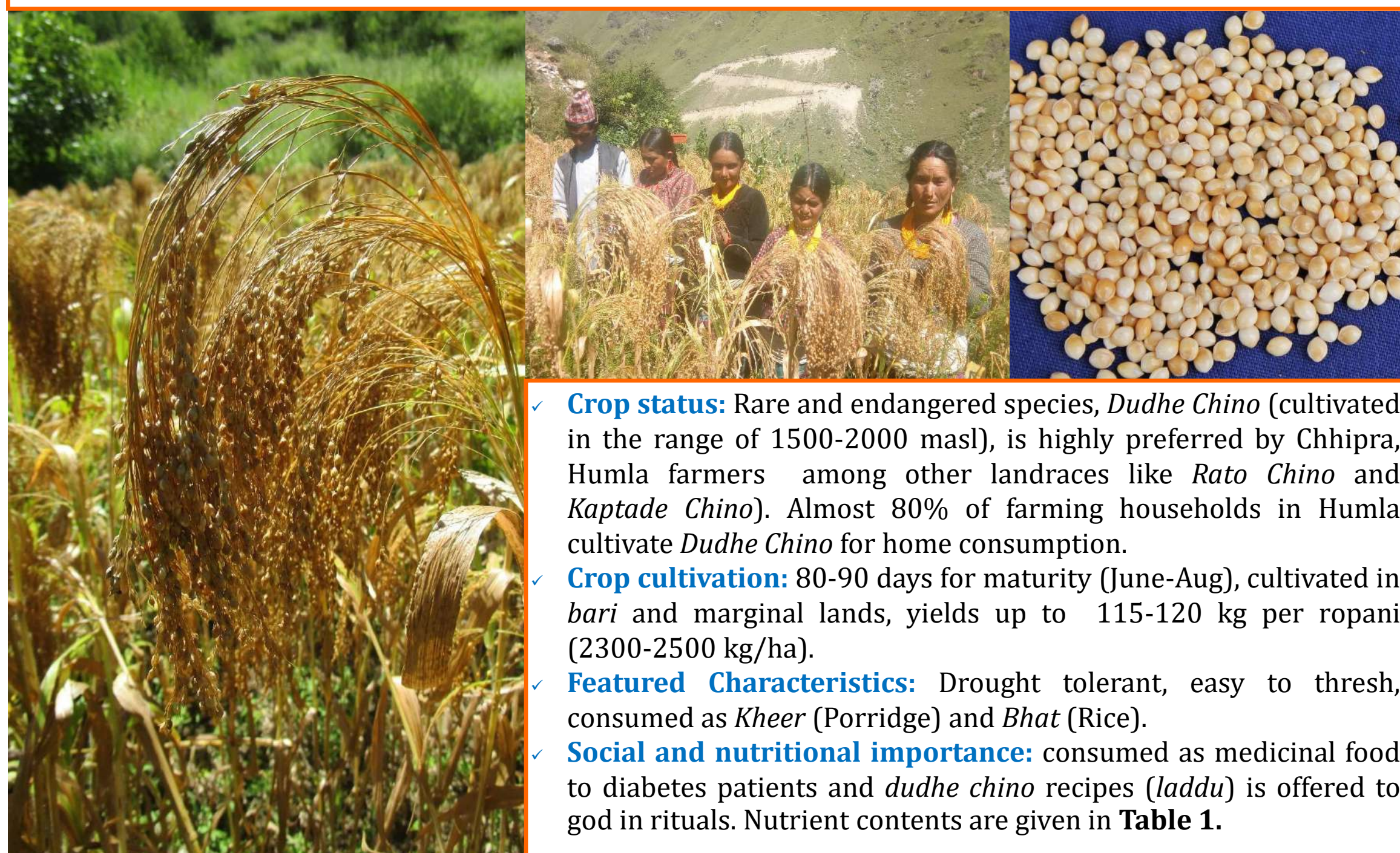


Promising mountain crops | landraces for varietal registration and promotion

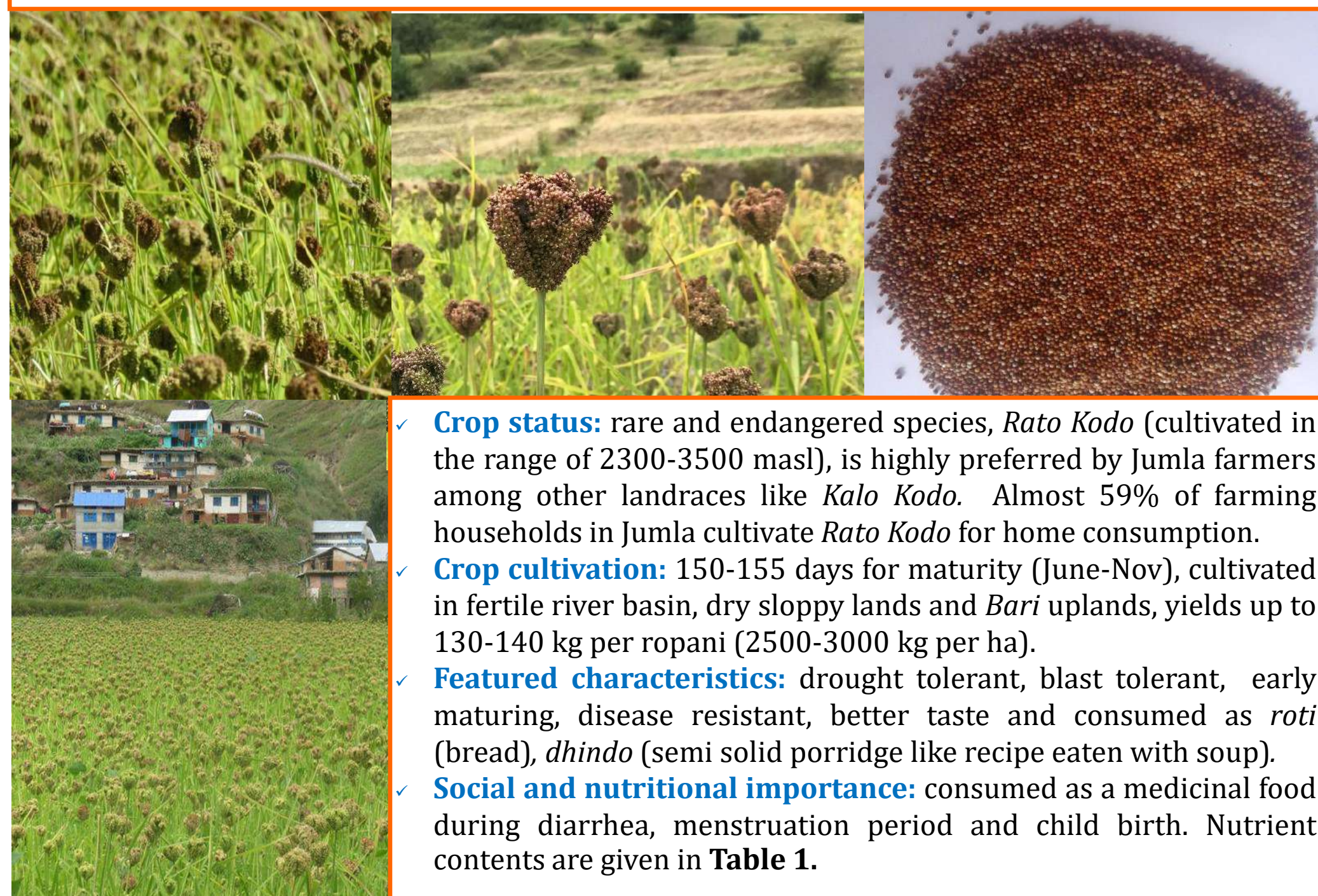
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Proso Millet (*Panicum miliaceum* L.) | Dudhe Chino (दुधे चिनो)
A promising local landrace supporting the food security of Humla farmers.



