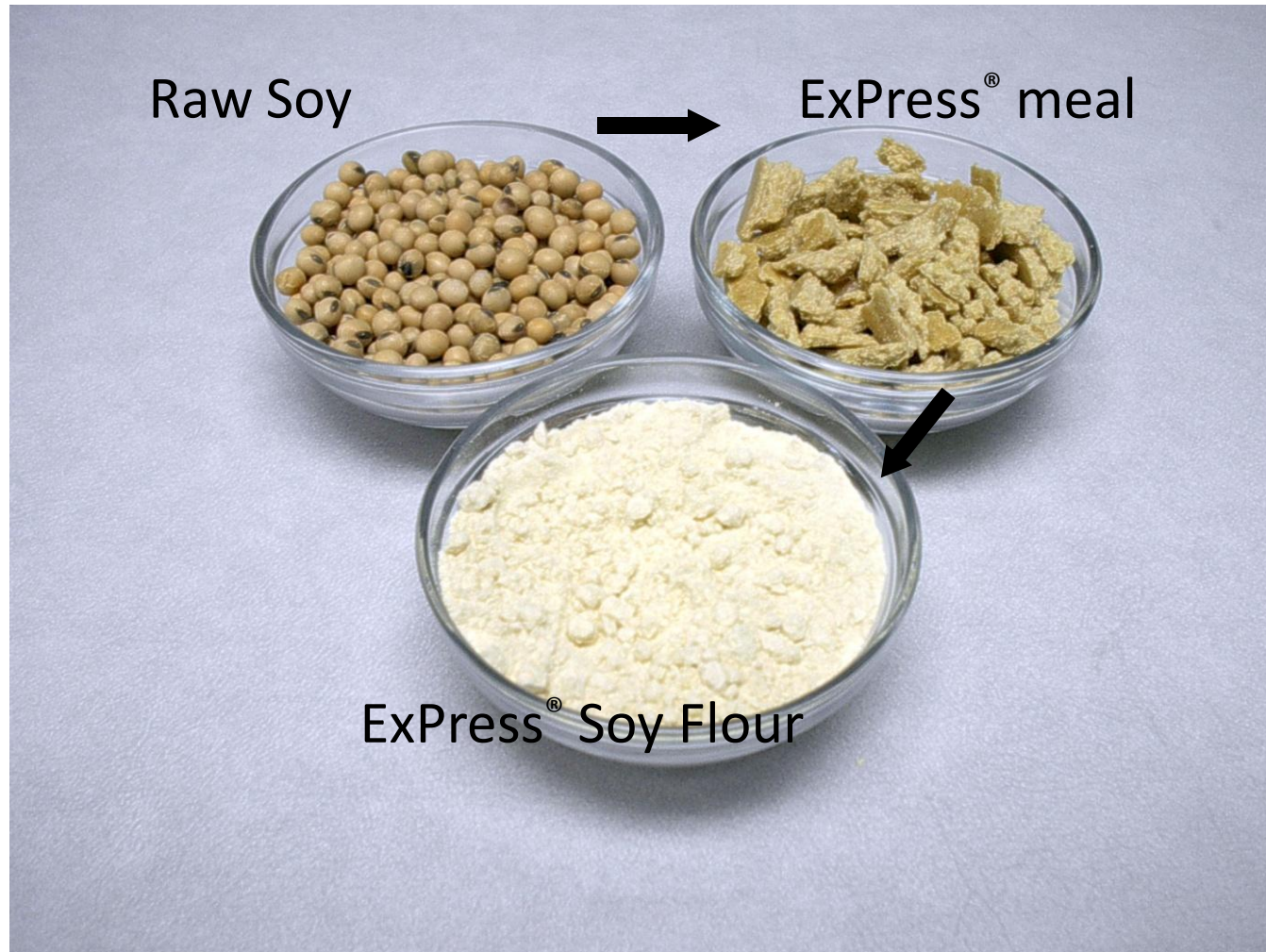
Insta-Pro Fortified Blended Foods



- Corn-Soy Blend CSB
- Sorghum-Soy Blend SSB
- Novel Blends – cassava, rice, millet, peanut, cowpea
- Flour or Shaped



Insta-Pro ExPress® Low-Fat Soy Flour



Insta-Pro ExPress® Low-Fat Soy Flour



Typical Proximate Composition

Moisture	9 %
Protein dry matter basis	50 %
as is	46 %
Fat	5 – 7 %
Total Dietary Fiber (TDF)	16 %
Carbohydrates (including TDF)	28 %
Calories (per 100 grams)	340

Insta-Pro ExPress® Food Applications



Product		Application
	Low-Fat Soy Flours	Breads, baked goods, infant foods
	Textured Soy Proteins	Sauces, meat replacement, meat extenders, hi-protein foods (sports), institutional foods (school, military), vegetarian foods, health foods, ...
	Fortified Blended Foods	Cereals and ready-to-eat snacks
	Natural Vegetable Oils	Cooking, frying, salad oil, mayonnaise (+ feed, biodiesel)

Insta-Pro TSP

50% protein

All vegetable, chemical-free

No cold chain



Why Invest in Extrusion?



1. Low-moderate capital investment
2. Modular system – build as you grow
3. Rapid return on investment – Africa ~12 months
4. Ideal for small-medium enterprises
5. Easy to operate, durable equipment
6. Mechanical – no hazardous chemicals
7. Flexibility to process various products
8. Uses local ingredients, helps local farmers
9. Positive impact on nutritional value
10. High value end-products

Self Sustaining Value Chain

Insta-Pro's Successful Business Model





www.insta-pro.com
www.youtube.com/instaproint