- **Crop status:** Rare and endangered species, *Dudhe Chino* (cultivated in the range of 1500-2000 masl), is highly preferred by Chhipra, Humla farmers among other landraces like *Rato Chino* and *Kaptade Chino*. Almost 80% of farming households in Humla cultivate *Dudhe Chino* for home consumption.
- **Crop cultivation:** 80-90 days for maturity (June-Aug), cultivated in *bari* and marginal lands, yields up to 115-120 kg per ropani (2300-2500 kg/ha).
- **Featured Characteristics:** Drought tolerant, easy to thresh, consumed as *Kheer* (Porridge) and *Bhat* (Rice).
- **Social and nutritional importance:** consumed as medicinal food to diabetes patients and *dudhe chino* recipes (*laddu*) is offered to god in rituals. Nutrient contents are given in **Table 1**.

Finger millet (*Eleusine coracana* Gaertn.) | Rato Kodo (रातो कोदो)
A promising local landrace supporting the food security of Jumla farmers.



- **Crop status:** rare and endangered species, *Rato Kodo* (cultivated in the range of 2300-3500 masl), is highly preferred by Jumla farmers among other landraces like *Kalo Kodo*. Almost 59% of farming households in Jumla cultivate *Rato Kodo* for home consumption.
- **Crop cultivation:** 150-155 days for maturity (June-Nov), cultivated in fertile river basin, dry sloppy lands and *Bari* uplands, yields up to 130-140 kg per ropani (2500-3000 kg per ha).
- **Featured characteristics:** drought tolerant, blast tolerant, early maturing, disease resistant, better taste and consumed as *roti* (bread), *dhindo* (semi solid porridge like recipe eaten with soup).
- **Social and nutritional importance:** consumed as a medicinal food during diarrhea, menstruation period and child birth. Nutrient contents are given in **Table 1**.

Amaranth (*Amaranth caudatus* L.) | Laal Marse or Rato Latte (लाल मार्से अथवा रातो लट्टे)
A promising dual purpose (green and grain) landrace in Jumla.



- **Crop status:** vulnerable crop species, *Rato Latte* (cultivated in the range of 2300-3500 masl), is highly preferred by Jumla farmers among other landraces like *Seto Marse*, *Ladi Marse*. Almost 5% of farming households in Jumla cultivate *Rato Latte* for home consumption.
- **Crop cultivation:** 170-180 days for maturity (April-Sep), grain yield up to 35-45 kg per ropani (800-1000 kg per ha).
- **Featured characteristics:** drought tolerant, cultivated in dry marginal lands and *Bari* uplands, consumed as green vegetable at early stages and grains at maturity.
- **Social and nutritional importance:** puffed grains are offered to god as a holy food during rituals, consumed as *laddu* during local festivals. Nutrient contents are given in **Table 1**.

Foxtail Millet (*Setaria italica* (L.) P. Beauv.) | Bariyo Kaguno (बरियो कागुनो)
A promising grain crop landrace in Lamjung.



- **Crop status:** rare and endangered crop species, *Bariyo Kaguno* (cultivated in the range of 800-1500 masl), is highly preferred by Ghanpokhara, Lamjung farmers among other landraces like *Tinmase Kaguno* and *Rato Kaguno*. Almost 5% of farming households in Lamjung cultivate *Bariyo Kaguno* for home consumption.
- **Crop cultivation:** 115-125 days for maturity (March-June), cultivated in rainfed *Bari* (uplands), grain yield up to 100-120 kg per ropani (2500-3000 kg per ha).
- **Featured characteristics:** drought tolerant, distracts monkeys, consumed as porridge, rice and *dhindo* (semi solid porridge like recipe eaten with soup).
- **Social and nutritional importance:** consumed as easily digestible, medicinal food for diabetes patients. Nutrient contents are given in **Table 1**.

Common Bean (*Phaseolus vulgaris* L.) | Pahelo Simi (पहेलो सिमी)
A promising dual purpose (dry bean and snap bean) landrace in Dolakha.



- **Crop status:** vulnerable crop species, *Pahelo Simi* (cultivated in the range of 950-2200 masl), is highly preferred by Dolakha, farmers among other landraces like *Kalo Simi*, *Rato Chhirke Simi*, *Seto Simi*, *Kalo Chhirke Simi*, *Kailo Simi*, *Sano Pahelo Simi*, *Gada Pahelo Simi* and *Thulo Chhirke Simi*. Almost 40% of farming households in Dolakha cultivate *Pahelo Simi* for home consumption.
- **Crop cultivation:** 85-90 days for snap purpose and 105-110 days for grain purpose maturity (Feb-May during summer and Aug-Nov during rainy season), green pod yield up to 700-1000 kg per ropani (15-20 tons per ha) and dry bean yield up to 150-200 kg per ropani (3.5-4.0 tons per ha).
- **Featured characteristics:** drought tolerant, cultivated in rainfed *Bari* (slopy uplands), consumed for its better taste as green vegetable, curry (*daal*) and roasted cake (*biramla*).
- **Social and nutritional importance:** can be consumed as both green vegetable (pods) as well as dry beans (curry and roasted cake) and thus fetch good price in the market. Nutrient contents are given in **Table 1**.

Common Bean (*Phaseolus vulgaris* L.) | Khairo Ghu Simi (खैरो घु सिमी)
A promising dual purpose (dry bean and snap bean) landrace in Dolakha.



- **Crop status:** vulnerable crop species, *Khairo Ghu Simi* (cultivated in the range of 950-2200 masl), is highly preferred by Dolakha, farmers among other landraces like *Kalo Simi*, *Rato Chhirke Simi*, *Seto Simi*, *Kalo Chhirke Simi*, *Kailo Simi*, *Sano Pahelo Simi*, *Gada Pahelo Simi* and *Thulo Chhirke Simi*. Almost 27% of farming households in Dolakha cultivate *Khairo Ghu Simi* for home consumption.
- **Crop cultivation:** 85-90 days for snap purpose and 105-110 days for grain purpose maturity (Feb-May during summer and Aug-Nov during rainy season), green pod yield up to 700-1000 kg per ropani (15-20 tons per ha) and grain yield up to 130-180 kg per ropani (3.0-3.5 tons per ha).
- **Featured characteristics:** drought tolerant, cultivated in rainfed *Bari* (slopy uplands), consumed for its better taste as green vegetable, curry (*daal*) and roasted cake (*biramla*).
- **Social and nutritional importance:** can be consumed as both green vegetable (pods) as well as dry beans (curry and roasted cake) and thus fetch good price in the market. Nutrient contents are given in **Table 1**.

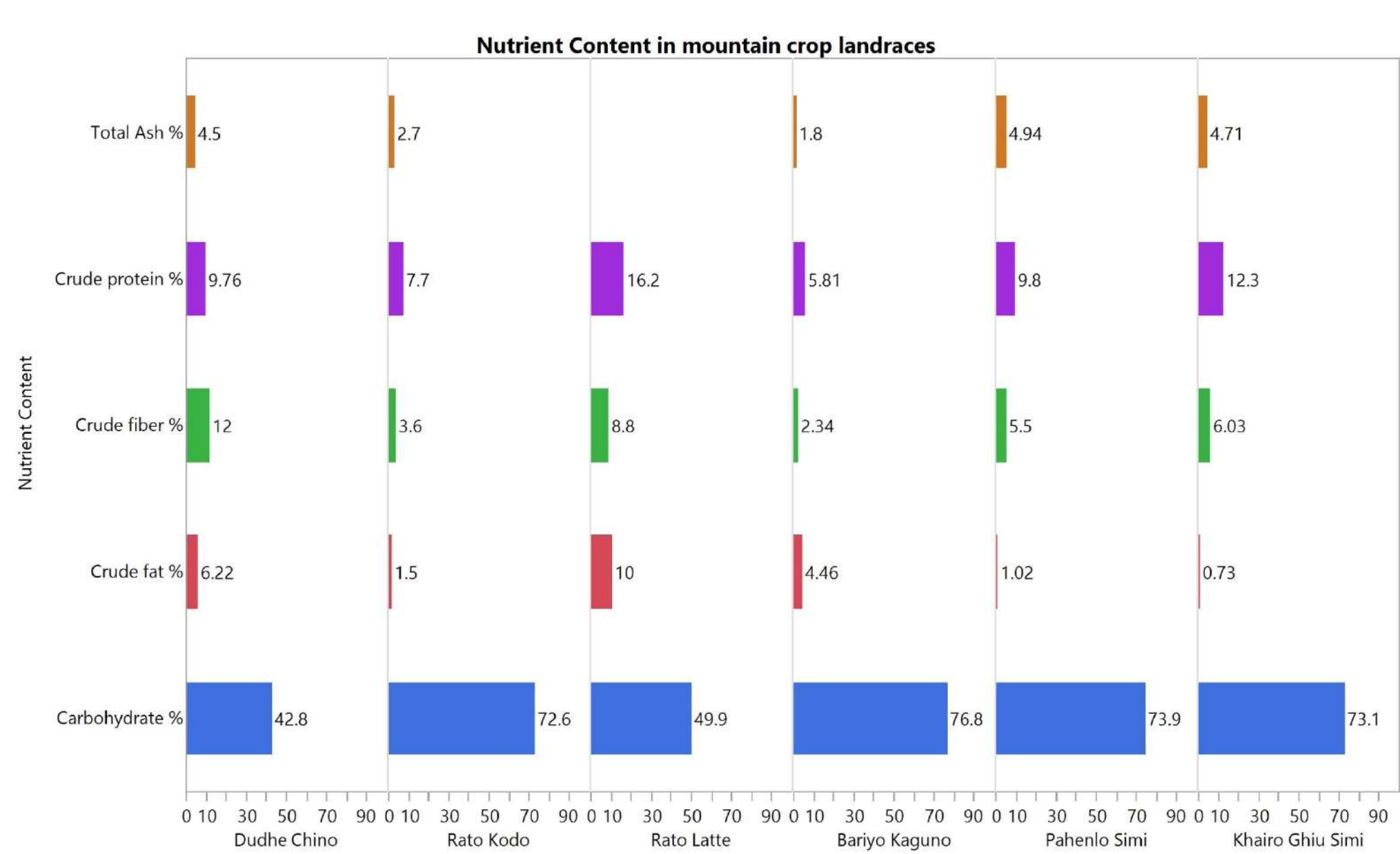


Figure 1. Graph showing nutrient content variation in mountain crop landraces from Humla, Jumla, Lamjung and Dolakha of Nepal. All those crops are rich in carbohydrate content except *Dudhe Chino* and *Rato Latte* which have relatively low carbohydrate content than others. These crops also yield detectable amount of protein, fiber, fat and ash contents.

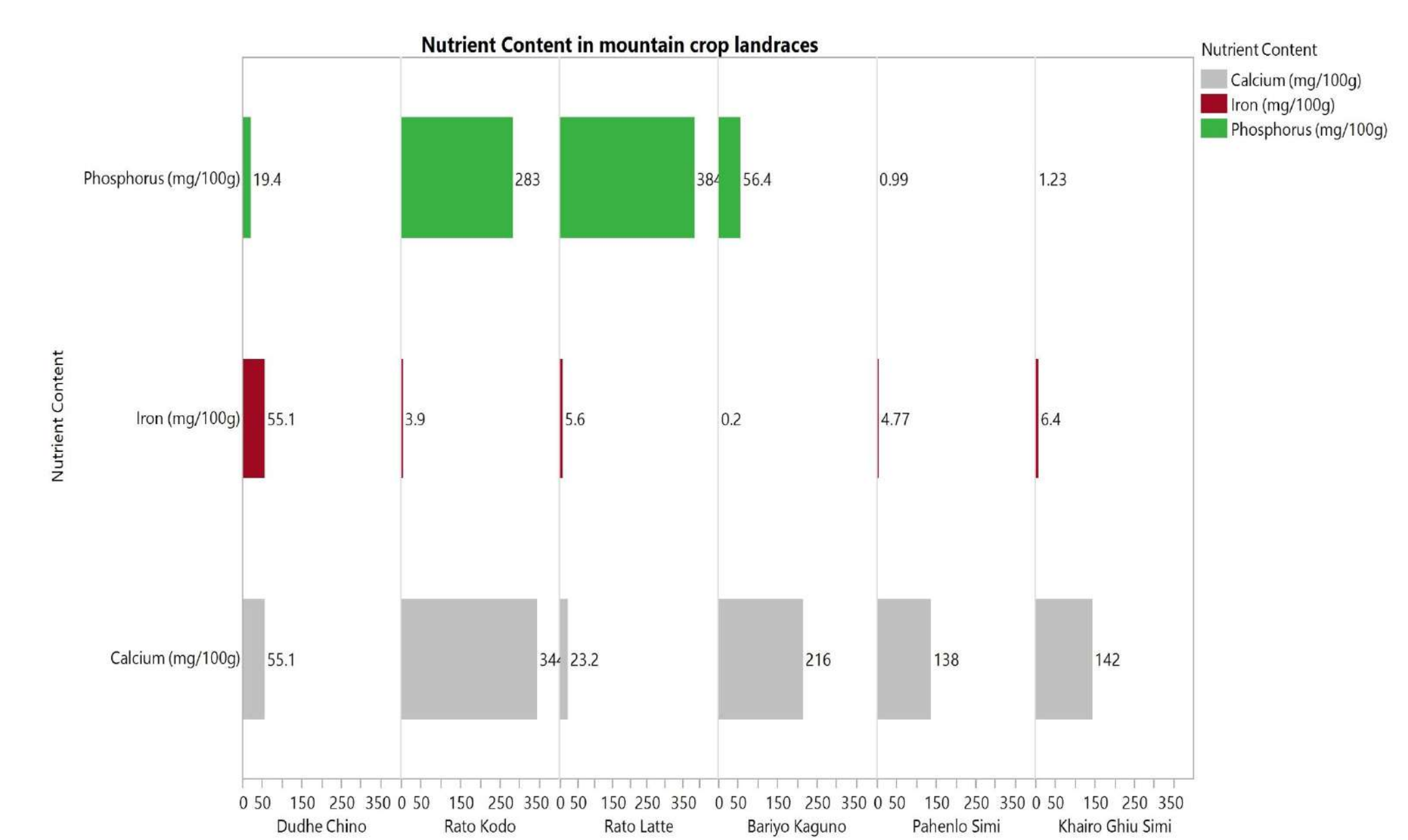


Figure 2. Graph showing nutrient content variation in mountain crop landraces from Humla, Jumla, Lamjung and Dolakha of Nepal. *Dudhe Chino* is rich in iron content. *Rato Kodo* and *Rato Latte* are rich source of phosphorus whereas *Rato Kodo*, *Bariyo Kaguno*, *Pahelo Simi* and *Khairo Ghu simi* are rich in calcium.

Table 1. Nutrient contents in mountain crop landrace from Humla, Jumla, Lamjung and Dolakha

Nutrient Content	<i>Dudhe Chino</i>	<i>Rato Kodo</i>	<i>Rato Latte</i>	<i>Bariyo Kaguno</i>	<i>Pahelo Simi</i>	<i>Khairo Ghu Simi</i>
Crude fat %	6.22	1.5	10	4.46	1.02	0.73
Total Ash %	4.5	2.7	1.8	4.94	4.71	4.71
Crude protein %	9.76	7.7	16.2	5.81	9.8	12.29
Crude fiber %	11.95	3.6	8.8	2.34	5.5	6.03
Carbohydrate %	42.83	72.6	49.9	76.8	73.94	73.13
Iron (mg/100g)	55.07	3.9	5.6	0.2	4.77	6.395
Phosphorus (mg/100g)	19.44	283	384.48	56.4	0.99	1.23
Calcium (mg/100g)	55.07	344	23.19	215.9	138.05	141.96

Source: Department of Food Technology and Quality Control (MOALD) and Food Research Division, Nepal Agricultural Research Council (NARC), 2019



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